शासकीय रामानुज प्रताप सिंहदेव स्नातकोत्तर महाविद्यालय

बैकुण्ठपुर, जिला - कोरिया (छ.ग.) 497335

Website : www rpspgc.edu.in

प्रवेश विवरणिका

Admission & Information Brochure

2023 - 2024

GOVT. RAMANUJ PRATAP SINGHDEV P.G. COLLEGE

BAIKUNTHPUR, DIST.- KOREA (C.G.) 497335

प्राचार्य की कलम से...

शासकीय रामानुज प्रताप सिंहदेव स्नातकोत्तर महाविद्यालय आप सभी विद्यार्थियों का स्वागत करता है।

यह गर्व की बात है कि उच्च शिक्षा के लिये आपने इस महाविद्यालय का चयन किया है। हम आपको आश्वासन देते हैं कि, आपके शैक्षणिक स्तर को उच्च से उच्चतर बनाने हेतु हम सब मिलकर हर संभव प्रयास करेंगे। उच्च शिक्षा का उपदेश युवाओं का सर्वांगीण विकास है, विकास का अवसर प्रदान करना, संसाधन जुटाना, परिवेश निर्मित करना, संस्था का दायित्व है। प्रतिभाएं शहरी क्षेत्र का विशेषाधिकार नहीं है, ग्रामीण क्षेत्र भी इससे भरे पड़े है. आवश्यकता सिर्फ अवसर प्रदान करने की है।

अध्ययन, मनन, धारण, लेखन सब आपको करना है। हम पुस्तकें समाचार पत्र-पत्रिकाएं, प्रायोगिक सुविधाएं, खेलकूद की सुविधाएं एवं अध्यापन की उत्तम व्यवस्था द्वारा आपको हर संभव मदद करेंगे।

अनुशासन सफलता की पहली सीढ़ी है, राष्ट्रीय सेवा योजना के सहभागी बनकर आप सेवाभावी आदर्श नागरिक बनकर देश का नाम रोशन कर सकते है। रेडक्रास के सहभागी बनकर जन-कल्याणकारी वैश्विक लक्ष्य हासिल कर सकते है। साहित्यिक, सांस्कृतिक, क्रीड़ा, विज्ञान प्रदर्शनी, जागरूकता के कार्यक्रमों आदि के द्वारा अपनी प्रतिभा को ऊंचा चढ़ाने का सतत् प्रयास कर सकते है।

महाविद्यालय स्तर पर बनी हुई विभिन्न समितियां आपके विविध आवश्कताओं की पूर्ति करेंगी। प्राचार्य से आप कार्यालयीन समय में कभी भी आकर अपनी समस्याओं का समाधान प्राप्त कर सकते हैं।

हम आपके उज्जवल भविष्य की कामना करते है.....

डॉ. ए. सी. गुप्ता
प्राचार्य

शासकीय रामानुज प्रताप सिंहदेव स्नातकोत्तर महाविद्यालय

बैकुण्ठपुर, जिला-कोरिया (छ.ग.)

संत गहिरा गुरू विश्वविद्यालय सरगुजा, अम्बिकापुर (छ.ग.) से सम्बद्ध

प्रवेश विवरणिका

आवेदन पत्र भरने से पूर्व विवरणिका को ध्यान से पढ़े ।

प्रकाशक

प्राचार्य, शासकीय रामानुज प्रताप सिंहदेव स्नातकोत्तर महाविद्यालय
बैकुण्ठपुर, जिला - कोरिया (छ.ग.)

महाविद्यालय एक नजर में.....

छत्तीसगढ़ के प्रतिष्ठित महाविद्यालयों में से एक शासकीय महाविद्यालय बैकुण्ठपुर की स्थापना 05 सितम्बर 1982 में बी.टी.आई हॉस्टल के पुराने भवन में हुई थी। सन् 1984 में नये भवन में स्थानांतरित होने के पश्चात् पूरी साज-सज्जा एवं सुविधाएं के साथ विकास की विविध उपलब्धियों को हस्तगत करते हुए यह महाविद्यालय निरंतर उन्नयन की ओर अग्रसर है।

बैकुण्ठपुर अविभाजित मध्यप्रदेश में कोरिया स्टेट के राजा रामानुज प्रताप सिंहदेव की राजधानी थी। यह सरगुजा जिला मुख्यालय अम्बिकापुर से 75 कि.मी. की दूरी पर स्थित है। श्रमिकों के लिये न्यूनतम मजदूरी का नियम इनके द्वारा ही प्रतिपादित किया गया जिसे सम्पूर्ण भारत वर्ष में लागू किया गया। छत्तीसगढ़ शासन द्वारा इस महाविद्यालय का नाम राजा रामानुज प्रताप सिंहदेव के नाम पर शासकीय रामानुज प्रताप सिंहदेव स्नातकोत्तर महाविद्यालय बैकुण्ठपुर रखा गया है।

उच्च शिक्षा में गुणवत्ता की ओर निरंतर अग्रसर होते हुए इस महाविद्यालय ने 41 वर्ष सफलता पूर्वक पूर्ण कर लिया है। आधुनिक विधाओं एवं तकनीकों के माध्यम से अध्ययन-अध्यापन व्यवसायिक एवं रोजगारोन्मुखी शिक्षा आदि, महाविद्यालय की प्राथमिकता में है। उच्च शिक्षा को सार्थक जीवनोपयोगी और सामाजिक प्रतिबद्धताओं से जोड़कर नया स्वरूप प्रदान करने का हमारा प्रयास है, ताकि इस महाविद्यालय के छात्र-छात्राएं पारंपरिक शिक्षा से हटकर कुछ कर सकें और कुछ सोच सकें।

इस महाविद्यालय में कला, विज्ञान एवं गणित एवं वाणिज्य संकाय में स्नातक तथा रसायनशास्त्र,राजनीति, भौतिकी समाजशास्त्र, हिन्दी, इतिहास, भूगोल, गणित, वनस्पति शास्त्र विषय पर स्नातकोत्तर स्तर की शिक्षा विषय विशेषज्ञों एवं दक्ष प्राध्यापकों के द्वारा दी जाती है।

वर्तमान में यह जिले का अग्रणी महाविद्यालय है। इस महाविद्यालय के निर्देशन में 04 अन्य शासकीय महाविद्यालय तथा 01 अशासकीय महाविद्यालय का कार्य संपादित होता है।

नई शिक्षा नीति के तहत वर्ष 2023-24 से स्नातक प्रथम वर्ष की कक्षाओ में अध्यन कार्य प्रारंभ किया गया है ।

उद्देश्य :

- शिक्षित समाज में सकारात्मक भूमिका निभाने हेतु युवा छात्र-छात्राओं को गुणात्मक शिक्षा के अवसर प्रदान करना।
- समाज की मांग के अनुरूप आवश्यक सभी क्षेत्रों में दक्षताएं प्रदान करना।
- युवा छात्र-छात्राओं को एक ऐसा वातावरण देना जो उनके व्यक्तित्व के विकास में आत्मविश्वास, समानता की भावना तथा अनुसंधानात्मक प्रवृत्तियों को पैदा करने में सक्षम हो।
- शिक्षा का उपयोग इसके हितग्राहियों के सतत् उन्नयन के लिए करना जहां पुरूष एवं महिलाएं ज्ञानपूर्वक और कल्याणकारी समाज में मुख्य भूमिका निभाती हों।

महाविद्यालय में स्नातक स्तर पर पढ़ाये जाने वाले विषय समूह एवं संकाय

स्नातक :

कला संकाय

1. **बी.ए. भाग -1 का पाठ्यक्रम -**
   - अ. अनिवार्य विषय - आधार पाठ्यक्रम (हिन्दी भाषा, अंग्रेजी भाषा)
   - ब. पर्यावरण अध्ययन
   - स. ऐच्छिक विषय - निम्नलिखित विषय समूह में से किन्हीं तीन विषयों का चयन करें। समाजशास्त्र, राजनीति विज्ञान अथवा गृह विज्ञान, हिन्दी साहित्य अथवा संस्कृत साहित्य, अर्थशास्त्र, भूगोल अथवा मनोविज्ञान, इतिहास अथवा अंग्रेजी साहित्य

   बी.ए. पाठ्यक्रम के तीनों वर्षों के विषय एक ही होंगे, विषय परिवर्तन की अनुमति नहीं दी जा सकेगी।

2. **बी.ए. भाग - दो का पाठ्यक्रम -**
   बी.ए. भाग-दो में से ही विषय लेने होंगे, जो बी.ए. भाग-एक में लिये गये हैं।

3. **बी.ए. भाग - तीन का पाठ्यक्रम -**
   बी.ए. भाग-तीन में से ही विषय लेने होंगे, जो बी.ए. भाग-दो में लिये गये हो एवं महाविद्यालय के विषय समूह के अंतर्गत हों।

विज्ञान संकाय

1. **बी.एस.सी. भाग - एक (गणित समूह)**
   - अ. अनिवार्य विषय - आधार पाठ्यक्रम (हिन्दी भाषा, अंग्रेजी भाषा)
   - ब. पर्यावरण अध्ययन
   - स. भौतिक शास्त्र, रसायन शास्त्र, गणित

2. **बी.एस-सी. भाग - दो (गणित समूह)**
   बी.एस.सी. भाग-एक में लिये गये विषय ही लेना होगा।

3. **बी.एस.सी. भाग - तीन (गणित समूह)**
   बी.एस-सी. भाग-दो में लिये गये विषय ही लेना होगा।

4. **बी.एस.सी. भाग - एक (बायोलॉजी समूह)**
   - अ. अनिवार्य विषय - आधार पाठ्यक्रम (हिन्दी भाषा, अंग्रेजी भाषा)
   - ब. पर्यावरण अध्ययन
   - स. रसायन शास्त्र, जन्तु विज्ञान, वनस्पति विज्ञान

5. **बी.एस.सी. भाग - दो (बायोलॉजी समूह)**
   बी.एस-सी. भाग-एक में लिये गये विषय ही लेना होगा।

3. **बी.एस-सी. भाग - तीन (बायोलॉजी समूह)**
   बी.एस-सी. भाग-दो में लिये गये विषय ही लेना होगा।

वाणिज्य संकाय

1. **बी.कॉम. भाग-1 -**
   - अ. अनिवार्य विषय - आधार पाठ्यक्रम (हिन्दी भाषा, अंग्रेजी भाषा)
   - ब. पर्यावरण अध्ययन
   - स. अनिवार्य समूह -
     1. वित्तीय लेखांकन एवं व्यावसायिक गणित
     2. व्यावसायिक संचार एवं व्यावसायिक नियमन रूप रेखा
     3. व्यावसायिक अर्थशास्त्र एवं व्यावसायिक पर्यावरण

2. **बी.कॉम. भाग - दो -**
   - अ. अनिवार्य विषय - आधार पाठ्यक्रम (हिन्दी भाषा, अंग्रेजी भाषा)
   - ब. अनिवार्य समूह -
     1. निगमित लेखे एवं लागत लेखांकन
     2. व्यावसायिक सांख्यिकीय एवं उद्यमिता के तत्व
     3. व्यावसाय प्रबंध एवं कम्पनी अधिनियम

2. **बी.कॉम. भाग - तीन -**
   - अ. अनिवार्य विषय - आधार पाठ्यक्रम (हिन्दी भाषा, अंग्रेजी भाषा)
   - ब. अनिवार्य समूह -

अनिवार्य समूह -	वैकल्पिक
1. आयकर	1. वित्तीय प्रबंध
2. अप्रत्यक्ष कर	2. वित्तीय बाजार संचालन
3. प्रबंधकीय लेखांकन	
4. अंकेक्षण	

स्नातकोत्तर :

1. एम.ए. पूर्व एवं अंतिम - भूगोल
2. एम.ए. पूर्व एवं अंतिम - समाजशास्त्र (अनिवार्य एवं ऐच्छिक विषय)
3. एम.ए. पूर्व अंतिम - राजनीति शास्त्र (अनिवार्य एवं ऐच्छिक विषय)
4. एम.ए. पूर्व एवं अंतिम - इतिहास (अनिवार्य एवं ऐच्छिक विषय)
5. एम.ए. पूर्व एवं अंतिम - हिन्दी साहित्य (अनिवार्य एवं ऐच्छिक विषय)
6. एम.कॉम. पूर्व एवं अंतिम - वाणिज्य (अनिवार्य एवं ऐच्छिक विषय)
7. एम. एससी. पूर्व एवं अन्तिम - रसायन शास्त्र (अनिवार्य एवं ऐच्छिक विषय)
8. एम. एससी. पूर्व एवं अन्तिम - वनस्पति शास्त्र (अनिवार्य एवं ऐच्छिक विषय)
9. एम. एससी. पूर्व एवं अन्तिम - गणित (अनिवार्य एवं ऐच्छिक विषय)
10. एम. एससी. पूर्व एवं अन्तिम - भौतिकी (अनिवार्य एवं ऐच्छिक विषय)

टीप - समस्त स्नातकोत्तर कक्षाएं सेमेस्टर पद्धति से संचालित हो रही हैं।

महाविद्यालय में स्नातक कक्षाओं में उपलब्ध सीटों की संख्या

स्नातक :

कला संकाय –

बी.ए. - भाग - एक	-	360 सीट
बी.ए. - भाग - दो	-	360 सीट
बी.ए. - भाग - तीन	-	360 सीट

विज्ञान संकाय - (गणित)

बी.एस.सी. - भाग - एक	-	50 सीट
बी.एस.सी. - भाग - दो	-	50 सीट
बी.एस.सी. - भाग - तीन	-	50 सीट

विज्ञान संकाय - (बायोलॉजी)

बी.एस.सी. - भाग - एक	-	210 सीट
बी.एस.सी. - भाग - दो	-	210 सीट
बी.एस.सी. - भाग - तीन	-	210 सीट

वाणिज्य संकाय –

बी.कॉम. - भाग - एक	-	160 सीट
बी.कॉम. - भाग - दो	-	160 सीट
बी.कॉम. - भाग - तीन	-	160 सीट

स्नातकोत्तर :

एम.ए. प्रथम सेमेस्टर समाजशास्त्र	-	50 सीट
एम.ए. तृतीय सेमेस्टर समाजशास्त्र	-	50 सीट
एम.ए. प्रथम सेमेस्टर राजनीति शास्त्र	-	40 सीट
एम.ए. तृतीय सेमेस्टर राजनीति शास्त्र	-	40 सीट
एम.ए. प्रथम सेमेस्टर इतिहास	-	25 सीट
एम.ए. तृतीय सेमेस्टर इतिहास	-	25 सीट
एम.ए. प्रथम सेमेस्टर हिन्दी साहित्य	-	40 सीट
एम.ए. तृतीय सेमेस्टर हिन्दी साहित्य	-	40 सीट
एम.कॉम. प्रथम सेमेस्टर	-	40 सीट
एम.कॉम. तृतीय सेमेस्टर	-	40 सीट
एम.एस.सी. प्रथम सेमेस्टर रसायन शास्त्र	-	40 सीट
एम.एस.सी. तृतीय सेमेस्टर रसायन शास्त्र	-	40 सीट
एम.एस.सी. प्रथम सेमेस्टर वनस्पति शास्त्र	-	40 सीट
एम.एस.सी. तृतीय सेमेस्टर वनस्पति शास्त्र	-	40 सीट
एम.एस.सी. प्रथम सेमेस्टर गणित	-	40 सीट
एम.एस.सी. तृतीय सेमेस्टर गणित	-	40 सीट
एम.ए. प्रथम सेमेस्टर भूगोल	-	40 सीट
एम.ए. प्रथम सेमेस्टर भौतिकी	-	40 सीट

छत्तीसगढ़ के शासकीय महाविद्यालयों में विद्यार्थियों के लिये आचरण-संहिता

सामान्य नियम :

छत्तीसगढ़ के शासकीय महाविद्यालयों में प्रवेश लेने वाले प्रत्येक विद्यार्थियों को महाविद्यालय के नियमों का अक्षरश: पालन करना होगा। इनका पालन न करने पर वह शासन द्वारा निर्धारित दण्डात्मक कार्यवाही का भागीदार होगा।

1. विद्यार्थी शालीन वेशभूषा में महाविद्यालय में आयेगा। किसी भी स्थिति में उसकी वेशभूषा उत्तेजक नहीं होना चाहिए।
2. प्रत्येक विद्यार्थी अपना पूर्ण ध्यान अध्ययन में लगायेगा, साथ ही महाविद्यालय द्वारा आयोजित पाठ्येत्तर गतिविधियों में भी भाग लेना होगा।
3. महाविद्यालय परिसर में वह शालीन व्यवहार करेगा, अभद्र व्यवहार, असंसदीय भाषा का प्रयोग, गाली-गलौच, मारपीट या आग्नेय अस्त्रों का प्रयोग नहीं करेगा।
4. प्रत्येक विद्यार्थी अपने शिक्षकों, अधिकारियों एवं कर्मचारियों से नम्रता एवं भद्रता का व्यवहार करेगा।
5. महाविद्यालय परिसर को स्वच्छ बनाये रखना प्रत्येक विद्यार्थी का नैतिक कर्तव्य है, वह सरल निव्यंसन और मितव्ययी जीवन निर्वाह करेगा।
6. महाविद्यालय की सीमाओं में किसी भी प्रकार के मादक पदार्थों का सेवन सर्वथा वर्जित है। दोषी पाये जाने पर उसे महाविद्यालय से निष्कासित किया जा सकता है।
7. महाविद्यालय में इधर-उधर थूकना, दीवालों को गन्दा करना या गंदी बातें लिखना सख्त मना है। असामाजिक तथा अपराधिक गतिविधियों से संलिप्त पाये जाने पर कठोर कार्यवाही की जायेगी।
8. वह अपनी मांगों का प्रदर्शन, आंदोलन, हिंसा या आतंक फैलाकर नहीं करेगा। विद्यार्थी अपने आप को दलगत राजनीति से दूर रखेगा तथा अपनी मांगों को मनवाने के लिये राजनीतिक दलों, कार्यकर्ताओं अथवा समाचार पत्रों का सहारा नहीं लेगा।

अध्ययन संबंधी नियम :

1. प्रत्येक विषय में विद्यार्थी की 75 प्रतिशत उपस्थिति अनिवार्य होगी तथा वह एन.सी.सी./एन.एस.एस. में भी लागू होगी अन्यथा उसे वार्षिक परीक्षा में बैठने की पात्रता नहीं होगी।
2. विद्यार्थी प्रयोगशाला में उपकरणों का उपयोग सावधानी पूर्वक करेगा। उनको स्वच्छ रखेगा।
3. ग्रंथालय द्वारा स्थापित नियमों का पूर्णत: पालन करेगा, उसे निर्धारित संख्या में ही पुस्तकें, प्राप्त होगी तथा समय से न लौटाने पर निर्धारित दण्ड देना होगा।
4. अध्ययन से संबंधित किसी भी कठिनाई के लिये गुरूजनों के समक्ष अथवा प्राचार्य के समक्ष शांतिपूर्वक ढंग से अभ्यावेदन प्रस्तुत करेगा।
5. व्याख्यान कक्षों, प्रयोगशालाओं या वाचनालय में पंखे, लाईट, फर्नीचर, इलेक्ट्रिक फिटिंग आदि का तोड़फोड़ करने पर इसकी भरपाई उस कक्षा के छात्र/छात्राओं से की जायेगी।

परीक्षा संबंधी नियम :

1. विद्यार्थी को सत्र के दौरान होने वाली सभी इकाई परीक्षाओं, त्रैमासिक तथा अर्द्धवार्षिक परीक्षाओं में सम्मिलित होना अनिवार्य है।
2. अस्वस्थतावश आंतरिक परीक्षाओं में सम्मिलित न होने की स्थिति में विद्यार्थी शासकीय चिकित्सक से मेडिकल सर्टिफिकेट प्रस्तुत करेगा तथा स्वस्थ होने के उपरांत परीक्षा देगा।
3. परीक्षा में या उसके संबंध में किसी प्रकार के अनुचित लाभ होने या अनुचित साधनों का प्रयोग करने का प्रयत्न गंभीर दुराचरण माना जायेगा।

महाविद्यालय प्रशासन का अधिकार क्षेत्र :

1. यदि छात्र अनैतिकता मूलक या गंभीर अपराध में अभियुक्त पाया गया तो उसका प्रवेश तत्काल निरस्त कर दिया जायेगा।
2. यदि छात्र रैगिंग में लिप्त पाया गया तो छत्तीसगढ़ शैक्षणिक संस्थानों में प्रताड़ना प्रतिषेध अधिनियम 2001 के अनुसार रैगिंग किये जाने पर अथवा रैगिंग के लिये प्रेरित करने पर पांच साल तक कारावास की सजा या पांच हजार रूपये जुर्माना अथवा दोनों से दण्डित किया जा सकता है।
3. यदि विद्यार्थी समय-समय में शुल्क का भुगतान नहीं करता तो उसका नाम निरस्त किया जायेगा।
4. यदि विद्यार्थी किसी भी प्रार्थना पत्र अथवा आवेदन में तथ्यों को छिपायेगा अथवा गलत तथ्य प्रस्तुत करेगा तो उसका प्रवेश निरस्त कर उसे महाविद्यालय से पृथक कर दिया जायेगा।
5. महाविद्यालय में प्रवेश लेने हेतु विद्यार्थी द्वारा प्रस्तुत किये गये आवेदन पत्र में उसके पालक अभिभावक का घोषणा पत्र पर हस्ताक्षर करना अनिवार्य है और यह हस्ताक्षर प्रवेश समिति के सम्मुख करेंगें

SUPREME COURT OF INDIA ORDER FOR CURBING RAGGING IN EDUCATIONAL INSTITUTIGN

As per Hon'ble Supreme Court of India order, If any incident of ragging comes to the notice of authority the concerned student shall be giveh liberty to explaih and if his / her explanation is not found satisfactroy, the authority would expel him / her from the Institution.

महाविद्यालय में शासन द्वारा निर्धारित प्रवेश संबंधी नियम

छत्तीसगढ़ शासन, उच्च शिक्षा विभाग

छत्तीसगढ़ के शासकीय/अशासकीय महाविद्यालयों की स्नातक तथा स्नातकोत्तर कक्षाओं में प्रवेश के लिये मार्गदर्शक सिद्धांत 2023-24

1. प्रयुक्ति :

1.1 यह मार्गदर्शक सिद्धांत छत्तीसगढ़ के सभी शासकीय/अशासकीय महाविद्यालयों में छ.ग. विश्वविद्यालय अधिनियम 1973 के तहत अध्यादेश क्र. 6 एवं 7 के प्रावधान के साथ सहपठित करते हुए लागू होंगे तथा समस्त प्राचार्य इनका पालन सुनिश्चित करेंगे।

1.2 प्रवेश के नियमों का शासकीय तथा **अशासकीय महाविद्यालयों को कड़ाई से पालन करना होगा।** 'प्रवेश' से आशय स्नातक कक्षा के प्रथम वर्ष अथवा प्रथम सेमेस्टर तथा स्नातकोत्तर कक्षा के पूर्व अथवा प्रथम सेमेस्टर से है।

2. प्रवेश की तिथि :

2.1 प्रवेश हेतु आवेदन-पत्र जमा करना :

इस वर्ष विश्वविद्यालय स्तर पर प्रवेश हेतु "ऑनलाईन" फार्म जमा कराया जायेगा। जिन महाविद्यालयों के लिये जितने फार्म जमा होंगे, उसे उस महाविद्यालय को प्रेषित किये जायेंगे। ऑनलाईन से प्राप्त आवेदनों में से प्राचार्य, शासन से प्राप्त प्रवेश मार्गदर्शिका सिद्धांत के नियमों के आधार पर प्रवेश प्रदान करेंगे।

(अ) अपरिहार्य कारणों से यदि "ऑफलाईन" आवेदन जमा करना हो तो आवेदक द्वारा महाविद्यालय में प्रवेश के लिये प्राचार्य द्वारा निर्धारित आवेदन पत्र समस्त प्रमाण-पत्रों सहित निर्धारित दिनांक तक महाविद्यालय में जमा किये जायेंगे।

(ब) प्रवेश हेतु बोर्ड / विश्वविद्यालय द्वारा अंकसूची प्रदान न किये जाने की स्थिति में पूर्व संस्था के संबंधित प्राचार्य द्वारा प्रमाणित किये जाने पर बिना अंकसूची के आवेदन पत्र जमा किये जा सकेंगे।

2.2 प्रवेश हेतु अंतिम तिथि निर्धारित करना :

स्थानांतरण प्रकरण को छोड़कर 16 जून से 16 अगस्त तक प्राचार्य स्वयं तथा 31 अगस्त तक कुलपति की अनुमति से प्रतिवर्ष प्राचार्य प्रवेश देने में सक्षम होंगे। (स्नातक प्रथम वर्ष में प्रवेश की तिथि 16 जून से तथा अन्य कक्षाओं हेतु 16 जून से 15 जुलाई तक या परीक्षा परिणाम घोषित होने के 10 दिवस के भीतर) शासन द्वारा समय-समय पर जारी निर्देशों के अनुसार प्रवेश प्रक्रिया की जावेगी। परीक्षा परिणाम विलम्ब से घोषित होने की स्थिति में परीक्षा परिणाम घोषित होने के उपरांत 10 दिवस के भीतर प्रवेश कार्य पूर्ण किये जायेंगें।
कंडिका 5.1 (क) में उल्लेखित कर्मचारियों के स्थानांतरित होने पर प्रवेश की अंतिम तिथि के बाद प्रवेश चाहने वाले उनके पुत्र/पुत्रियों को स्थान रिक्त होने पर ही सत्र के दौरान प्रवेश दिया जाये किन्तु इसके लिए कर्मचारी द्वारा कार्यभार ग्रहण करने का प्रमाण पत्र प्रस्तुत करना एवं आवेदक का प्रवेश हेतु निर्धारित अंतिम तिथि के पूर्व अन्य महाविद्यालय में प्रवेश होने की स्थिति में ही प्रवेश दिया जायेगा ।

विशेष टीप :-

सत्र 2022-23 की प्रवेश प्रक्रिया में सी.बी.एस.सी./आई.सी.एस.सी. बोर्ड एवं अन्य बोर्ड जिनके परीक्षा परिणाम घोषित नहीं हुये हैं ऐसे आवेदक संबंधित बोर्ड द्वारा आयोजित परीक्षा के अंतर्गत प्रथम टर्म में प्राप्त अंक पत्रक की छायाप्रति संबंधित विद्यालय के प्राचार्य से हस्ताक्षर करवाकर अपलोड करेंगें। सी.बी.एस.सी. के ऐसे आवेदक जिनकों संबंधित विद्यालय द्वारा प्रतिहस्ताक्षरित पत्रक उपलब्ध नहीं करा रहे हैं ऐसे आवेदक प्रथम टर्म

के अंकों के लिए वचन पत्र स्वयं/अभिभावक के हस्ताक्षर से अपलोड करेंगें । वचन पत्र असत्य पाये जाने पर प्रवेशित विद्यार्थी का प्रवेश स्वमेव निरस्त माना जायेगा, पढ़ा जाये।

स्पष्टीकरण :-

आवेदक 'क' ने किसी अन्यत्र स्थान (अ) के महाविद्यालय में नियमानुसार किसी कक्षा में प्रवेश लिया था। उसके बाद उसके पालक का स्थानांतरण स्थान 'ब' में हो गया, इस स्थान (ब) के किसी महाविद्यालय में अब प्रवेश लेना चाहता है, रिक्त स्थान होने पर ही उसे प्रवेश दिया जायेगा। आवेदक 'ख' ने स्थान (अ) के जहां उसके पालक कार्यरत थे, किसी भी महाविद्यालय में प्रवेश नहीं लिया किन्तु पालक के स्थान (ब) में स्थानांतरण होते ही, स्थान (ब) के किसी महाविद्यालय में प्रवेश लेना चाहता है, अतः अब प्रवेश के लिये निर्धारित अंतिम तिथि निकल जाने के बाद आवेदक (ख) को प्रवेश नहीं दिया जा सकता।

2.3 पुनर्मूल्यांकन में उत्तीर्ण छात्रों के लिये प्रवेश की अंतिम तिथि निर्धारित करना :

विधि संकाय के अतिरिक्त अन्य संकायों में पुनर्मूल्यांकन/पुनर्गणना में उत्तीर्ण छात्रों को पुनर्मूल्यांकन/पुनर्गणना के परिणाम घोषित होने के 15 दिन तक संबंधित विश्वविद्यालय के कुलपति की अनुमति के पश्चात गुणानुक्रम में आने पर प्रवेश की पात्रता होगी । किन्तु विधि संकाय की कक्षाओं में गुणानुक्रम के आधार पर प्रवेश की पात्रता होने पर भी महाविद्यालय में स्थान रिक्त होने पर ही प्रवेश दिया जायेगा। 12वीं कक्षा में उत्तीर्ण छात्र-छात्राओं को भी स्थान रिक्त होने पर नियमित प्रवेश की पात्रता होगी ।

3. प्रवेश संख्या का निर्धारण :

3.1 महाविद्यालयों में उपलब्ध साधनों तथा कक्षा में बैठने की व्यवस्था, प्रयोगशाला में उपलब्ध उपकरण / उपयोग योग्य सामग्री एवं स्टाफ की उपलब्धता आदि के आधार पर पूर्व में दी गई छात्र संख्या (सीट) के अनुसार ही विभिन्न कक्षाओं के लिये छात्रों को प्रवेश दिया जायेगा। यदि प्राचार्य महाविद्यालय में प्रवेश हेतु छात्र संख्या में सीट की वृद्धि चाहते हैं तो 30 अप्रैल तक अपना प्रस्ताव उच्च शिक्षा संचालनालय को प्रेषित करें। तथा "उच्च शिक्षा संचालनालय / उच्च शिक्षा विभाग से अनुमति प्राप्त होने पर ही बढ़े हुये स्थान के अनुसार प्रवेश की कार्यवाही करे।"

3.2 विधि स्नातक प्रथम, द्वितीय एवं तृतीय वर्ष एवं पंचवर्षीय पाठ्यक्रम बी.ए.एल.एल.बी. की कक्षाओं में बार कौंसिल द्वारा निर्धारित मापदण्डों के अनुसार अधिकतम 60 विद्यार्थियों को ही प्रति सेक्शन (न्यूनतम 2 सेक्शन एवं अधिकतम 5 सेक्शन) में प्रवेश गुणानुक्रम के आधार पर दिया जावे।

3.3 सम्बद्ध वि.वि./स्वशासी महाविद्यालय द्वारा प्रत्येक कक्षा के लिये अध्यापन के विषय/विषय समूह का निर्धारण किया गया है। प्राचार्य अपने महाविद्यालयों में उन्हीं निर्धारित विषय/विषय समूह में निर्धारित प्रवेश संख्या के अनुसार ही प्रत्येक कक्षा में आवेदकों को प्रवेश देंगें।

4. प्रवेश सूची :

4.1 प्राचार्य द्वारा प्रवेश शुल्क जमा करने की निर्धारित अंतिम तिथि की सूचना देते हुए, प्रवेश हेतु चयनित विद्यार्थियों की अर्हकारी परीक्षा में प्राप्तांकों एवं जहां अधिभार देय है, वहां अधिभार देकर कुल प्राप्तांकों की गुणानुक्रम सूची, प्रतिशत अंक सहित, सूचना पटल पर लगायी जायेगी।

4.2 प्रवेश समिति द्वारा आवश्यक संलग्न प्रमाण पत्रों की प्रतियों को मूल प्रमाण पत्रों से मिलान कर प्रमाणित किये जाने एवं स्थानांतरण प्रमाण पत्र की मूल प्रति जमा करने के पश्चात् ही प्रवेश शुल्क जमा करने की अनुमति दी जायेगी। प्रवेश देने के तत्काल बाद स्थानांतरण प्रमाण पत्र पर ''प्रवेश दिया गया'' रद्द की मोहर लगाकर उसे रद्द करना चाहिए।

4.3 निर्धारित शुल्क जमा करने पर ही महाविद्यालय में प्रवेश मान्य होगा। प्रवेश के पश्चात् स्थानांतरण प्रमाण पत्र की मूल प्रति को निरस्त की सील लगा कर अनिवार्य रूप से निरस्त कर दिया जाए।

4.4 घोषित प्रवेश सूची की शुल्क जमा करने की अंतिम तिथि के बाद स्थान रिक्त होने पर सभी कक्षाओं में नियमानुसार प्रवेश हेतु विलंब शुल्क रूपये 100/- अशासकीय मद में अतिरिक्त रूप से वसूला जायेगा, तथापि ऐसे प्रकरणों में 31 जुलाई के पश्चात् प्रवेश की अनुमति नहीं दी जायेगी।

4.5 स्थानांतरण प्रमाण पत्र की द्वितीय प्रति (डुप्लीकेट) के आधार पर प्रवेश नहीं दिया जायेगा। स्थानांतरण प्रमाण पत्र खो जाने की स्थिति में निकटस्थ पुलिस थाने में एफ.आई.आर. दर्ज किया जाए। पुलिस थाने की रिपोर्ट एवं पूर्व प्रवेश प्राप्त संस्था से अधिकृत रिपोर्ट जिसमें मूल स्थानांतरण प्रमाण पत्र का अनुक्रमांक एवं दिनांक का उल्लेख हो, प्राप्त होने की स्थिति में ही प्रवेश दिया जा सकता है। इस हेतु विद्यार्थी से वचन पत्र लिया जाएगा।

4.6 महाविद्यालय के प्राचार्य स्थानांतरण प्रमाण पत्र जारी करने के साथ-साथ छात्र से संबंधित गोपनीय रिपोर्ट जारी करेंगे कि संबंधित छात्र रैगिंग / अनुशासनहीनता / तोड़फोड़ आदि में संलिप्त है या नहीं। ऐसे गोपनीय रिपोर्ट को सीलबंद लिफाफे में बंद कर महाविद्यालय के प्राचार्य को प्रेषित करेंगे जहां कि छात्रा ने प्रवेश के लिये आवेदन किया है।

4.7 राज्य शासन द्वारा शासकीय महाविद्यालयों में अध्ययनरत स्नातक/ स्नातकोत्तर स्तर की छात्राओं को शिक्षण शुल्क से छूट प्रदान की गई है। अतः उक्त निर्देशों का पालन किया जाये ।

5. प्रवेश की पात्रता :

5.1 निवासी एवं अर्हकारी परीक्षा :

क. छत्तीसगढ़ के मूल / स्थायी, छ.ग. में स्थायी सम्पत्तिधारी निवासी / राज्य या केन्द्र सरकार के शासकीय कर्मचारी, अर्द्धशासकीय कर्मचारी तथा प्राईवेट लिमिटेड कम्पनी के कर्मचारी, राष्ट्रीकृत बैंकों तथा भारत सरकार द्वारा संचालित व्यवसायिक संगठनों के कर्मचारी जिनका पंदाकन छत्तीसगढ़ में है। उनके पुत्र / पुत्रियों एवं जम्मू कश्मीर के विस्थापितों तथा उनके आश्रितों को ही शासकीय महाविद्यालयों में प्रवेश दिया जाएगा। उपरोक्तानुसार प्रवेश देने के पश्चात् भी स्थान रिक्त होने पर अन्य राज्यों के मान्यता प्राप्त बोर्ड एवं अर्हकारी परीक्षा उत्तीर्ण विद्यार्थियों को नियमानुसार गुणानुक्रम के आधार पर प्रवेश दिया जा सकता है।

ख. सम्बद्ध वि.वि. से या सम्बद्ध वि.वि. द्वारा मान्यता प्राप्त विद्यालयों और वि.वि. से अर्हकारी परीक्षा उत्तीर्ण आवेदकों को ही महाविद्यालय में प्रवेश की पात्रता होगी।

ग. आवश्यकतानुसार संबंधित विश्वविद्यालय से पात्रता प्रमाण-पत्र प्राप्त करने के पश्चात् ही आवेदक को प्रवेश प्रदान किया जाए ।

5.2 स्नातक स्तर, नियमित प्रवेश :

क. 10+2 परीक्षा उत्तीर्ण आवेदकों को स्नातक प्रथम वर्ष में नियमित प्रवेश की पात्रता होगी। किन्तु वाणिज्य व कला संकाय के आवेदकों को विज्ञान संकाय में प्रवेश नहीं दिया जाएगा। बी.एस.सी. (गृहविज्ञान) प्रथम वर्ष में किसी भी संकाय से उत्तीर्ण छात्रा को प्रवेश की पात्रता होगी। व्यवसायिक पाठ्यक्रम से 12वीं उत्तीर्ण विद्यार्थियों को केवल कला संकाय में प्रवेश की पात्रता होगी। परंतु यदि अभ्यार्थी ने वाणिज्य संकाय के विषयों

से अध्ययन किया हो तो उसे वाणिज्य संकाय में प्रवेश की पात्रता होगी। इसी प्रकार 10+2 परीक्षा कृषि संकाय से उत्तीर्ण आवेदकों को विज्ञान संकाय अथवा बी.एस.सी. (बायो./गणित समूह) प्रथम वर्ष में प्रवेश नहीं दिया जायेगा।

ख. स्नातक स्तर की प्रथम / द्वितीय परीक्षा उत्तीर्ण आवेदकों को उन्हीं विषयों की क्रमश द्वितीय / तृतीय वर्ष में नियमित प्रवेश की पात्रता होगी। स्नातक द्वितीय स्तर पर विषय परिवर्तन की पात्रता नहीं होगी।

5.3 स्नातकोत्तर स्तर नियमित प्रवेश :

क. बी.कॉम./बी.एस.सी. (गृहविज्ञान)/बी.ए. स्नातक परीक्षा उत्तीर्ण आवेदकों को क्रमश एम.कॉम / एम.एस.-सी (गृहविज्ञान)/एम.ए. प्रथम सेमेस्टर एवं अर्हकारी विषय लेकर बी.एस.सी उत्तीर्ण आवेदकों को एम.एस.सी./एम.ए. प्रथम सेमेस्टर में नियमित प्रवेश की पात्रता होगी। एम.ए. प्रथम सेमेस्टर/पूर्व - भूगोल में उन्हीं विद्यार्थियों को प्रवेश की पात्रता होगी जिन्होंने स्नातक स्तर पर भूगोल विषय का अध्ययन किया हो। उपरोक्त के अतिरिक्त अर्हता के संबंध में संकाय की स्थिति में संबंधित विश्वविद्यालय संबंधित अध्यादेश में उल्लेखित प्रावधान/अर्हता ही बंधनकारी होंगे।

ख. स्नातकोत्तर प्रथम वर्ष/प्रथम सेमेस्टर उत्तीर्ण आवेदकों को उसी विषय के स्नातकोत्तर द्वितीय वर्ष में नियमित प्रवेश की पात्रता होगी। सेमेस्टर पद्धति की पूर्ण अर्हकारी परीक्षा उत्तीर्ण आवेदकों को अगले सेमेस्टर में नियमित प्रवेश की पात्रता होगी।

ग. स्नातकोत्तर कक्षाओं हेतु ए.टी.के.टी. (Allowed To Keep Terms) नियम -

1. स्नातकोत्तर प्रथम सेमेस्टर में प्रावधिक प्रवेश की पात्रता रखने वाले आवेदकों को प्रवेश के लिये निर्धारित अंतिम तिथि के पूर्व प्रावधिक प्रवेश लेना अनिवार्य है।
2. स्नातकोत्तर तृतीय सेमेस्टर में ए.टी.के.टी. (Allowed To Keep Terms) नियमों के अनुसार पात्र आवेदकों को अगले सेमेस्टर में प्रावधिक प्रवेश की पात्रता होगी।

5.4 विधि संकाय नियमित प्रवेश :

क. स्नातक परीक्षा उत्तीर्ण आवेदकों को विधि स्नातक प्रथम वर्ष में नियमित प्रवेश की पात्रता होगी।

ख. विधि स्नातक परीक्षा उत्तीर्ण आवेदकों को एल.एल.एम. प्रथम वर्ष में नियमित प्रवेश की पात्रता होगी।

ग. एल.एल.बी. प्रथम सेमेस्टर एवं एल.एल.एम. प्रथम सेमेस्टर परीक्षा उत्तीर्ण आवेदकों को क्रमश. एल.एल.बी. द्वितीय सेमेस्टर एवं एल.एल.एम. द्वितीय सेमेस्टर में प्रवेश की पात्रता होगी। इसी प्रकार तृतीय, चतुर्थ, पंचम सेमेस्टर में भी लागू होगा।

5.5 प्रवेश हेतु अर्हकारी परीक्षा में न्यूनतम अंक सीमा :-

क. विधि स्नातक प्रथम वर्ष में प्रवेश हेतु न्यूनतम अंक सीमा 45 प्रतिशत (अनुसूचित जनजाति एवं अनुसूचित जाति हेतु 40 प्रतिशत अन्य पिछड़ा वर्ग 42 प्रतिशत होगी तथा विधि स्नातकोत्तर पूर्वार्द्ध में 55 प्रतिशत अंक (अनुसूचित जनजाति/अनुसूचित जाति/ओ.बी.सी. हेतु 50 प्रतिशत) प्राप्त आवेदकों को ही नियमित प्रवेश की पात्रता होगी।

5.6 AICTE\CTE\BAR COUNCIL OF INDIA\MEDICAL COUNCIL OF INDIA से अनुमोदित पाठ्यक्रमों में प्रवेश/संचालन पर संबंधित संस्था के प्रावधान प्रभावी होंगें।

6. समकक्ष परीक्षा :

6.1 सेन्ट्रल बोर्ड ऑफ सेकेण्डरी एजुकेशन(सी.बी.एस.ई.), इंडियन कौंसिल फार सेकेण्डरी एजूकेशन (आई.सी.एस.ई.) तथा अन्य राज्यों के विद्यालयों / इण्टरमीडिएट बोर्ड की 10+2 परीक्षा में मा.शि.मं. की 10+2 परीक्षा के समकक्ष मान्य है। प्राचार्य मान्य बोर्ड की सूची सम्बद्ध वि.वि. से प्राप्त कर सकते हैं।

6.2 सामान्यत भारत में स्थित विश्वविद्यालयों जो भारतीय विश्वविद्यालय संघ (एसोसिएसन ऑफ यूनिवर्सिटी) के सदस्य हैं उनकी समस्त परीक्षाएं छत्तीसगढ़ के विश्वविद्यालय की परीक्षा के समकक्ष मान्य है। ऐसे विश्वविद्यालय (IGNOU को छोड़कर) जो दूरवर्ती पाठ्यक्रम संचालित करते हैं, किन्तु राज्य शासन से अनुमति प्राप्त नहीं है की परीक्षाएं मान्य नहीं है। विश्वविद्यालय अनुदान आयोग, नई दिल्ली के निर्देशानुसार छत्तीसगढ़ राज्य के बाहर के किसी भी विश्वविद्यालय अथवा शैक्षणिक संस्था को छत्तीसगढ़ राज्य में अध्ययन केन्द्र/ऑफ कैम्पस आदि खोलकर छात्र-छात्राओं को प्रवेश देने/डिग्री देने की मान्यता नहीं है तथा ऐसी संस्थाओं से डिग्री/डिप्लोमा वैधानिक रूप से मान्य नहीं होगा ।

6.3 संबद्ध विश्वविद्यालय द्वारा मान्यता प्राप्त विश्वविद्यालय का शिक्षण संस्थाओं की सूची एवं विश्वविद्यालय अनुदान आयोग द्वारा समय-समय पर जारी फर्जी अथवा मान्यता विहीन विश्वविद्यालय या शिक्षण संस्थाओं, जिनकी परीक्षा उपाधि मान्य नहीं है, की जानकारी प्राचार्य संबद्ध विश्वविद्यालय से प्राप्त करें।

6.4 वर्ष 2012 में प्रारंभ किए गए एनवीईक्यूएफ (National Vocational Educational Qualification) के अंतर्गत उत्तीर्ण आवेदकों को विश्वविद्यालय एवं महाविद्यालय में स्नातक स्तर के पाठ्यक्रमों में दाखिलों के लिए अन्य सामान्य विषयों की तुलना में समतुल्य प्राथमिकता प्रदान की जावे ।

विश्वविद्यालय अनुदान आयोग के अर्द्धशासकीय पत्र क्रमांक 1-52/2013 (सीसी/सएसक्यूएफ) अप्रैल 2014 के अनुसार -

"जैसा कि आपको ज्ञात है आर्थिक कार्य विभाग, वित्त मंत्रालय द्वारा अधिसूचित राष्ट्रीय कौमाल अर्हता संरचना (एनएसक्यूएफ) में मानव संसाधन विकास मंत्रालय द्वारा राष्ट्रीय व्यावसायिक शैक्षिक अर्हता संरचना (एसवीईक्यूएफ) में सूत्रबद्ध किये गये समस्त महत्वपूर्ण तथ्यों को निगमित किया गया है। जैसा एनएसक्यूएफ में अधिसूचित किया गया है कि यह 1 से 10 स्तर तक के प्रमाण पत्र उपलब्ध कराता है जिनमें स्तर 5 से स्तर 10 तक के प्रमाण पत्र उच्च शिक्षा से एवं स्तर 1 से स्तर 4 तक के प्रमाण पत्र स्कूली शिक्षा के क्षेत्र से संबंध है। वर्ष 2012 में प्रारंभ किये गये एनवीईक्यूएफ के अनुसरण में कुछ स्कूल बोर्डों द्वारा छात्रों को पाठ्यक्रम प्रस्तावित किये गये और एनवीईक्यूएफ के अंतर्गत छात्रों को समतुल्य/समस्तरीय प्रमाण-पत्र प्रदान किये जा रहे है । ऐसे छात्र एनएसक्यूएफ के स्तर 4 के प्रमाणित स्तर सहित 10+2 शिक्षा को वर्ष 2014 तक सफल कर पायेंगे । मानव संसाधन विकास मंत्रालय, भारत सरकार ने आशंका जताई है कि ऐसे छात्र जो विश्वविद्यालय एवं महाविद्यालय में स्नातक पूर्व किसी भी पाठ्यक्रम में दाखिला लेने के इच्छुक हैं तथा जिनके पास + 2 स्तर में व्यावसायिक विषय थे वे अलाभकारी स्थिति में होंगे। अत मेरा आपसे अनुरोध है कि जिस समय छात्रों द्वारा विश्वविद्यालय एवं महाविद्यालय में अन्य किसी भी स्नातक पूर्व पाठ्यक्रमों में दाखिलों के लिए प्रयास किये जा रहे हो तो उस समय ऐसे विषयों को अन्य सामान्य विषयों की तुलना में समतुल्य प्राथमिकता प्रदान की जाये, ताकि उन छात्रों को क्षैतिजिक गत्यात्मकता के लिए सुअवसर मिल सकें।

7. बाह्य आवेदकों का प्रवेश :

7.1 स्नातक स्तर तक बी.ए./बी.कॉम./बी.एस.सी./बी.एच.एस.सी. में एकीकृत पाठ्यक्रम लागू होने से छ.ग. के किसी भी विश्वविद्यालय, स्वशासी महाविद्यालय से प्रथम / द्वितीय वर्ष की परीक्षा उत्तीर्ण आवेदकों को क्रमशः द्वितीय/तृतीय वर्ष में प्रवेश की पात्रता है। किन्तु सम्बद्ध वि.वि./स्वशासी महाविद्यालय में पढ़ाये जा रहे विषयों/विषय समूहों में आवेदकों ने पिछली परीक्षा दी हो, इसका परीक्षण करने के पश्चात् ही नियमित प्रवेश दिया जावे। आवश्यक हो तो वि.वि. से पात्रता प्रमाण पत्र अवश्य लिया जाये।

7.2 छ.ग. के बाहर स्थित विश्वविद्यालयों/स्वशासी महाविद्यालयों से स्नातक स्तर की प्रथम/द्वितीय परीक्षा, अन्य विश्वविद्यालयों/स्वशासी महाविद्यालयों से स्नातकोत्तर पूर्व की परीक्षा या प्रथम, द्वितीय, तृतीय सेमेस्टर परीक्षा एवं विधि स्नातक स्तर की प्रथम/द्वितीय परीक्षा उत्तीर्ण आवेदकों को उनके द्वारा सम्बद्ध विश्वविद्यालय से पात्रता प्रमाण पत्र प्रस्तुत करने की पश्चात् ही उन्हीं विषयों / विषय समूह की अगली कक्षा में नियमित प्रवेश दिया जावे।
राज्य के बाहर के विद्यार्थियों को निर्धारित प्रारूप में एक शपथ-पत्र देना होगा किसी भी प्रकार की झूठी/गलत जानकारी पाये जाने पर संबंधित विद्यार्थी का प्रवेश निरस्त करते हुए उसे प्रदेश के किसी भी विश्वविद्यालय में प्रवेश से वंचित कर दिया जावेगा। अन्य राज्य के विद्यार्थियों द्वारा प्रस्तुत दस्तावेजों का प्रमाणीकरण संबंधित बोर्ड/ विश्वविद्यालयों से कराया जाना अनिवार्य है।

7.3 विज्ञान एवं अन्य प्रायोगिक विषयों में स्वाध्यायी आवेदकों का स्थान रिक्त होने पर तथा महाविद्यालय के पूर्व छात्रों को 30 नवम्बर तक, निर्धारित शुल्क लेकर मात्र प्रायोगिक कार्य करने की अनुमति प्राचार्य द्वारा दी जा सकती है।

8. अस्थायी प्रवेश की पात्रता :

अस्थायी प्रवेश की पात्रता रखने वाले विद्यार्थियों को प्रवेश हेतु निर्धारित अंतिम तिथि के पूर्व अस्थायी प्रवेश लेना अनिवार्य होगा।

8.1 स्नातक स्तर की प्रथम/द्वितीय वर्ष की परीक्षा में पूरक परीक्षा (कम्पार्टमेंट) प्राप्त नियमित आवेदकों को अगली कक्षा में स्थान रिक्त होने पर अस्थायी प्रवेश की पात्रता होगी।

8.2 स्नातकोत्तर सेमेस्टर प्रथम/द्वितीय/तृतीय में पूरक/एटी-केटी प्राप्त आवेदकों को अगली कक्षा में अस्थायी प्रवेश की पात्रता होगी।

8.3 विधि स्नातक त्रिवर्षीय पाठ्यक्रम एल.एल.बी. के प्रथम द्वितीय वर्ष में निर्धारित एग्रीगेट 40% पूरा न करने वाले या पूरक प्राप्त आवेदकों को अगली कक्षा में अस्थायी प्रवेश की पात्रता होगी।

8.4 उपरोक्त कंडिका-7 के खण्ड 1 एवं 2 के आवेदकों को अस्थायी प्रवेश की पात्रता नहीं होगी।

8.5 पूरक परीक्षा में अनुत्तीर्ण अस्थायी प्रवेश प्राप्त छात्र/छात्राओं का अस्थायी प्रवेश स्वतः निरस्त हो जाएगा। उत्तीर्ण होने पर अस्थायी प्रवेश नियमित प्रवेश के रूप में मान्य किया जावेगा।

9. प्रवेश हेतु अर्हताएं :

9.1 किसी भी महाविद्यालय/वि.वि. शिक्षण विभाग के किसी संकाय की कक्षा में होने वाले छात्र / छात्राओं को उसी संकाय की उसी कक्षा में आगामी वर्ष/वर्षों में पुन नियमित प्रवेश की पात्रता नहीं होगी। यदि किसी छात्र ने पूर्व सत्र में आवेदित कक्षा में नियमित प्रवेश नहीं लिया हो तो ऐसा आवेदक नियमित प्रवेश हेतु अनर्ह नहीं माना जावेगा। उसे मात्र मूल स्थानांतरण प्रमाण पत्र तथा शपथ पत्र जिससे प्रमाणित हो कि पूर्व में उसने प्रवेश नहीं लिया है, के आधार पर ही नियमानुसार प्रवेश दिया जावेगा।

9.2 जिनके विरूद्ध न्यायालय में चालान प्रस्तुत किया गया हो/या न्यायालय में अपराधिक प्रकरण चल रहा हो, परीक्षा में या पूर्व सत्र में छात्रों/अधिकारियों/कर्मचारियों के साथ दुर्व्यवहार/मारपीट करने के गंभीर आरोप हों। चेतावनी देने के बाद भी सुधार परिलक्षित नहीं हुआ हो, तो ऐसे छात्र/छात्राओं को प्रवेश नहीं देने के लिए प्राचार्य अधिकृत है।

9.3 महाविद्यालय में तोड़-फोड़ करने और महाविद्यालय की सम्पत्ति को नष्ट करने वाले/रैगिंग के आरोपी छात्र/छात्राओं के प्राचार्य प्रवेश निरस्त करने/प्रवेश न देने के लिए अधिकृत है। प्राचार्य इस हेतु समिति गठित कर जांच करवाये एवं जांच रिपोर्ट के आधार पर प्रवेश निरस्त किया जाये। ऐसे छात्र/छात्राओं को छत्तीसगढ़ राज्य के किसी भी शासकीय/अशासकीय महाविद्यालय में प्रवेश न दिया जावे।

9.4 **प्रवेश की आयु सीमा**

(क) छ.ग.शासन, उच्च शिक्षा विभाग के पत्र क्रमांक एफ 17-95/2017/38-2 दिनांक 15.08.2021 द्वारा सभी कक्षाओं एवं पाठ्यक्रमों में आयु सीमा के बंधन को समाप्त किया गया है

9.5 पूर्णकालिक शासकीय/अशासकीय सेवारत् कर्मचारी को उसकी दैनिक कार्य की अवधि में लगने वाले महाविद्यालय में नियमित प्रवेश की पात्रता नहीं होगा। दैनिक कर्तव्य अवधि के उपरांत लगने वाले महाविद्यालय में प्रवेश हेतु आवेदन करने पर आवेदक द्वारा नियोक्ता का अनापत्ति प्रमाण पत्र प्रस्तुत करने के बाद ही प्रवेश दिया जावेगा।

9.6 किसी संकाय में स्नातक उपाधि प्राप्त छात्र/छात्राओं को, विधि संकाय को छोड़कर अन्य संकायों के स्नातक पाठ्यक्रम में नियमित प्रवेश की पात्रता नहीं होगी।

10. प्रवेश हेतु गुणानुक्रम का निर्धारण :

10.1 उपलब्ध स्थानों से अधिक आवेदक होने पर प्रवेश निम्नानुसार गुणानुक्रम से किया जायेगा।
(क) स्नातक एवं स्नातकोत्तर कक्षाओं में प्रवेश हेतु अर्हकारी परीक्षा के प्राप्तांक एवं अधिभार देय है, तो अधिभार जोड़क प्राप्त कुल प्रतिशत अंकों के आधार पर, तथा
(ख) विधि स्नातक प्रथम वर्ष में सम्बद्ध विश्वविद्यालय में प्रवेश परीक्षा का प्रावधान हो तो विश्वविद्यालय द्वारा निर्धारित मापदण्डों के अनुसार होगी।

10.2 सामान्य एवं आरक्षित श्रेणी के लिए अलग-अलग गुणानुक्रम सूची तैयार की जावेगी।

11. प्रवेश हेतु प्राथमिकता :

11.1 स्नातक/स्नातकोत्तर विधि कक्षाओं में प्राथमिकता का आधार, अर्हकारी परीक्षा के प्राप्तांक के आधार पर प्रावीण्य सूची तैयार की जायेगी ।

11.2 स्नातक/स्नातकोत्तर अगली कक्षाओं में प्राथमिकता का आधार, अर्हकारी परीक्षा में उत्तीर्ण नियमित, उत्तीर्ण भूतपूर्व नियमित परीक्षार्थी, एक विषय में पूरक प्राप्त पूर्व सत्र के नियमित छात्र / स्वाध्यायी छात्रों के क्रमानुसार रहेगा।

11.3 विधि संकाय की अगली कक्षाओं में पूरक छात्रों के पहले उत्तीर्ण, परंतु 48 एग्रीगेट प्राप्त करने वाले छात्रों को प्राथमिकता के आधार पर प्रवेश दिया जावे, अन्य क्रम यथावत रहेगा।

11.4 स्नातक स्तर के त्रिवर्षीय पाठ्यक्रम के प्रथम वर्ष में प्रवेश के लिये प्रदेश के किसी भी महाविद्यालय में प्रदेश के अन्य स्थानों /तहसीलों / जिलों के निवासरत् अथवा परीक्षा उत्तीर्ण करने वाले आवेदक विद्यार्थीयों को भी गुणानुक्रम से प्रवेश दिया जावे।

11.5 किसी एक विषय की स्नातकोत्तर परीक्षा उत्तीर्ण विद्यार्थी को अन्य विषय की स्नातकोत्तर कक्षा में प्रवेश महाविद्यालय में स्थान रिक्त रहने की स्थिति में ही दिया जा सकेगा।

12. आरक्षण :

छ.ग. शासन की आरक्षण नीति के अनुरूप निम्नानुसार होगा –

12.1 प्रत्येक शैक्षणिक सत्र में प्रवेश में सीटों का आरक्षण, तथा किसी शैक्षणिक संस्था में इसका विस्तार निम्नलिखित रीति से होगा, अर्थात् –

क. अध्ययन या संकाय की प्रत्येक शाखा में वार्षिक अनुज्ञप्त संख्या में से 32 प्रतिशत सीटें अनुसूचित जनजातियों के लिए आरक्षित रहेंगी।

ख. अध्ययन या संकाय की प्रत्येक शाखा में वार्षिक अनुज्ञप्त संख्या में से 12 प्रतिशत सीटें अनुसूचित जातियों के लिए आरक्षित रहेंगी।

ग. अध्ययन या संकाय की प्रत्येक शाखा में वार्षिक अनुज्ञप्त संख्या में से 14 प्रतिशत सीटें अन्य पिछड़ा वर्ग के लिए आरक्षित रहेगी।

परन्तु जहाँ अनुसूचित जनजातियों के साथ-साथ अनुसूचित जाति / अन्य पीछड़ा वर्ग के रिक्त सीटों पर भी विपरीत क्रम में पात्र आवेदकों को वेश दिया जायेगा। आरक्षित सीटे पात्र विद्यार्थियों के अनुपलब्धता के कारण अंतिम तिथियों पर रि यह जाती है तो इस विपरित क्रम में पात्र विद्यार्थियों में से भरा जायेगा।

परंतु यह और कि पूर्वगामी परंतुक में निर्दिष्ट व्यवस्था के पश्चात् भी, जो खण्ड क, ख, तथा ग के अधीन आरक्षित सीटें, अंतिम तिथियों पर रिक्त रह जाती हैं तों इसे अन्य पात्र विद्यार्थियों से भरा जाग।

12.2 (1) बिन्दु क्र. 12.1 के खण्ड क, ख, तथा ग के अधीन उपलब्ध सीटों का आरक्षण ऊर्ध्वाधर (वर्टीकल) रूप से अवधारित किया जाएगा।

(2) निःशक्त व्यक्तियों, महिलाओं, भूतपूर्व कार्मिकों, स्वतंत्रता संग्राम सेनानियों के बच्चों या व्यक्तियों के अन्य विशेष वर्गों के संबंध में क्षैतिज आरक्षण का प्रतिशत ऐसा होगा, जैसा कि राज्य सरकार द्वारा समय-समय पर इस अधिनियम के प्रयोजनों के लिए अधिसूचित किया जाए, तथा यह बिन्दु क्र. 12.1 के खण्ड क, ख तथा ग के अधीन यथास्थिति, ऊर्ध्वाधर आरक्षण के भीतर होगा।

12.3 स्वतंत्रता संग्राम सेनानियों के पुत्र-पुत्रियों, पौत्र-पौत्रियों और नाती/नातीन के लिये 3 प्रतिशत स्थान आरक्षित रहेंगे । निःश्क्त श्रेणी के आवेदकों के लिए 5 प्रतिशत स्थान आरक्षित रहेंगें ।

12.4 सभी वर्गों में उपलब्ध स्थानों में से 30 प्रतिशत स्थान महिला छात्राओं के लिये आरक्षित रहेगा।

12.5 आरक्षित श्रेणी का कोई उम्मीदवार अधिक अंक पाने के कारण अनारक्षित श्रेणी ओपन काम्पीटीशन में नियमानुसार मेरिट सूची में रखा जाता है, तो आरक्षित श्रेणी की सीटें यथावत् अप्रभावित रहेंगी, परन्तु ऐसा विद्यार्थी किसी संवर्ग जैसे- स्वतंत्रता संग्राम सेनानी आदि का भी है तो संवर्ग की यह सीट उस आरक्षित श्रेणी में भरी मानी जावेगी, शेष संवर्ग की सीटें भरी जाएगी।

12.6 आरक्षित स्थान का प्रतिशत 1/2 से कम आता है तो आरक्षित स्थान उपलब्ध नहीं होगा। 1/2 प्रतिशत एवं 1 प्रतिशत के बीच आने पर आरक्षित स्थान की संख्या एक होगी।

12.7 जम्मू कश्मीर विस्थापितों तथा आश्रितों को 5 प्रतिशत तक सीट वृद्धि कर प्रवेश दिया जाए तथा न्यूनतम अंक में 10 प्रतिशत की छूट प्रदान की जाए।

12.8 समय-समय पर शासन द्वारा जारी आरक्षण नियमों का पालन किया जाए।

12.9 कंडिका 12.1 में दर्शाई गई आरक्षण के प्रावधान माननीय उच्च न्यायालय बिलासपुर के निर्णय के अधीन रहेगा।

12.10 तृतीय लिंग के व्यक्तियों को माननीय उच्चतम न्यायालय द्वारा इस संबंध में प्रकरण क्रमांक डब्ल्यू.पी. (सी) 400/2012 नेशनल लीगल सर्विसेस अथॉरिटी विरूद्ध भारत सरकार एवं अन्य में पारित निर्णय दिनांक 15.04.2014 की कंडिका 129 (3) में यह निर्देश दिया गया है कि - We direct the Centre and the State Government to take Steps to treat them as socially and educationally backward classes of citizens and e tend all kinds of reservation in cases of admission in educational institutions and for public appointements." का कड़ाई से पालन किया जाए ।

13. अधिभार :

अधिभार मात्र गुणानुक्रम निर्धारण के लिए ही प्रदान किया जायेगा, पात्रता प्राप्ति हेतु इसका उपयोग नहीं किया जायेगा। अर्हकारी परीक्षा के प्राप्तांकों के प्रतिशत पर ही अधिभार देय होगा। अधिभार हेतु समस्त प्रमाण पत्र प्रवेश आवेदन पत्र के साथ ही संलग्न करना अनिवार्य है। आवेदन पत्र जमा करने के पश्चात् बाद में लाये जाने/जमा किये जाने वाले प्रमाण पत्रों पर अधिभार हेतु विचार नही किया जायेगा। एक से अधिक अधिभार प्राप्त होने पर मात्र सर्वाधिक अभिभार ही देय होगा।

13.1 एन.सी.सी./एन.एस.एस./स्काउट्स :
स्काउट्स शब्द को स्काउट्स/गाईड्स/रेन्जर्स/सेवर्स के अर्थ में पढ़ा जाये।

(क)	एन.एस.एस./एन.सी.सी./ए-सर्टिफिकेट	- 02 प्रतिशत
(ख)	एन.एस.एस./एन.सी.सी./बी-सर्टिफिकेट	- 03 प्रतिशत
(ग)	'सी' सर्टिफिकेट या तृतीय सोपान उत्तीर्ण स्काउट्स	- 04 प्रतिशत
(घ)	राज्य स्तरीय संचालनालयीन एन.सी.सी. प्रतियोगिता में ग्रुप का प्रतिनिधित्व करने वाले छात्रों को	- 04 प्रतिशत
(च)	नई दिल्ली के गणतंत्र दिवस परेड में छ.ग. के एन.सी.सी./एन.एस.एस. कटिन्जेन्स में भाग लेने वाले विद्यार्थी को	- 05 प्रतिशत
(छ)	राज्यपाल स्काउट्स	- 05 प्रतिशत
(ज)	राष्ट्रपति स्काउट्स	- 10 प्रतिशत
(झ)	छ.ग. का सर्वश्रेष्ठ एन.सी.सी. कैडेट	- 10 प्रतिशत

(य) ड्यूक ऑफ एडिनबर्ग अवार्ड प्राप्त एन.सी.सी. कैडेट - 10 प्रतिशत

(र) भारत एवं अन्य राष्ट्रों के मध्य यूथ एक्सचेंज प्रोग्राम/एन.सी.सी./एन.एस.एस. के लिए चयनित एवं प्रवास करने वाले कैडेट को/अंतर्राष्ट्रीय जम्बूरी के लिए चयनित होने वाले विद्यार्थी को - 15 प्रतिशत

13.2 आनर्स विषय पाठ्यक्रम में उत्तीर्ण विद्यार्थी को स्नातकोत्तर कक्षा में उसी विषय में प्रवेश लेने पर - 10 प्रतिशत

13.3 खेलकूद/साहित्यिक/सांस्कृतिक/क्विज/रूपांकन प्रतियोगिताएं

(1) लोक शिक्षण संचालनालय अथवा छ.ग. उच्च शिक्षा विभाग द्वारा आयोजित अंतर जिला संभाग स्तर अथवा केन्द्रीय विद्यालय संगठन द्वारा आयोजित अंतर संभाग/क्षेत्र स्तर प्रतियोगिता में -

(क) प्रथम, द्वितीय, तृतीय स्थान प्राप्त टीम के प्रत्येक सदस्य को - 02 प्रतिशत

(ख) व्यक्तिगत प्रतियोगिता में उपर्युक्त स्थान प्राप्त करने वाले को - 04 प्रतिशत

(2) उपर्युक्त कंडिका 13.4 (1) में उल्लेखित विभाग/संचालनालय द्वारा आयोजित अंतर संभाग राज्य स्तर अथवा केन्द्रीय विद्यालय संगठन द्वारा आयोजित अंर्तक्षेत्रीय, राष्ट्रीय प्रतियोगिता में अथवा भारतीय विश्वविद्यालय संघ ए.आई.यू. द्वारा आयोजित प्रतियोगिता में अथवा संसदीय कार्य मंत्रालय भारत सरकार द्वारा आयोजित क्षेत्रीय प्रतियोगिता में -

(क) प्रथम, द्वितीय, तृतीय स्थान प्राप्त टीम के प्रत्येक सदस्य को - 06 प्रतिशत

(ख) व्यक्तिगत प्रतियोगिता में उपर्युक्त स्थान प्राप्त करने वाले को - 07 प्रतिशत

(ग) संभाग/क्षेत्र का प्रतिनिधित्व करने वाले प्रतियोगी को - 05 प्रतिशत

(3) भारतीय विश्वविद्यालय संघ द्वारा आयोजित संसदीय कार्य मंत्रालय, भारत सरकार द्वारा आयोजित राष्ट्रीय प्रतियोगिताओं में -

(क) व्यक्तिगत प्रतियोगिता में प्रथम, द्वितीय, तृतीय स्थान प्राप्त करने वालों को - 15 प्रतिशत

(ख) प्रथम, द्वितीय, तृतीय स्थान अर्जित करने वाली टीम के सदस्यों को - 12 प्रतिशत

(ग) संभाग/क्षेत्र का प्रतिनिधित्व करने वाले प्रतियोगी को - 10 प्रतिशत

13.4 भारत एवं अन्य राष्ट्रों के मध्य यूथ अथवा सांइस एवं कल्चरल एक्सचेंज प्रोग्राम के तहत (विज्ञान/सांस्कृतिक/साहित्यिक/कला क्षेत्र में) चयनित एवं प्रवास करने वाले दल के सदस्य को - 10 प्रतिशत - 10 प्रतिशत

13.5 छ.ग. शासन/म.प्र. शासन से मान्यता प्राप्त खेल संघों द्वारा आयोजित राष्ट्रीय प्रतियोगिता में -

(क) छ.ग./म.प्र. का प्रतिनिधित्व करने वाली टीम के सदस्य को - 10 प्रतिशत

(ख) प्रथम, द्वितीय, तृतीय स्थान प्राप्त करने वाली छ.ग. की टीम के सदस्य को - 12 प्रतिशत

13.6 जम्मू कश्मीर के विस्थापितों तथा उनके आश्रितों को - 01 प्रतिशत

13.7 विशेष प्रोत्साहन :

(क) छत्तीसगढ़ राज्य एवं महाविद्यालय के हित में एन.सी.सी./खेलकूद को प्रोत्साहन देने के लिये एन.सी.सी. के राष्ट्रीय स्तर के सर्वश्रेष्ठ कैडेट्स तथा ओलम्पियाड/एशियाड स्पोर्टस अथारिटी ऑफ इंडिया द्वारा राष्ट्रीय एवं अंतर्राष्ट्रीय स्तर पर आयोजित खेल प्रतियोगिता में भाग लेने वाले विद्यार्थियों को बगैर गुणानुक्रम के आगामी शिक्षा सत्र में उन कक्षाओं में सीधे प्रवेश दिया जाए जिनकी उन्हें पात्रता है। बशर्ते कि -

(1) इस प्रकार के प्रमाण पत्रों को संचालक, खेल एवं युवा कल्याण छ.ग. शासन द्वारा अभिप्रमाणित किया गया हो एवं

(2) यह सुविधा केवल उन्हीं अभ्यर्थियों को मिलेगी जिन्होंने निर्धारित समयावधि के अंतर्गत अपना अभ्यावेदन महाविद्यालय में प्रस्तुत किया है, परंतु इस प्रकार की सुविधा दूसरी बार प्राप्त करने के लिए उन्हें उपलब्धि पुन: प्राप्त करना आवश्यक होगा।

13.8 प्रथम वर्ष में प्रवेश हेतु स्कूल स्तर के पिछले 04 क्रमिक सत्र के प्रमाण पत्र स्नातकोत्तर प्रथम या विधि प्रथम वर्ष में प्रवेश हेतु विगत तीन क्रमिक सत्र तक के प्रमाण पत्र अधिभार हेतु मान्य किये जायेंगे। स्नातक द्वितीय, तृतीय एवं स्नातकोत्तर द्वितीय में प्रवेश पूर्व सत्र के प्रमाण पत्र अधिभार हेतु मान्य होंगें

14. संकाय/विषय/ग्रुप परिवर्तन :

स्नातक/स्नातकोत्तर प्रथम वर्ष में अहंकारी परीक्षा के संकाय/विषय/ग्रुप परिवर्तन कर प्रवेश चाहने वाले विद्यार्थियों को उनके प्राप्तांकों से 5 प्रतिशत घटाकर उनका गुणानुक्रम निर्धारित किया जायेगा। अधिभार घटे हुए प्राप्तांकों पर देय होगा। महाविद्यालय में स्नातक/स्नातकोत्तर प्रथम वर्ष में एक बार प्रवेश लेने के बाद वर्तमान सत्र के दौरान संकाय/विषय/ग्रुप परिवर्तन की अनुमति महाविद्यालय के प्राचार्य द्वारा 30 सितम्बर तक या विलम्ब से मुख्य परीक्षा परिणाम आने पर कंडिका 2.2 में उल्लेखित प्रवेश की अंतिम तिथि से 15 दिन तक ही दी जायेगी। यह अनुमति उन्हीं विद्यार्थियों को देय होगी जिनके प्राप्तांक संबंधित विषय/संकाय की मूल गुणानुक्रम सूची में अंतिम प्रवेश पाने वाले विद्यार्थी के समकक्ष या उससे अधिक हो।

15. शोध छात्र :

शासकीय महाविद्यालयों में पी.एच.डी. के शोध छात्रों को दो वर्ष के लिए प्रवेश दिया जायेगा। पुस्तकालय/प्रायोगिक कार्य अपूर्ण रह जाने की स्थिति में सुपरवाइजर की अनुशंसा पर प्राचार्य इस समयावधि को अधिकतम 04 वर्ष कर सकेंगे। छात्र निर्धारित आवेदन पत्र में आवेदन करेंगे। प्रवेश के बाद निर्धारित शुल्क जमा करने के बाद ही नियमित प्रवेश मान्य किया जायेगा। शोध छात्र के लिए संबंधित विश्वविद्यालय द्वारा पी.एच.डी. निर्देशन हेतु महाविद्यालय में पदस्थ मान्य प्राध्यापक सुपरवाइजर विश्वविद्यालय द्वारा निर्धारित नियमों के अंतर्गत ही अपना शोध कार्य संपादन करेंगे। अध्ययन अवकाश लेकर कोई शिक्षक यदि शोध छात्र के रूप में कार्यरत हैं, तो सक्षम अधिकारी द्वारा प्रेषित उपस्थिति प्रमाण-पत्र एवं प्रति तीन माह की कार्य प्रगति रिपोर्ट प्राप्त होने पर ही वेतन आहरण अधिकारी द्वारा शोध शिक्षक का वेतन आहरित किया जायेगा। महाविद्यालय में पदस्थ प्राध्यापक सुपरवाइजर के अन्यत्र स्थानांतरण हो जाने की स्थिति में शोध छात्र उसी संस्था में अपना शोध कार्य चालू रख सकते हैं जहां से उनका शोध आवेदन पत्र अग्रेषित किया गया था। शोध कार्य पूर्ण हो जाने के उपरांत शोध का प्रबंध उसी महाविद्यालय के प्राचार्य अग्रेषित करेंगे।

16. विशेष :

16.1 जाली प्रमाण पत्रों, गलत जानकारी, जानबूझकर छिपाये गये प्रतिकूल तथ्यों प्रशासकीय अथवा कार्यालयीन असावधानीवश यदि किसी आवेदक को प्रवेश मिल गया है तब ऐसे प्रवेश को निरस्त करने का पूर्ण अधिकार प्राचार्य को होगा।

16.2 प्रवेश लेकर किसी समुचित कारण, पूर्व अनुमति या सूचना के बिना लगातार एक माह या अधिक समय तक अनुपस्थित रहने वाले विद्यार्थी का प्रवेश निरस्त करने का अधिकार प्राचार्य को होगा।

16.3 प्रवेश के बाद सत्र के दौरान कंडिका 9.2 एवं 9.3 में वर्णित अनुशासनहीनता के प्रकरणों को लिप्त विद्यार्थी का प्रवेश निरस्त करने अथवा उसे निष्कासित करने का अधिकार प्राचार्य को होगा।

16.4 प्रवेश के बाद सत्र के दौरान विद्यार्थी द्वारा महाविद्यालय छोड़ देने अथवा उसका प्रवेश निरस्त होने अथवा उसका निष्कासन किये जाने की स्थिति में विद्यार्थी को संरक्षित निधि के अतिरिक्त अन्य कोई शुल्क वापिस नहीं किया जायेगा।

16.5 प्रवेश के मार्गदर्शक सिद्धांतों के स्पष्टीकरण या प्रवेश संबंधी किसी भी प्रकरण में मार्गदर्शन की आवश्यकता होने पर, प्राचार्य प्रकरण में अनिवार्य रूप से स्पष्ट टीप व अभिमत देते हुए स्पष्टीकरण/मार्गदर्शन आयुक्त, उच्च शिक्षा, छत्तीसगढ़, रायपुर से चाहा करेंगे। प्रवेश संबंधी किसी भी प्रकरण को केवल अग्रेषित लिखकर प्रेषित न किया जाये।

16.6 इन मार्गदर्शन सिद्धांतों में उल्लेखित प्रावधानों की व्याख्या करने का अधिकार आयुक्त, उच्च शिक्षा विभाग को है। इन मार्गदर्शक सिद्धांतों में समय-समय पर परिवर्तन/संशोधन/निरसन/संलग्न का सम्पूर्ण अधिकार छत्तीसगढ़ शासन, उच्च शिक्षा विभाग, मंत्रालय को होगा।

अवर सचिव
छत्तीसगढ़ शासन, उच्च शिक्षा विभाग

प्रवेश संबंधी अन्य नियम एवं सुविधाएं

प्रवेश तिथि :

छत्तीसगढ़ शासन के शिक्षा विभाग तथा विश्वविद्यालय द्वारा निर्धारित तिथि तक महाविद्यालय में प्रवेश के इच्छुक छात्र-छात्रा को प्रवेश समिति के साक्षात्कार के लिए उपस्थित होना अनिवार्य है। प्रवेश समिति द्वारा छात्रों की योग्यता प्रवीणता तथा साक्षात्कार के आधार पर चयन का तथा प्राचार्य की स्वीकृति मिल जाने पर छात्र-छात्रा को प्रवेश मिल सकेगा।

प्रवेश पात्रता :

विश्वविद्यालय अधिनियम 8 के अनुसार महाविद्यालय में निम्नलिखित योग्यता वाले छात्र-छात्रा प्रवेश पा सकेंगे -

1. **बी.ए., बी.कॉम एवं बी.एस.सी. भाग-1**
   माध्यमिक शिक्षा मंडल रायपुर (छ.ग.) या किसी माध्यमिक शिक्षा मंडल द्वारा आयोजित उच्चतर माध्यमिक परीक्षा 12वीं उत्तीर्ण हो या विश्वविद्यालय द्वारा मान्य समकक्ष परीक्षा उत्तीर्ण हो।

2. **बी.ए., बी.कॉम एवं बी.एस.सी. भाग-2**
   क. बी.ए., बी.कॉम. एवं बी.एस.सी. भाग-1 की परीक्षा उत्तीर्ण हो। या
   ख. विश्वविद्यालय द्वारा मान्यता प्राप्त समकक्ष परीक्षा उत्तीर्ण हो।

3. बी.ए., बी.कॉम एवं बी.एस.सी. भाग-3
   क. बी.ए., बी.कॉम. एवं बी.एस.सी. भाग-2 की परीक्षा उत्तीर्ण हो। या
   ख. समकक्ष परीक्षा उत्तीर्ण हो।

4 एम.ए. पूर्व
   क. विश्वविद्यालय की बी.ए., बी.कॉम. अथवा बी.एस.सी. भाग-3 की परीक्षा उत्तीर्ण हो। या
   ख. समकक्ष परीक्षा उत्तीर्ण हो।

5. एम.ए. अंतिम
   क. विश्वविद्यालय की एम.ए. पूर्व की परीक्षा उत्तीर्ण हो।

6. एम.एससी. पूर्व
   क. विश्वविद्यालय की बी.एस.सी. भाग-3 की परीक्षा उत्तीर्ण हो।

7. एम.एससी. अंतिम
   क. विश्वविद्यालय की एम.एससी. पूर्व की परीक्षा उत्तीर्ण हो।

8. एम.कॉम. पूर्व
   क. विश्वविद्यालय की बी.कॉम. भाग-3 की परीक्षा उत्तीर्ण हो।
   ख. समकक्ष परीक्षा उत्तीर्ण हो।

9. एम.कॉम. अंतिम
   क. विश्वविद्यालय की एम.कॉम. पूर्व की परीक्षा उत्तीर्ण हो।

प्रवेश नियम (Admission Rules) :

1. महाविद्यालय में प्रवेश पाने के इच्छुक प्रत्याशी को आन लाईन निर्धारित आवेदन पत्र भरकर देना होगा। ऑन लाईन भरे गए आवेदन पत्र की छायाप्रति छात्र एवं पालक के हस्ताक्षर से जमा करना अनिवार्य है।
2. आवेदन पत्र के साथ निम्नलिखित प्रमाण पत्र संलग्न करना अनिवार्य है।
   (1) स्थानांतरण प्रमाण पत्र (Transfer Certificate) (मूल प्रति)
   (2) अंक सूची (अंतिम परीक्षा दो प्रतियों में) राजपत्रित अधिकारी स्वयं द्वारा अभिप्रमाणित स्वयं प्रतिलिपि/फोटो स्टेट कॉपी।
   (3) चरित्र प्रमाण पत्र (Character Certificate)
   नियमित छात्रों को पूर्व में प्राचार्य के द्वारा हस्ताक्षरित चरित्र प्रमाण पत्र प्रस्तुत करना होगा। स्वाध्यायी छात्रों के लिए किन्हीं दो उत्तरदायी नागरिकों से चरित्र प्रमाण-पत्र संलग्न करना होगा। चरित्र प्रमाण-पत्र की मूल प्रति ही संलग्न करें।
   (4) प्रव्रजन प्रमाण पत्र (Migration Certificate) की मूल प्रति स्नातक विश्वविद्यालय अम्बिकापुर की परिसीमा के बाहर से आये छात्रों के लिए।
   (5) अंतिम परीक्षा के प्रमाण पत्र की मूल प्रति आवश्यकता पड़ने पर महाविद्यालय कार्यालय में प्रस्तुत करना अनिवार्य होगा।
   (6) पासपोर्ट आकार के दो चित्र।
   (7) जाति प्रमाण पत्र केवल अनु.जाति, अनु. जनजाति एवं अन्य पिछड़ा वर्ग के छात्रों के लिए किसी राजस्व अधिकारी क. तहसीलदार द्वारा प्रदत्त।
   (8) जन्मतिथि प्रमाण पत्र इसके लिए उच्चतर माध्यमिक परीक्षा के प्रमाण पत्र पर अंकित तिथि मान्य होगी।

नोट :
1. अनुत्तीर्ण, पूरक तथा विश्वविद्यालय परीक्षा में नकल करते पकड़े गये छात्रों को महाविद्यालय में प्रवेश नहीं दिया जायेगा।
2. अपूर्ण, असत्य एवं भ्रामक जानकारी के आधार पर प्राप्त प्रवेश सूचना प्राप्त होते ही निरस्त कर दिया जायेगा एवं उसका दायित्व छात्र का होगा, ऐसी स्थिति में उसके द्वारा जमा की गई राशि वापस नहीं की जायेगी।
3. उपर्युक्त प्रमाण पत्र के अभाव में प्रवेश रद्द हो जायेगा।
4. छात्र का आचरण अर्हता आदि से संबंधित आपत्ति होने पर प्राचार्य ऐसे प्रत्याशियों को महाविद्यालय में प्रवेश के लिए अपात्र घोषित कर सकते हैं।
5. महाविद्यालय के शुल्क एवं आवश्यक प्रपत्र प्रस्तुत करने पर ही छात्र का प्रवेश स्थाई समझा जायेगा। महाविद्यालय को यह अधिकार होगा कि बिना कारण बताये प्रवेश से वंचित कर दे या प्रवेश ही रद्द कर दे।
6. जिस छात्र का प्रवेश स्वीकार हो जायेगा उसे एक प्रवेश पत्र/परिचय पत्र कार्यालय से दिया जायेगा। इन दोनों को वर्ष भर सुरक्षित रखना चाहिए।
7. आवेदन पत्र में छात्र का नाम सही होना चाहिए जो उच्चतर माध्यमिक शाला परीक्षा प्रमाण पत्र या अंकसूची में अंकित हो। नाम परिवर्तन के इच्छुक छात्र/छात्रा को पांच रूपये के नान ज्युडिशियल स्टाम्प में प्रथम श्रेणी न्यायाधीश की अदालत में शपथ पत्र (Affidavit) देकर नत्थी करना होगा।
8. छात्र द्वारा आवेदन पत्र में दर्शाये स्थायी एवं वर्तमान पते में यदि किसी प्रकार का परिवर्तन होता है, तो उसकी सूचना प्राचार्य को तत्काल देना अनिवार्य है।
9. छत्तीसगढ़ शासन उच्च शिक्षा विभाग से प्राप्त प्रवेश नियमों का पालन किया जायेगा।

परिचय पत्र (Identity Card) :

1. परिचय पत्र महाविद्यालय के छात्र-छात्राओं के लिए अनिवार्य है। महाविद्यालय में प्रवेश करते समय चेक पोस्ट में प्रत्येक छात्र/छात्रा को परिचय पत्र दिखाना अनिवार्य है।
2. महाविद्यालय में प्रवेश लेते समय आवेदन पत्र के साथ पासपोर्ट साईज फोटो संलग्न कर कार्यालय में देना आवश्यक होगा, ताकि प्रवेश पत्र के साथ परिचय पत्र भी छात्र/छात्रा को प्राप्त हो सके।
3. परिचय पत्र को सावधानी पूर्वक सुरक्षित रखना छात्र-छात्राओं का कर्तव्य है।
4. महाविद्यालय में प्रवेश करते समय, प्रत्येक समारोह एवं उत्सव में सम्मिलित होते समय छात्राओं को परिचय पत्र साथ रखना होगा।
5. महाविद्यालय के किसी भी अधिकारी द्वारा परिचय पत्र की मांग करने पर प्रस्तुत करना अनिवार्य होगा।
6. परिचय पत्र का हस्तांतरण योग्य नहीं है। छात्र को यह निर्देश बाध्यकारी होगा, अन्यथा छात्र दण्ड का अधिकारी होगा।
7. परिचय पत्र खो जाने पर 50/- रूपये शुल्क तथा दो प्रतियां पासपोर्ट साईज फोटो जमा करने पर पुन प्राप्त किया जा सकेगा, परंतु नया परिचय पत्र, शपथ पत्र प्रस्तुत करने पर ही दिया जावेगा।

ग्रंथालय विभाग :

महाविद्यालय में एक समृद्ध ग्रंथालय है। वर्तमान में स्नातक/स्नातकोत्तर की लगभग 37425 पुस्तकें है। ग्रंथालय में विभिन्न समाचार पत्र, पत्रिकाएं एवं शोध जर्नल्स भी मंगाये जाते हैं। अनुसूचित जाति/जनजाति के छात्र छात्राओं के लिये पुस्तकें प्रदान करने के लिए बुक-बैंक योजना कार्यान्वित की जाती है। जिसके अंतर्गत अनुसूचित जाति/जनजाति के छात्र/छात्राओं को पुस्तकें प्रदान की जाती हैं। जिन्हें परीक्षा उपरांत वापस लिया जाता है। सामान्य छात्र/छात्राओं को नियमानुसार ग्रंथालय से पुस्तकें दान की जाती है।

1. महाविद्यालय में निर्धारित सुरक्षा निधि/छात्राओं को नियमानुसार ग्रंथालय का सदस्य बनाती हैं।
2. पुस्तकालय में पुस्तकों का निर्गमन तथा वापस लेना ग्रंथालय के नियंत्रण में रहता है। जिसके लिये उनके द्वारा निर्धारित नियमों का पालन आवश्यक है। नियमोल्लंघन करने पर छात्र दण्डित होंगे।
3. ग्रंथालय में वाचनालय भी जहां विभिन्न पत्र-पत्रिकाओं के पठन की सुविधा है।

4. ग्रंथालय में महाविद्यालय के समस्त छात्र-छात्राओं को 15 दिनों के लिये दो पुस्तक निर्गमित की जावेगी।

5. ग्रंथालय से ली गई पुस्तक यदि 15 दिनों के बाद न लौटाई गई तो प्रति पुस्तक प्रतिदिन 1.00 के हिसाब से अर्थदण्ड देय होगा। जिसका भुगतान शिक्षण शुल्क की किश्त के साथ अनिवार्य रूप से करना होगा।

राष्ट्रीय सेवा योजना :

भारत सरकार, युवा कार्यक्रम एवं खेल मंत्रालय नई दिल्ली तथा छत्तीसगढ़ शासन के उच्च शिक्षा विभाग द्वारा यह योजना विश्वविद्यालय के माध्यम से महाविद्यालयों में अध्ययनरत छात्र/छात्राओं के सर्वांगीण व्यक्तित्व एवं चरित्र के विकास तथा उनमें लोकतांत्रिक मूल्यों के प्रति सकारात्मक दृष्टिकोण के उन्नयन के लिये संचालित की जाती है। महाविद्यालय में लंबे समय से यह योजना संचालित है। राष्ट्रीय सेवा योजना संबंधित विस्तृत जानकारी के। लिए कार्यक्रम अधिकारी डॉ० श्रीमती प्रीति गुप्ता एवं श्री अनुरंजन कुजूर से संपर्क किया जा सकता है। विस्तृत मार्गदर्शन हेतु प्रो. एम.सी. हिमधर, जिला संगठक कोरिया भी महाविद्यालय में हमेशा उपलब्ध रहते हैं। राष्ट्रीय सेवा योजना छात्रों को इकाई ग्राम शिविर/जिला शिविर/राज्य स्तरीय/राष्ट्रीय एकता/मेगा शिविर / राष्ट्रीय गणतंत्र दिवस परेड शिविर के साथ-साथ 240 घंटे की सेवा कार्य पूर्ण करने पर विद्यार्थियों को विश्वविद्यालय द्वारा "बी" एवं "सी" प्रमाण पत्र दिया जाता है जो प्रवेश, रोजगार आदि में क्रमशः 03 एवं 04 प्रतिशत का बोनस अंक प्रदान करता है। राष्ट्रीय गणतंत्र दिवस परेड नई दिल्ली में महाविद्यालय राष्ट्रीय सेवा योजना के स्वयं सेवक सुनील कुमार शर्मा ने वर्ष 2009 में एवं कु. सुप्रिया तिवारी ने वर्ष 2012 में छत्तीसगढ़ का प्रतिनिधित्व किया। वर्ष 2010 में रामेश्वर सोनवानी ने राष्ट्र मण्डल खेल मेगा शिविर नई दिल्ली में सक्रिय भागीदारी किया। वर्ष 2011 में कु. आकांक्षा, सविता लहरे, अर्चना मिश्रा, अनुराग साहू एवं विकास दुबे ने राष्ट्रीय साहसिक शिविर मनाली में भाग लिया साथ ही राष्ट्रीय सेवा योजना के स्वयं सेवक कु. चांदनी मार्को, रितेश राजवाड़े एवं श्री रोहित कुमार साहू ने मेगा शिविर पुणे (महाराष्ट्र) में भागीदारी किया। वर्ष 2012 में अशोक राजवाड़े ने मनाली में, 2013 श्री पृथ्वी रतन तिवारी ने नरकण्डा में, वर्ष 2014 में कु. सुनीता साहू ने मनाली में तथा वर्ष 2015 में धर्मेन्द्र कुशवाहा एवं कु. रेखा ने राष्ट्रीय साहसिक शिविर नरकण्डा शिमला में भागीदारी कर महाविद्यालय का नाम रोशन किया। वर्ष 2016-17 में लव कुमार एवं कु० शालिनी सिंह श्याम ने राष्ट्रीय एकता शिविर हैदराबाद में भाग लिया। वर्ष 2018-19 में सुमित कुमार साहू ने राष्ट्रीय साहसिक शिविर मनाली में भाग लिया। वर्ष 2020 में राष्ट्रीय एकता शिविर बड़ोदरा गुजरात में आकाश सिंह ने भागीदारी की एवं राष्ट्रीय ट्राईबल इन्टेक्शन कैम्प गुवाहाटी असाम में देव नारायण सिंह ने प्रतिनिधित्व किया। वर्ष 2021 में कन्हैया लाल ने राष्ट्रीय एकता शिविर बरेली उत्तर प्रदेश में भाग लिया। वर्ष 2022 में बिहारीलाल साहू ने राज्य स्तरीय श्रेष्ठ स्वयं सेवक का पुरस्कार प्राप्त कर महाविद्यालय को गौरवान्वित किया तथा कु. संगीता यादव ने राष्ट्रीय साहसिक शिविर मनाली में भाग लिया व कु. तनुप्रिया यादव ने राष्ट्रीय एकता शिविर रेवाड़ी हरियाणा में भाग लिया । वर्ष 2022 में उमेश्वर राजवाड़े ने राष्ट्रीय एकता शिविर अमलेश्वर, दुर्ग छत्तीसगढ़ में महाविद्यालय का प्रतिनिधित्व किया। सत्र 2020- 21 में स्वयं सेविका कु० शालिनी सिंह श्याम ने राज्य स्तरीय उत्कृष्ट स्वयं सेवक का सम्मान प्राप्त कर महाविद्यालय का नाम गौरवान्वित किया है, इसी तरह वर्ष 2021-22 में कु० शबाना बेगम एवं बिहारी लाल साहू ने विश्वविद्यालय स्तरीय उत्कृष्ट स्वयं सेवक का सम्मान प्राप्त किया है। वर्ष 2023 में शशि कुमार पोर्ते ने मनाली में साहसिक शिविर में भागीदारी किया एवं कु. चन्दा राजवाड़े ने पूर्व गणतंत्र दिवस परेड शिविर हरिद्वार उत्तराखण्ड में भाग लिया ।

क्रीड़ा विभाग :

महाविद्यालय के स्थापना वर्ष 1982 से ही महाविद्यालय के छात्र/छात्राये विभिन्न क्रीड़ा प्रतियोगिताओं में भाग लेते रहे हैं। विश्वविद्यालय द्वारा जारी वार्षिक खेल कैलेण्डर के अनुसार महाविद्यालय को अन्तर महाविद्यालयीन प्रतियोगिता आयोजन की जिम्मेदारी मिलती रहती है।

महाविद्यालय छात्रों को क्रीड़ा प्रतियोगिता में भाग लेने हेतु प्रोत्साहित करता रहता है। महाविद्यालय में जिम, क्रिकेट, फुटबाल, व्हालीबाल, टेबल टेनिस, शतरंज, कबड्डी, बैडमिंटन आदि खेलों के लिए पर्याप्त सुविधा उपलब्ध है। वार्षिक क्रीड़ा प्रतियोगिता के तहत् छात्र-छात्राओं के बीच विभिन्न क्रीड़ा प्रतियोगिताओं का आयोजन किया जाता है तथा छात्रों को पुरस्कार एवं प्रमाण पत्र प्रदान कर प्रोत्साहित किया जाता है। क्रीडा प्रभारी के रूप में डॉ. वी.के. पाण्डेय सक्रिय रहते है।

छात्र संघ :

महाविद्यालयीन युवा छात्रों में नेतृत्व क्षमता एवं जिम्मेदारी विकसित करने तथा रचनात्मक क्रियाकलापों से जोड़ने के लिए छात्र संघ का गठन शासन के नियमानुसार किया जाता है। छात्र संघ के प्रभारी डॉ. जी.के. मिश्रा, सहायक प्राध्यापक से संपर्क कर विस्तृत जानकारी प्राप्त की जा सकती है।

रेडक्रास यूनिट :

रेडक्रास के माध्यम से विद्यार्थियों के बीच स्वास्थ्य के प्रति जागरूकता लाने का प्रयास किया जाता है। महाविद्यालय में रेडक्रास सेल द्वारा विद्यार्थियों के बीच विभिन्न प्रकार के स्वास्थ्य परिक्षण प्रतिवर्ष किया जाता है। इसके साथ ही साथ पर्यावरण जागरूकता, आमंत्रित विद्वानों से व्याख्यान, परिचर्चा और रक्तदान जैसे महत्वपूर्ण कार्य मानवीय हित में किये जाते है। रेडक्रास सेल प्रभारी प्रो. एस.सी. शिमर, सहायक प्राध्यापक अर्थशास्त्र से संपर्क कर विस्तृत जानकारी प्राप्त की जा सकती है।

रेड रिबन क्लब:

महाविद्यालय में शासन के निर्देशानुसार रेड रिबन क्लब का गठन किया गया है। रेड रिबन क्लब के माध्यम से छात्रों में मानवता की सेवा भाव जगाने एवं उनके सर्वांगीण विकास हेतु विभिन्न प्रकार की साहित्यिक, सांस्कृतिक, अकादमिक प्रतियोगिताएं एवं जागरूकता कार्यक्रमों का आयोजन किया जाता है। रेड रिबन क्लब के प्रभारी डॉ. बी.के पाण्डेय, सहायक प्राध्यापक विधि हिन्दी से संपर्क कर विस्तृत जानकारी प्राप्त की जा सकती है।

शुल्क विनियम :

1. एक बार कोई शुल्क जमा हो जाने के बाद वह किसी भी प्रकार से वापस नहीं होगा।
2. एक बार किसी छात्र का महाविद्यालय में प्रवेश हो जाने के पश्चात् शासकीय अनुदान नियमों के अनुसार उसे पूरे सत्र का सभी शुल्क जमा करना होगा, चाहे वह किस तिथि को प्रवेश ले एवं महाविद्यालय छोड़ दे।
3. संस्था छोड़ने के दो वर्ष बाद किसी प्रकार की राशि वापस नहीं की जावेगी।
4. छात्रों को सलाह दी जाती है कि शुल्क जमा करने के बाद रसीद का ठीक से निरीक्षण करें तथा उसे प्रमाण स्वरूप सुरक्षित रखें। जो भी शुल्क या किसी प्रकार की अन्य धनराशि इस महाविद्यालय में किसी भी छात्र या व्यक्ति के द्वारा जमा की जाये, उसकी रसीद नियमानुसार प्राप्त कर लेनी चाहिए, अन्यथा उसका उत्तरदायित्व जमा करने वाले व्यक्ति का ही होगा।
5. परीक्षा फार्म जमा करने के पूर्व विश्वविद्यालयीन शुल्क भी जमा करना होगा।

संस्था छोड़ने हेतु नियम :

यदि कोई छात्र मध्य सत्र में संस्था त्यागने और दूसरी संस्था में प्रवेश लेने की इच्छा करता है तो उसे विश्वविद्यालय अधिनियमानुसार निम्न कार्यवाही पूरी करनी होगी।

(अ) संस्था त्यागने के उद्देश्य की लिखित सूचना करनी होगी।
(ब) समस्त शुल्कों की जमा करना होगा।
(स) उक्त सम्पूर्ण सत्र का पूर्ण शुल्क उसे महाविद्यालय को देना पड़ेगा।
(द) महाविद्यालय से प्राप्त अन्य सहायता, निःशुल्क शिक्षा या छात्रवृत्ति आदि की राशि लौटानी होगी।
(च) निःशेष प्रमाण-पत्र (No Dues Certificate) प्रस्तुत करना होगा।

(छ) स्थानांतरण प्रमाण-पत्र या आचरण प्रमाण-पत्र की दूसरी प्रति चाहने वाले छात्रों को 10/- रूपये जमा करना होगा।

(ज) अवधान निधि की वापसी महाविद्यालय छोड़ने पर टी.सी. लेते समय ही होगी बशर्ते अपनी रसीद प्रस्तुत करें। अवधान निधि की वापसी महाविद्यालय छोड़ने के छः माह बाद नहीं की जायेगी।

विश्वविद्यालय नामांकन : (नवीन छात्र/छात्रा हेतु अनिवार्य)

1. विश्वविद्यालय में नामांकन हेतु समय पर आवश्यक आवेदन पत्र भर कर नामांकन करा लेने का उत्तरदायित्व छात्र/छात्रा का होगा। प्रवेश के बाद नामांकन फार्म महाविद्यालय में निर्धारित अवधि में भरना होगा।
2. स्नातकोत्तर कक्षाओं के छात्र/छात्राओं को नामांकन कार्य विभागाध्यक्ष के अनुशंसा पर दिया जायेगा जिससे निर्धारित समय-सीमा एवं शुल्क के साथ जमा किया जावे।

> शिक्षा उन सब शक्तियों के विकास का नाम है जिनके द्वारा मनुष्य में अपने वातावरण पर नियंत्रण रखने तथा अपनी समस्त शक्तियों के विकास की सामर्थ उत्पन्न होती है।
>
> —जॉन डिवी

विश्वविद्यालय अनुदान आयोग के अध्यादेश 2009 की कंडिका 3 के अनुसार

रैगिंग के अंतर्गत आने वाले कृत्य निम्नलिखित हैं :-

1. किसी विद्यार्थी या विद्यार्थियों द्वारा किया गया ऐसा कृत्य जिसमें बोले गये शब्द या किया गया काम जिसके द्वारा चिढ़ाना या रुखाई से पेश आना प्रतीत होता है।
2. विद्यार्थी या विद्यार्थियों द्वारा किया गया असत्य या अनुशासनहीन कृत्य जिसमें नये विद्यार्थी को क्रोध आए, किसी प्रकार की शारीरिक, मानसिक या मनोवैज्ञानिक पीड़ा या डर उत्पन्न हो।
3. ऐसा कोई कार्य जो कि शर्मनाक हो जिससे नये विद्यार्थी को शर्मीन्दगी, मानसिक पीड़ा या मनोवैज्ञानिक उत्पीड़न हो।
4. वरिष्ठ छात्र द्वारा किया गया ऐसा कोई भी कार्य जो नये विद्यार्थी की अकादमिक गतिविधि में अवरोध उत्पन्न करें।
5. किसी नवीन प्रवेशित छात्र या अन्य कोई छात्र का शोषण करके अपने या अपने समूह के लिये अकादमिक कार्य कराना।
6. किसी भी नये विद्यार्थी या अन्य किसी छात्र से ऊपर जबरदस्ती वित्तीय बोझ डालना।
7. शारीरिक पीड़ा देने का कोई भी कृत्य जैसे अश्लील गतिविधियां, इशारेबाजी या स्वास्थ्य को नुकसान पहुंचाने वाले कार्य।
8. शब्दों द्वारा पीड़ा पहुंचाना, ई-मेल करना, डाक द्वारा, सार्वजनिक अपमान करना, दूसरों को पीड़ा पहुंचाकर मानसिक संतोष प्राप्त करना इन सब कृत्यों में लिप्त होना या साथ देना।
9. ऐसा कोई भी काम जो नये विद्यार्थी के मानसिक, स्वास्थ्य या उसके आत्मविश्वास को प्रभावित करें।

विश्वविद्यालय अनुदान आयोग के अध्यादेश 2009 की कंडिका 9 के अनुसार

रैगिंग के विरूद्ध प्रशासनिक कार्यवाही :-

संस्था रैगिंग करने वाले विद्यार्थी को अपराधी पाये जाने पर निम्न प्रकार से सजा दे सकती है :-

- एंटी रैगिंग कमेटी सभी रैगिंग की घटनाओं के तथ्यों तथा उनकी गंभीरता को देखते हुए रैगिंग स्क्वाड द्वारा की गई अनुशंसा के आधार पर उचित निर्णय लेगी।
- एंटी रैगिंग स्क्वाड द्वारा सिद्ध किए गए अपराध का प्रकार एवं गंभीरता देखते हुए एंटी रैगिंग कमेटी निम्नलिखित में से एक या एक से अधिक सजा दे सकती है -

1. अकादमिक सुविधाओं एवं कक्षाओं से निलंबन।
2. छात्रवृत्ति, फेलोशीप और दूसरे लाभों से वंचित करना।
3. किसी भी परीक्षा आंतरिक एवं अन्य मूल्यांकन प्रक्रिया में शामिल होने से रोकना।
4. परीक्षा परिणाम रोकना।
5. किसी क्षेत्रीय, राष्ट्रीय या अंर्तराष्ट्रीय उत्सव प्रतियोगिता या युवा उत्सव में संस्था का प्रतिनिधित्व करने से रोकना।
6. हॉस्टल से निलंबन या निष्कासन।
7. प्रवेश निरस्त करना।

शुल्क विवरण

क्र.	शासकीय शुल्क	छात्र सामान्य वर्ग	अजा., अजजा. व छात्रा	ए.ग. कर्मचारी का
	शासकीय शुल्क	154.00	28.00	28.00
1	बी.ए./बी. कॉम	123.00	8.00	8.00
2	बी.एस.सी.	143.00	28.00	28.00
3	एम.ए.	134.00	8.00	134.00
	अशासकीय शुल्क			
1	स्नातक प्रथम वर्ष	1013.00	1013.00	1013.00
2.	स्नातक द्वितीय व तृतीय वर्ष	1693.00	1693.00	1693.00

	(नये छात्रों से नामांकन व अवधान राशि अतिरिक्त ली जावेगी)			
3	स्नातकोत्तर	1998.00	1998.00	1998.00
	जनभागीदारी शुल्क			
1	समस्त कक्षा	500.00	500.00	500.00
स्वाध्यायी छात्रों से प्रायोगिक शुल्क				
1	बी.ए. (गृह विज्ञान)	150.00 शुल्क तथा 100.00 कॉशनमनी		
2	बी.एस.सी.	150.00 शुल्क तथा 100.00 कॉशनमनी		

टीप :

1. परीक्षा शुल्क नवम्बर माह में घोषित की जायेगी। (दिव्यांग छात्रों को प्रमाण पत्र प्रस्तुत किये जाने पर विश्वविद्यालय के द्वारा परीक्षा शुल्क में छूट प्रदान की जाती है।)
2. अन्य बोर्डों वि.वि. से आने वाले विद्यार्थियों को अप्रवासन शुल्क 360.00 अलग से देना होगा एवं मूल माइग्रेशन प्रमाण पत्र जमा करना होगा।
3. शासन के आदेशानुसार प्रवेश शुल्क में परिवर्तन हो सकता है।

नोट :

1. दूसरे विश्वविद्यालय से आये छात्र/छात्राओं को 360/- अप्रवासन शुल्क एवं 120/- नामांकन शुल्क अतिरिक्त लिया जायेगा।
2. माह- नवम्बर में विश्वविद्यालय द्वारा निर्धारित परीक्षा फीस प्रत्येक छात्र को जमा करनी होगी।
3. शासन के आदेशानुसार प्रवेश शुल्क में परिवर्तन हो सकता है।
4. छात्र जब कभी सुरक्षा निधि की वापसी के लिये प्रार्थना पत्र दें, तब प्रार्थना पत्र के साथ रसीद संलग्न करनी होगी तथा सभी विभागों से कोई धन बकाया नहीं होने का प्रमाण पत्र देना होगा। यदि छात्र द्वारा किसी कारणवश इस महाविद्यालय में नियमित अध्ययन करना छोड़े हुये तीन वर्ष से ऊपर हो गया है, एवं उसने अपने सुरक्षा धन बकाया को वापस नहीं लिया तो वह वापस नहीं किया जावेगा।
5. महाविद्यालय छोड़ने के लिये प्रार्थना पत्र देते समय स्थानांतरण प्रमाण पत्र प्राप्त करने एवं सुरक्षा धन की वापसी के लिये महाविद्यालय में अपना परिचय पत्र जमा कर देना होगा। सुरक्षा धन की वापसी परिचय पत्र जमा किये बिना नहीं की जावेगी।
6. शुल्क भुगतान की रसीद प्रत्येक विद्यार्थी अपने पास अवश्य ही सुरक्षित रखें, जिसे किसी समय आवश्यकता पड़ने पर शुल्क भुगतान चुकाने के प्रमाण स्वरूप प्रस्तुत करना होगा।
7. परीक्षा के समय विद्यार्थी को परीक्षा में सम्मिलित होने व प्रवेश पत्र प्राप्त करने हेतु बकाया कुछ नहीं (नो ड्यूज सर्टिफिकेट) का प्रमाण पत्र दे दिया जाने के पश्चात् भी, यदि किसी समय कार्यालय के रजिस्टरों का स्किार्ड निरीक्षण करते हुए यह पाया गया कि किसी विद्यार्थी के कार्यालय की भूल या असावधानी व अन्य किसी कारणवश कोई शुल्क या सामान वसूल करना बाकी रह गया है तो विद्यार्थी को वह शुल्क या सामान देना होगा।
8. प्रवेश की अथवा महाविद्यालय छोड़ने की तिथि चाहे जो रही हो, प्रवेश प्राप्त करने के पश्चात् विद्यार्थी पूरे सत्र के लिय महाविद्यालय के शुल्कों को जमा करने का भागी होगा।
9. छात्रों को शुल्क संबंधी स्वीकृत हुई छूट अथवा छात्रवृत्ति अनुशासनहीनता की स्थिति में बंद कर दी जावेगी।
10. कॉशनमनी की वापसी के लिए प्रतिमाह की 15 एवं 16 तारीख निश्चित की गई है।

स्वाध्यायी विद्यार्थियों को प्रयोगशाला सुविधा

1. परिस्थिति एवं उपलब्ध साधनों के परिप्रेक्ष्य में प्राचार्य द्वारा लिये निर्णयानुसार प्रवेश सत्रारंभ से ही नियोजित मार्गदर्शिका सिद्धांत के अनुसार हो होगा।
2. प्रवेशार्थियों की न्यूनतम संख्या 10 एवं अधिकतम 20 होगी, न्यूनतम संख्या से कम प्रवेशार्थी उपलब्ध होने पर कक्षा प्रारंभ नहीं होगी।
3. यद्यपि प्रवेशार्थी छः माह सत्र हेतु सत्रारंभ में ही प्रवेश लेगा किन्तु लोकहित एवं सामान्य नियमित छात्रों के हित में प्राचार्य स्वयं अध्ययन सत्र का निर्धारित करेंगे।
4. चयनित प्रवेशार्थियों का निम्नानुसार शुल्क का एक किश्त में संपूर्ण रूप से जमा करने पर ही प्रवेश मान्य किया जावेगा -

1)	प्रयोगशाला शुल्क	-	15 x 6	=	90.00
2)	टूट-फूट सामग्री शुल्क	-	10 x 6	=	60.00
3)	विकास शुल्क	-			25.00
4)	सुरक्षा निधि	-			100.00
			कुल रूपये		275.00

छत्तीसगढ़ शासन की छात्रवृत्तियां

क्र.	छात्रवृत्ति	अवधि	आधार
1.	राष्ट्रीय छात्रवृत्ति -		
	प्राथमिक/माध्यमिक शालाओं के शिक्षकों के बच्चों के लिए	03 वर्ष	1. मा.शि.मण्डल छ.ग. की 12 वीं की परीक्षा में कम से कम 60 प्रतिशत अंक से अधिक अंक प्राप्त करने पर।
2.	राष्ट्रीय ऋण छात्रवृत्तियां	03 वर्ष	1. मा.शि.मण्डल छ.ग. की 12 वीं की परीक्षा में कम से कम 50 प्रतिशत अंक से अधिक अंक प्राप्त करने पर। 2. माता/पिता/पालक की वार्षिक आय - 25000/- तक हो।
3.	राज्य शासन की एकीकृत छात्रवृत्तियाँ -		
	1. स्नातकोत्तर योग्यता छात्रवृत्ति	20 माह	1. उपाधि परीक्षाओं में कम से कम 55% अंक प्राप्त किये हों।
	2. स्नातकोत्तर योग्यता सह-सामक शिष्यवृत्ति	20 माह	1. उपाधि परीक्षाओं में कम से कम 55% अंक प्राप्त किये हों।
	3. स्नातक योग्यता छात्रवृत्ति	30 माह	1. मा.शि.मण्डल छ.ग. की 12 वीं की परीक्षा में कम से कम 60 प्रतिशत अंक प्राप्त किये हों।
	4. स्नातक योग्यता सह-सामक	30 माह	1. मा.शि.मण्डल छ.ग. की 12 वीं की परीक्षा में कम से कम 55 प्रतिशत अंक से अधिक अंक प्राप्त करने पर।
	5. खेल-कूद छात्रवृत्तियां	30 माह	1. यह छात्रवृत्ति उनके लिये है जो छ.ग. की स्कूल टीम में राष्ट्रीय खेल कूद में रहें हों या जो प्रदेश स्तर की प्रतियोगिता में पहले तीन स्थानों में से किसी मा रहें हों।
	6. अपंग/विकलांग छात्रवृत्ति	10 माह	1. पूर्व परीक्षा में कम से कम 40 प्रतिशत अंक से उत्तीर्ण की हो। 2. माता-पिता/अभिभावक की आय रू. 24000/- वार्षिक से अधिक न हो।
	7. निर्धन छात्रवृत्ति	10 माह	1. पूर्व परीक्षा में कम से कम 40 प्रतिशत अंक से उत्तीर्ण की हो। 2. माता-पिता/अभिभावक की आय रू. 24000/- वार्षिक से अधिक न हो।

टीप - इसके अतिरिक्त अनुसूचित जाति, जनजाति एवं पिछड़े वर्ग के छात्रों को आदिम जाति कल्याण विभाग में छात्रवृत्ति दी जाती है।

1. संपूर्ण छात्रवृत्तियों के लिए छात्र महाविद्यालयीन सूचनाओं की ओर ध्यान दें तथा कार्यालय से संपर्क बनाये रखें। आवेदन पत्र के प्रारूप कार्यालय से प्राप्त होंगें।
2. छात्रवृत्तियों के निर्धारित प्रपत्रों में आवश्यक प्रविष्टियां पूर्ण की अपने आवेदन-पत्र निश्चित तिथि तक कार्यालय में जमा करें निश्चित तिथि के बाद प्राप्त आवेदन पत्रों पर विचार करना संभव नहीं हो सकेगा।

महाविद्यालय में पदस्थ प्राचार्य, प्राध्यापक / सहायक प्राध्यापक

1. डॉ. अखिलेश चन्द्र गुप्ता	प्राचार्य
2. डॉ.जोशी राम कंवर	सहायक प्राध्यापक समाजशास्त्र
3. डॉ. श्रीमती प्रीति गुप्ता	सहायक प्राध्यापक - वाणिज्य
4. श्री मानिक चन्द हिंगवर	सहायक प्राध्यापक अर्थशास्त्र
5. डॉ. गौरव कुमार मिश्रा	सहायक प्राध्यापक - मनोविज्ञान
6. डॉ. आशुतोष ऐजलकर	सहायक प्राध्यापक - राजनीति विज्ञान
7. डॉ. विनय कुमार शुक्ला	सहायक प्राध्यापक - हिन्दी
8. डॉ. कृजेश कुमार पाण्डेय	सहायक प्राध्यापक - हिन्दी
9. श्रीमती जयश्री प्रजापति	सहायक प्राध्यापक- गृह विज्ञान
10. श्री भूपेन्द्र सिंह	सहायक प्राध्यापक- इतिहास
11. श्री अनुरंजन कुजूर	सहायक प्राध्यापक- भौतिकी

महाविद्यालय में कार्यरत अतिथि व्याख्याता :-

1. डॉ० श्रीमती अर्चना पाण्डेय	अतिथि व्याख्याता वनस्पति शास्त्र
2. डॉ० श्रीमती सुनीता सिंह	अतिथि व्याख्याता रसायन शास्त्र
3. श्री शम्भु प्रसाद रैदास	अतिथि व्याख्याता रसायन शास्त्र
4. श्रीमती अर्चना द्विवेदी	अतिथि व्याख्याता गणित
5. श्रीमती सुमन विश्वकर्मा	अतिथि व्याख्याता जन्तु विज्ञान
6. श्रीमती रजनी अग्रवाल	अतिथि व्याख्याता वाणिज्य
7. श्रीमती नीलम गोयल	अतिथि व्याख्याता वाणिज्य
8. श्रीमती कंचन जयसवाल	अतिथि व्याख्याता समाज शास्त्र
9. कु० गीतू खत्री	अतिथि व्याख्याता राजनीति शास्त्र
10. श्री राधेश्याम पटेल	अतिथि व्याख्याता हिन्दी
11. श्रीमती शिखा रानी मण्डल	अतिथि व्याख्याता भूगोल
12. श्रीमती सरस्वती टोप्पो	अतिथि व्याख्याता अंग्रेजी
13. डॉ. प्रदीप कुमार द्विवेदी	अतिथि व्याख्याता समाज शास्त्र
14. डॉ. रामपाल पाल	अतिथि व्याख्याता हिन्दी
15. डॉ. संदीप सिंह	अतिथि व्याख्याता भूगोल
16. दीपशिखा मिश्रा	अतिथि व्याख्याता वनस्पति

कार्यालय स्टाफ

1. श्री प्रवि पाण्डेय	सहायक ग्रेड - 01
2. मो. आरीफ ढेबर	सहायक ग्रेड - 02
3. श्री शिव कुमार	योगशाला तकनीशियन
4. श्री विशाल टोप्पो	योगशाला तकनीशियन
5. श्री मनमोहन कुमार	योगशाला तकनीशियन
6. श्रीमती उर्मिला कुजूर	बुक सिपटर
7. श्री शशिभूषण	भृत्य
8. श्री तेजीलाल कुजूर	चौकीदार
9. श्री समयलाल सहत्पाक	स्वीपर

महाविद्यालय में आयोजित गतिविधियाँ

महाविद्यालय में आयोजित गतिविधियाँ

महाविद्यालय में आयोजित गतिविधियाँ

SANT GHIRA GURU VISHWAVIDYALAYA
SARGUJA AMBIKAPUR (C.G.)

CHOICE BASED CREDIT SYSTEM
(CBCS)
2018-19

Syllubus

M.A. ~~Socilogy~~ Sociology

FIRST SEMESTER (CBCS)

PART-1

Course Code	Course Type	Course(Paper /Subjects) Compulsory paper	Credits	Contact Hours Per Week			Ease Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	IA
MAS 101	CCC	CLASSICAL SOCIOLOGICAL TRADITION	6	4	3	00	3	0	70	30
MAS102	CCC	SOCIAL ANTHROPOLOGY	6	4	3	00	3	0	70	30
MAS103	CCC	SOCIAL CHANGE IN INDIA	6	4	3	00	3	00	70	30
MAS111	CCC	METHODOLOGY IN SOCIAL RESEACH	6	00	00	08	0	3	70	30
		OPTIONAL PAPER								
MAS02	ECC/CB	GENDER AND SOCIETY	6	4	3	00	3	00	70	30
MASA05	ECC/CB	URBAN SOCIOLOGY	6	4	3	00	3	00	70	30

M.A. SOCIOLOGY SECOND SEMESTER (CBCS)

Course Code	Course Type	Course(Paper /Subjects) Compulsory paper	Credits	Contact Hours Per Week			Ease Duration (Hrs.)		Marks	
									SEE	IA
				L	T	P	Thy	P		
MAS 101	CCC	CLASSICAL SOCIOLOGICAL TRADITION	6	4	3	00	3	0	70	30
MAS103	CCC	SOCIAL ANTHROPOLOGY	6	4	3	00	3	0	70	30
MAS103	CCC	SOCIAL CHANGE IN0NDIA	6	4	3	00	3	0	70	3
MAS111	CCC	FIELD WORK	6	00	00	08	0	3	100	00
		OPTIONAL PAPER								
MAS02	ECC/CB	GENDER AND SOCIETY	6	4	3	00	3	00	70	00
MAS&05	ECC/CB	URBAN SOCIOLOGY	6	4	3	00	3	00	70	00

PART-3

M.A. SOCIOLOGY THIRD SEMESTER (CBCS)

Course Code	Course Type	Course(Paper /Subjects)	Credits	Contact Hours Per Week			Eose Duration (Hrs.)		Marks	
		Compulsory peper							SEE	IA
				L	T	P	Thy	P		
MAS 301	CCC	CLASSICAL SOCIOLOGICAL THEORY	6	4	3	00	3	0	70	30
MAS 302	CCC	PERSPECTIVE ON INDIAN SOCIETY	6	4	3	00	3	0	70	30
MAS 303	CCC	CRIMINOLOGY - I	6	4	3	00	3	0	70	30
		OPTIONAL PAPER								
MAS 301	OSC	INTELLECTUAL PROPERTY, HUMAN RIGHTS & ENVIRONMENT : BASICS	6	4	3	00	3	0	70	30
MAS301	ECC/CB	TRIBAL STUDIES	6	4	3	00	3	0	70	30
MAS 302	ECC/CB	SOCIAL DEMOGRAPHY	6	4	3	00	3	0	70	30
MAS 303	ECC/CB	SOCIAL MOVEMENTS IN INDIA	6	4	3	00	3	0	70	30

PART-4

M.A. SOCIOLOGY FOURTH SEMESTER (CBCS)

Course Code	Course Type	Course(Paper /Subjects)	Credits	Contact Hours Per Week			Ease Duration (Hrs.)		Marks	
									SEE	IA
				L	T	P	Thy	P		
		Compulsory paper		L	T	P	Thy	P		
MAS 401	CCC	MODERN SOCIOLOGICAL THEORY	6	4	3	00	3	0	70	30
MAS 402	CCC	COMPARATIVE SOCIOLOGY	6	4	3	00	3	0	70	30
MAS 303	CCC	CRIMINOLOGY-II	6	4	3	00	3	0	70	30
MAS 304	PRJ/SSC	DISSERTATION	6	4	3	00	3	0	70	30
		OPTIONAL PAPER			•					
MASD01	ECC/CS	URBAN SOCIETY IN INDIA	6	4	3	00	3	0	70	30
MASD02	ECC/CS	SOCIOLOGY OF DISASTER MGT. AND DISASTER PLANNING	6	4	3	00	3	0	70	30

SANT GHIRA GURU VISHWAVIDYALAYA SARGUJA AMBIKAPUR (C.G.)

CHOICE BASED CREDIT SYSTEM (CBCS) 2018-19

Syllabus

Master of M.Com.

M. COM. FIRST SEMESTER

Course Code	Paper/Subject	Credit	Contract Hour Per Week			EoSE Duration (Hrs.)	
			L	T	P	THY	P
MCM 101	Managerial Economics	6	4	3	0	3	0
MCM 102	Advanced Accounting	6	4	3	0	3	0
MCM 103	Management Accounting	6	4	3	0	3	0
MCM SO1-OSC (Compulsory)	Research Methodology & Computer Application Basics	6	4	3	0	3	0
ECC/CB –A01	Constitutionalism & Indian Political System	6	4	3	0	3	0
ECC/CB - A02	Advanced Business Statistics						
ECC/CB - A03	Business Finance						
ECC/CB - A04	Marketing Management						
ECC/CB - A05	Principle of Marketing						
MINIMUM CREDIT IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30		30					

M. COM. SECOND SEMESTER

Course Code	Paper/Subject	Credit	Contract Hour Per			EoSE (Hrs.)	
			L	T	P	THY	P
MCM 201	Business Economics	6	4	3	0	3	0
MCM 202	Specialized Accounting	6	4	3	0	3	0
MCM 203	Accounting for Managerial Decision	6	4	3	0	3	0
MCM S02-OSC (Compulsory)	Social Outreach & Skill Development	6	4	3	0	3	0
ECC/CB-B01	Environment & Forest Law	6	4	3	0	3	0
ECC/CB-B02	Advanced Statistics						
ECC/CB-B03	Business Law						
ECC/CB-B04	Marketing Strategy						
ECC/CB-B05	Advertising & Sales Management						
ECC/CB-B06	Personnel Management						
MINIMUM CREDIT IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30		30					

M. COM. THIRD SEMESTER

Course Code	Paper/Subject	Credit	Contract Hour Per			EoSE (Hrs.)	
			L	T	P	THY	P
MCM 301	Management Concept	6	4	3	0	3	0
MCM 302	Organization Behaviour	6	4	3	0	3	0
MCM 303	Advanced Cost Accounting	6	4	3	0	3	0
MCM S03-OSC (Compulsory)	Intellectual Properties, Human Rights & Environment Basics	6	4	3	0	3	0
ECC- C01	Tribal Studies	6	4	3	0	3	0
ECC - C02	Strategic Management						
ECC - C03	International Marketing						
ECC - C04	Production Management						
ECC - C05	Life Insurance						
ECC - C06	Accounting Methods						
MINIMUM CREDIT IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30		30					

M. COM. FORTH SEMESTER

Course Code	Paper/Subject	Credit	Contract Hour Per			EoSE (Hrs.)	
			L	T	P	THY	P
MCM 401	Corporate Legal Framework	6	4	3	0	3	0
MCM 402	Marketing Research	6	4	3	0	3	0
MCM 403	Investment Management	6	4	3	0	3	0
MCMS04-OSC (Compulsory)	Dissertation	6	4	3	0	3	0
ECC -D01	Consumer Behavior	6	4	3	0	3	0
ECC- D02	Financial Institution and Markets						
ECC - D03	Goods & Service Taxes - GST						
ECC - D04	Industrial Law						
ECC - D05	Bank Management						
ECC - D06	Introduction to Information Technology						
MINIMUM CREDIT IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30		30					

NT GHIRA GURU VISHWAVIDYALAYA
SARGUJA AMBIKAPUR (C.G.)

CHOICE BASED CREDIT SYSTEM
(CBCS)
2018-19

Syllabus

M.Sc.Chemistry

M.Sc. CHEMISTRY FIRST SEMESTER

First Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	IA
MSC 101	CCC	INORGANICCHEMISTRY-1	6	4	3	0	3	0	80	20
MSC 102	CCC	ORGANICCHEMISTRY-1	6	4	3	0	3	0	80	20
MSC 103	CCC	ANALYTICAL CHEMISTRY	6	4	3	0	3	0	80	20
MSC 111	CCC	INORGANIC AND ANALYTICAL CHEMISTRY-1 LAB	6	0	0	9	0		100	
MSC S01	OSC	RESEARCH METHODOLOGY & COMPUTER APPLICATION: BASICS	6	4	3	0	3	0	80	20
MSC A01	ECC/CB	CONSTITUTIONALISM & INDIAN POLITICAL SYSTEM	6	4	3	0	3	0	80	20
MSC A02	ECC/CB	GROUP THEORY, SPECTROSCOPY AND DIFFRACTION METHODS								
MSC A03	ECC/CB	COMPUTER PROGRAMMING IN CHEMISTRY								
MSC A04	ECC/CB	MEDICINAL CHEMISTRY								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			Total Credit= 36							

Second Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	IA
MSC 201	CCC	INORGANICCHEMISTRY-2	6	4	3	0	3	0	80	20
MSC 202	CCC	ORGANICCHEMISTRY-2	6	4	3	0	3	0	80	20
MSc 203	CCC	PHYSICALCHEMISTRY	6	4	3	0	3	0	80	20
MSC 211	CCC	ORGANIC AND PHYSICALCHEMISTRYLAB	6	0	0	9	0		100	
MSC S02	PRJ/SSC	SOCIAL OUTREACH AND SKIL DEVELOPMENT	6	4	3	0	3	0	80	20
MSC B01	ECC/CB	ENVIRONMENTAL AND FOREST LAWS	6	4	3	0	3	0	80	20
MSC B02	ECC/CB	POLYMER CHEMISTRY								
MSC B03	ECC/CB	ORGANIC SYNTHESIS-1								
MSC B04	ECC/CB	APPLIED CHEMISTRY								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			Total Credit= 36							

Third Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per Week			Exam Duration (Hrs.)		Marks	
				L	T	P	Dur	P	SEE	IA
MSC 301	CCC	APPLICATIONS OF SPECTROSCOPY-INORGANIC CHEMISTRY	6	4	3	0	3	0	80	20
MSC 302	CCC	APPLICATIONS OF SPECTROSCOPY-ORGANIC CHEMISTRY	6	4	3	0	3	0	80	20
MSC 303	CCC	PHOTOCHEMISTRY AND PERICYCLIC REACTION	6	4	3	0	3	0	80	20
MSC 311	CCC	ORGANIC CHEMISTRY LAB	6	0	0	9	0		100	
MSC 313	OEC	INTELLECTUAL PROPERTY, HUMAN RIGHTS & ENVIRONMENT: BASICS	6	4	3	0	3	0	80	20
MSC CH1	ECOCB	TRIBAL STUDIES	6	4	3	0	3	0	80	20
MSc CH	ECOCB	GREEN CHEMISTRY								
MSC CH	ECOCB	ORGANIC SYNTHESIS II								
MSC CH4	ECOCB	HETEROCYCLIC CHEMISTRY								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			Total Credits 30							

Fourth Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	IA
MSC 401	CCC	BIOINORGANIC CHEMISTRY	6	4	3	0	3	0	80	20
MSC 402	CCC	ENVIRONMENTAL CHEMISTRY	6	4	3	0	3	0	80	20
MSC 403	CCC	SOLID STATE CHEMISTRY	6	4	3	0	3	0	80	20
MSC 411	CCC	GENERAL CHEMISTRY LAB	6	0	0	9	3	0	180	
MSC 804	PRJ/SSC	DISSERTATION	6	4	3	0	3	0	80	20
MSC D01	ECC/CB	PHOTOINORGANIC CHEMISTRY	6	4	3	0	3	0	80	20
MSC D02	ECC/CB	MATERIAL SCIENCE								
MSC D03	ECC/CB	CHEMISTRY OF NATURAL PRODUCT								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			Total Credit = 36							

SANT GHIRA GURU VISHWAVIDYALAYA
SARGUJA AMBIKAPUR (C.G.)

CHOICE BASED CREDIT SYSTEM
(CBCS)
2018-19

Syllabus

M.A.History

M.A. HISTORY

First Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per Week			ESE Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	IA
MAH 101	CCC	CONCEPT OF HISTORY	6	4	3	0	3	0	70	30
MAH 102	CCC	MODERN WORLD	6	4	3	0	3	0	70	30
MAH 103	CCC	ANCIENT AND MEDIEVAL CHHATTISGARH	6	4	3	0	3	0	70	30
MAH S01	OSC	RESEARCH METHODOLOGY AND COMPUTER APPLICATION: BASICS	6	4	3	0	3	0	70	30
MAH A01	BCC/ CB	HISTORY OF GREAT BRITAIN 1815-1885 AD	6	4	3	0	3	0	70	30
MAH A02	BCC/ CB	HISTORY OF CHINA & JAPAN 1800-1911 AD								
MAH A03	BCC/ CB	WOMEN IN INDIAN HISTORY IN ANCIENT & MEDIEVAL PERIOD								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			30							

M.A. HISTORY

Second Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	
MAH 201	CCC	HISTORIOGRAHY	6	4	3	0	3	0	70	3
MAH 202	CCC	CONTEMPORARY WORLD	6	4	3	0	3	0	70	3
MAH 203	CCC	MODERN CHHATTISGARH	6	4	3	0	3	0	70	3
MAH - S02	OSC	SOCIAL OUTREACH AND SKILL DEVELOPMENT	6	4	3	0	3	0	70	3
MAH B01	BCC/ CB	MODERN ENGLAND 1885-1956 AD	6	4	3	0	3	0	70	30
MAH B02	BCC/ CB	HISTORY OF CHINA & JAPAN 1911-1956 AD								
MAH B03	BCC/ CB	WOMEN IN INDIAN HISTORY IN MODERN PERIOD								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			30							

M.A. HISTORY
Third Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	IA
MAH 301	CCC	HISTORY OF NATIONAL MOVEMENT (1857 AD - 1922AD)	6	4	3	0	3	0	70	30
MAH 302	CCC	ANCIENT INDIA – 2500 BC TO 1000 AD	6	4	3	0	3	0	70	30
MAH 303	CCC	INDIAN POLITY AND ECONOMY IN SULTANATE PERIOD (1200-1526 A.D.)	6	4	3	0	3	0	70	30
MAH 583	OSC	INTELLECTUAL PROPERTY, HUMAN RIGHTS & ENVIRONMENT: BASICS	6	4	3	0	3	0	70	30
MAH C01	ECC/ CB	Cultural History of India	6	4	3	0	3	0	70	30
MAH C02	ECC/ CB	History of Science and Technology in India								
MAH C03	ECC/ CB	Thinkers of Modern India (1920 to 2000 AD)								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			30							

M.A. HISTORY
Fourth Semester (CBCS)

Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			End Sem Duration (Hrs.)		Marks	
				L	T	P	Thy	P	SEE	IA
MAH 401	CCC	HISTORY OF NATIONAL MOVEMENT (1922 to 1947 A.D.)	6	4	3	0	3	0	70	30
MAH 401	CCC	Indian Polity and Economy in Mughal Period	6	4	3	0	3	0	70	30
MAH 403	CCC	Modern India 1858 A.D. to 1964 A.D. (Political, Administrative)	6	4	3	0	3	0	70	30
MAH S04	OSC	DISSERTATION	6	4	3	0	3	0	70	30
MAH D01	ECC /CB	Gandhism Theory and Practice	6	4	3	0	3	0	70	30
MAH D02	ECC /CB	The Evolution of Human Rights in the 20th Century								
MAH D02	ECC /CB	Tourism Theory and Principles In Reference of History								
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			30							

SANT GHIRA GURU VISHWAVIDYALAYA
SARGUJA AMBIKAPUR (C.G.)

CHOICE BASED CREDIT SYSTEM
(CBCS)
2018-19

Syllabus

M.A.Political Science

Syllabus of M.A. (Political Science) for Regular Mode (CBCS Pattern-2018)

M.A. (Political science) FIRST SEMESTER

Eligibility criteria	Admission Criteria	Course code	Course Type	Name of Papers	Credits	Teaching Hours Per Week	
						Lecture	Tutorial
Bachelor Degree in Concerned Subjects and According to CG Higher Education Guideline	1. Merit List 2. Entrance Test (written admission cards 3. Observation of Reservation Policy	MAP 101	CCC	THEORIES IN POLITICAL THEORY	6	4	2
		MAP 102	CCC	COMPARATIVE POLITICAL ANALYSIS	6	4	2
		MAP 103	CCC	INDIAN GOVERNMENT AND POLITICS	6	4	2
		MAP 104	CCC	RESEARCH METHODOLOGY & COMPUTER APPLICATION: BASICS	6	4	2
		MAP A01	ECCC6	THEORIES OF INTERNATIONAL RELATIONS	6	4	2
		MAP A02	ECCC6	INTERPRETING MODERN INDIA			
		MAP A03	ECCC6	CONTEMPORARY DEBATES IN POLITICAL THEORY			
				Total	30		

Syllabus of M.A. (Political science) for Regular Mode (CBCS Pattern-2018)

M.A. (Political science) SECOND SEMESTER

Eligibility criteria (qualifying Exam)	Course code	Course Type	Name of Papers	Credits	Teaching Hours for Week	
					Lecture	Tutorial
After appearing in the first semester examination irrespective of any number of back/ carry paper	MAP 201	CCC	ADMINISTRATIVE THEORY: PRINCIPLES AND APPROACHES	6	4	3
	MAP 202	CCC	THEMES IN INDIAN POLITICAL THOUGHT	6	4	3
	MAP 203	CCC	WESTERN POLITICAL THOUGHT	6	4	3
	MAP 204	[illegible]	SOCIAL RESEARCH AND SKILL DEVELOPMENT	6	4	3
	[illegible]	[illegible]	ETHICS AND POLITICS	6	4	3
	[illegible]	[illegible]	CRITICAL TRADITIONS IN POLITICAL THEORY			
	[illegible]	[illegible]	SOCIAL MOVEMENTS AND REVOLUTIONS			
			Total	30		

Syllabus of M.A. (Political science) for Regular Mode (CBCS Pattern-2018)

M.A. (Political science) THIRD SEMESTER

Eligibility criteria (Qualifying from)	Course code	Course Type	Name of Papers	Credits	Teaching Hours Per Week	
					Lecture	Tutorial
Uher appearing in the second semester examination irrespective of any number of backlog error paper	MAP 301	CCC	DEMOCRACY AND POLITICAL INSTITUTIONS IN INDIA	6	4	3
	MAP 302	CCC	PARTIES, ELECTIONS AND POLITICAL PROCESS IN INDIA	6	4	3
	MAP 303	CCC	INDIAN POLITICAL THOUGHT	6	4	3
	MAP 902	OSC	INTELLECTUAL PROPERTY RIGHTS, HUMAN RIGHTS & ENVIRONMENT: BASICS	6	4	3
	MAP C01	ECC/CB	TRIBAL STUDIES	6	4	3
	MAP C02	ECC/CB	DEMOCRACY AND HUMAN RIGHTS IN INDIA			
	MAP C03	ECC/CB	ADMINISTRATIVE THEORY			
			Total	30		

Syllabus of M.A. (Political science) for Regular Mode (CBCS Pattern-2018)

M.A. (Political science) FOURTH SEMESTER

Eligibility criteria (Qualifying Exam)	Course code	Course Type	Name of Paper	Credits	Teaching Hours Per Week	
					Lecture	Tutorial
After appearing in the third semester examination irrespective of any number of back/ even paper	MAP 401	CCC	PRINCIPLES OF INTERNATIONAL POLITICS	6	4	3
	MAP 402	CCC	INDIA AND THE WORLD	6	4	3
	MAP 403	CCC	POLITICAL HISTORY OF CHHATTISGARH	6	4	3
	MAP 431	SECPEJ	DISSERTATION*	6	4	3
	MAP D01	ECCCB	FOREIGN POLICY OF MAJOR POWERS	6	4	3
	MAP D02	ECCCB	DEVELOPMENT PROCESS AND POLITICS IN INDIA			
	MAP D03	ECCCB	INTERNATIONAL SECURITY			
			Total	30		

GHIRA GURU VISHWAVIDYALAYA
SARGUJA AMBIKAPUR (C.G.)

CHOICE BASED CREDIT SYSTEM
(CBCS)
2018-19

Syllabus

Master of M.A. HINDI

M. A. in HINDI

FACULTY OF ARTS

FIRST SEMESTER (ODD SEMESTER)

Course Code	Course Type	Course (Paper/Subject)	Credits	Hours Per Week			Duration (Hrs.)	
				L	T	P	Th	P
HIND 101	CCC	हिंदी साहित्य का इतिहास	06	4	2	06	3	00
HIND 102	CCC	प्राचीन एवं मध्यकालीन काव्य	06	4	2	06	3	00
HIND 103	CCC	हिंदी भाषा एवं भाषा विज्ञान	06	4	2	06	3	00
HIND 201	PROJECT	शोध प्रविधि एवं कम्प्यूटर एप्लीकेशन की पृष्ठभूमि	06	4	2	06	3	00
HIND A01	ECCC	पर्यावरणीय एवं मानवी हिंदी	06	4	2	06	3	00
HIND A02	ECCC	संत कवि कबीर						
HIND A03	ECCC	भक्तकवि सूरदास						
HIND A04	ECCC	महाकवि तुलसीदास						
HIND A05	ECCC	महाकवि जायसीकृत पद्मावत						
HIND A06	ECCC	आचार्य रामचन्द्र शुक्ल						
MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 04 AND IN COMPLETE SEMESTER IT WOULD BE 30			TOTAL-30					

DEPARTMENT OF HINDI

- **M. A. in HINDI :**

FACULTY OF ARTS

- **SECONO SEMESTER** (EVEN SEMESTER)

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course/Paper Subject(s)	Credits	Contact Hours Per Week			ESE Duration Hrs	
					L	T	P		
After appearing in the First semester examination irrespective of any number of back/ annual papers	HND 201	CCC	आधुनिक काव्य	06	4	3	00	3	00
	HND 202	CCC	कथा साहित्य	06	4	3	00	3	00
	HND 203	CCC	भारतीय काव्य शास्त्र	06	4	3	00	3	00
	HND SO1	OEC	सामाजिक अधिगम और कौशल विकास	06	4	3	00	3	00
	HNDS 01	ECCCS	भारतीय राजनीतिक व्यवस्था एवं संविधानिकता	06	4	3	00	3	00
	HNDS 02	ECCCS	आदिकाव्य						
	HNDS 03	ECCCS	संत काव्य						
	HNDS 04	ECCCS	रीति काव्य						
	HNDS 05	ECCCS	छायावाद काव्य						
	HNDS 06	ECCCS	स्वातंत्र्योत्तर हिंदी काव्य						
	MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			TOTAL= 30					

- **M.A. in HINDI**

FACULTY OF ARTS

- **THIRD SEMESTER** (ODD SEMESTER)

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per Week			ESE Duration (Hrs)	
					L	T	P	Th	P
After appearing in the Second semester examination, irrespective of any number of back/ arrear papers	HIND 301	CCC	हिंदी निबंध एवं अन्य गद्य विधाएं	06	4	2	00	3	00
	HIND 302	CCC	छायावादोत्तर हिंदी काव्य	06	4	2	00	3	00
	HIND 303	CCC	भारतीय काव्य शास्त्र	06	4	2	00	3	00
	HIND 30[illegible]	OEC	बौद्धिक संपदा, मानवाधिकार एवं पर्यावरण : पृष्ठभूमि	06	4	2	00	3	00
			जनजातीय अध्ययन						
	[illegible]	ECC/CB	हिंदी आलोचना						
			हिन्दी साहित्य और भारतीय संस्कृति						
	[illegible]	ECC/CB	दृश्य श्रव्य माध्यम लेखन	06	4	2	00	3	00
			लिपि, भाषा एवं व्याकरण						
	[illegible]	ECC/CB	जैन साहित्य						
	MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			TOTAL 30					

DEPARTMENT OF HINDI

- M. A. in HINDI

FACULTY OF ARTS

- FOURTH SEMESTER (EVEN SEMESTER)

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per WeeK			EoSE Duration (Hrs.)	
					L	T	P	Thy	P
After appearing in the Third semester examination irrespective of any number of back/ arrear papers	HND 401	CCC	भारतीय साहित्य ✓	06	4	3	00	3	00
	HND 402	CCC	हिन्दी पत्रकारिता	06	4	3	00	3	00
	HND 403	CCC	प्रयोजनमूलक हिंदी ✓	06	4	3	00	3	00
	HND 421	SSC	लघु शोध प्रबंध	06	00	00	9	00	4
			प्रायोगिक एवं मौखिकी	06	4	3	03	3	00
	HNDO 02	ECCCB	भारतीय मूलभाषा पालि						
	HNDO 03	ECCCB	अनुवाद विज्ञान						
	HNDO 04	ECCCB	कोश विज्ञान						
	HNDO 05	ECCCB	पठनलोचन						
	HNDO 06	ECCCB	भाषा शिक्षण						
	MINIMUM CREDITS IN INDIVIDUAL SUBJECT IS 6 AND IN COMPLETE SEMESTER IT WOULD BE 30			TOTAL = 30					

DEPARTMENT OF PHYSICS

- **M. Sc. in PHYSICS** **FACULTY OF SCIENCE**
- **THIRD SEMESTER** (ODD SEMESTER)

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per Week			Field Duration (Hrs.)	
					L	T	P	Thy	P
After appearing in the second semester examination irrespective of any number of back/arrear papers	MSP 301	CCC	Solid State Physics	4	4	2	0	3	0
	MSP 311	CCC	Solid State Lab	2	0	0	3	0	3
	MSP 302	CCC	Nuclear and Particle Physics	4	4	2	0	3	0
	MSP 312	CCC	Nuclear Lab	2	0	0	3	0	3
	MSP 303	CCC	Classical Electro Dynamics	4	4	2	0	3	0
	MSP 304	U&C	Intellectual Property, Human Rights &Environment: Basics	6	4	1	0	3	0
	MSP C01	ECC/CB	Tribal Studies	4	4	1	0	3	0
	MSP C02	ECC/CB	Macrowave Electronics						
	MSP C03	ECC/CB	Nano Science						
	MSP C04	ECC/CB	High Energy Physics - III						
				TOTAL- 24					

M.Sc. in PHYSICS (THIRD SEMESTER)			
COURSE CODE:	**MSP 301**	**COURSE TYPE :**	**CCC**
COURSE TITLE:	**SOLID STATE PHYSICS**		
CREDIT: 08 **THEORY: 06**	**PRACTICAL: 02**	**HOURS: 135** **THEORY: 90**	**PRACTICAL: 45**
MARKS: 100 **THEORY: 70**	**CCA : 30**	**PRACTICAL: 50**	
OBJECTIVE: The main objective is to learn about solid state physics .			

UNIT-1 20 Hrs.	Crystal Physics Types of lattices - Miller indices - simple crystal structures - Crystal diffraction - Bragg's law - Reciproeal lattice (sc, bcc, lcc) - Laue equations - Structure factor - Atomic ferm factor - Types of crystal binding - Cohesive energy of ionic crystals - Madelung constant - Inert gas crystals - Vander Waal - Landon equation - Metai crystals - Hydrogen bonded erystals.
UNIT-2 15 Hrs	Lattice dynamics Monoatomic lattices - Lattice with two atoms per primitive cell - First Brillouin zone - Group and phase velocities - Quantization of lattice vibrations - Phonon momentum - Inelastic scattering by phonons - Debye's theory of lattice heat capacity - Einstein's model and Debye's model of specifio heat - thermal expansion - Thermal cooductivity - Umklapp processes.
UNIT-3 20 Hrs	Theory of metals and semiconductors Free electrons gas in three dimensions - Electronic heat capacity - Wiedmann-Franz law - Hali effect - Band theory of metals and semiconductors - Bloch theorem - Kronig-Penny model - Semiconductors - intrinsie carrier concentration - Mobility - Impurity conductivity - Fermi surfaces and construction - Experimental methods in Fermi surface studies - de Haas Van Alphen effect.

UNIT-4 15Hrs	Magnetism Elementary ideas of dia, para and ferro magnetism - quantum theory of paramagnetism - Rare earth ion - Hund's rule - Quenching of orbital angular momentum - Adiabatic demagnetization - Quantum theory of ferromagnetism - Curie point - Exchange integral - Heisenberg's interpretation of Weiss field - ferromagnetic domains - Bloch Wall - Spin waves - Quantization - Magnons - thermal excitation of magnons - Curie temperature and susceptibility of ferrimagnets - Theery of antiferromagnetism - Neel temperature.
UNIT- 5 20Hrs	Super conductivity Experimental facts-occurrence - Effect of magnetic fields - Meissner effeet - Entropy and heat capacity - Energy gap - Microwave and infrared properties - Type I and II superconductors - theoretical explanation - thermodynamics of super conducting transition - London equation - Coherence length - BCS Theory - single particle Tunneling - Josephson tunneling - DC and AC Josephson effects - High temperature super conductors - SQUIDS.
LABORATORY WORK MSP311	**CORE PRACTICAL III** **SOLID STATE PHYSICS LAB** 1. To study temperature variation of resistivity for a semi-conductor and to obtain band gap using four probe method. 2. To study hall effect and tc determine hall coefficient. 3. To study the variation of rigidity of a given specimen as a function of the temperature. 4.To Study the Variation of magnetoresisitance of a sample with the applied Magnetic Field. 5. To Determine the phase diagram of alloys using cooling curve. 6. Indexing of a given XRD pattern and determination of lattice parameter. 7. To determine the wavelength using Michelson interferometer. 8.Structure Factor calculation of Simple Crystal Structures. 9. Thermoluminescence Studies of Alkali Halides by X-Ray Radiations. 10. Size Estimation of Nano Crystals.

SUGGESTED READINGS

1. N.W. Aschroft and N.D. Mermin, Solid State Physics, Rhinehart and Winton, New York.

2. J.S. Blakemore, 1974, Solid State Physics, 2nd Edition, W.B. Saunder, Philadelphia.

3. A.J. Dekker, Solid State Physics, Macmillan India, New Delhi.

4. H.M. Rosenburg, 1993, The Solid State, 3rd Edition, Oxford University Press, Oxford.

5. S.O. Pillai, 1994, Problems and Solutions in Solid State Physics, New Age International, New Delhi.

6. S.L. Altmann, Band Theory of Metals, Pergamon, Oxford.

7. M.A. Wahab, 1999, Solid State Physics, Structure and Properties of Materials, Narosa, New Delhi.

8. J.M. Ziman, 1971, Principles of the Theory of Solids, Cambridge University Press, London.

M.Sc. in PHYSICS (THIRD SEMESTER)			
COURSE CODE:	MSP 302	COURSE TYPE :	CCC
COURSE TITLE:	NUCLEAR AND PARTICLE PHYSICS		
CREDIT: 08 THEORY: 06	PRACTICAL: 02	HOURS: 135 THEORY: 90	PRACTICAL: 45
MARKS: 100 THEORY: 70	CCA : 30		PRACTICAL: 50
OBJECTIVE: The main objective is to learn nuclear and particle physics .			

UNIT-1 20 Hrs:	Nuclear Structure And Models Magnetic dipole moment - Experimental determination - Electric quadruple moment - Liquid drop model - Semi-empirical mass formula of Weizsacker - Nuclear stability - Mass parabolas - Bohr-Wheeler theory of fission - Bhett model - Spin-orbit coupling - Magic numbers - Angular momenta and parities of nuclear ground state - qualitative discussion and estimates of transition rates - Magnetic moments and Schmidt lines - Collective model of Bohr and Mottelson - Nilsson Model - oblate and prolate deformations of Nucleus.
UNIT-2 15 Hrs	Nuclear Interactions Nuclear forces - Two body problem - Ground state of deuteron - Magnetic moment - Quadruple moment - Tensor forces - Meson theory of nuclear forces - Yukawa potential - Nucleon-nucleon scattering - Low energy n-p scattering - Effective range theory - Spin dependence, charge independence and charge symmetry of nuclear forces - Isospin formalism.
UNIT-3 20 Hrs	Nuclear reactions Types of reactions and conservation laws - Energetics of nuclear reactions - Reaction dynamics - Q-value equation - Scattering and reaction cross sactions - compound nucleus - Scattering matrix - Reciprocity theorem - Breit-Wigner one level formula - Resonance Scattering - Continuum theory - Optical model - Absorption cross soction at high energies.
UNIT-4 20Hrs	Nuclear decay Beta decay - Fermi's theory - Fermi-Kurie Plot - Fermi and Gamow - Teliar selection rules - Allowed and forbidden decays - Decay rates - Theory of Neutrino - Helicity of neutrino - Helicity measurement - Theory of electron capture - Non-conservation of parity - Gamma decay - Internal conversion - Multipole transitions in nuclei - Nuclear isomerism - Angular correlation in successive gamma amissions.
UNIT- 5 15 Hrs	Partiolo Physics Types of interactions between elementary particles - Hadrons and Leptons - Symmetry and conservation laws. Elementary ideas of CP and CPT invariance - Classification of Hadrons - Lie algebra - SU (2) - SU (3) multiplets - Quark model - Gell-mann-Okubo mass formula for octet and decaplet Hadrons - Weak interactions.

LABORATORY WORK
MSP312

CORE PRACTICAL IV :NUCLEAR PHYSICS LAB

1. To determine helf-life of a radio isotope using GM counter.
2. To study absorption of particles and determine range using at least two sources.
3. To study characteristics of e GM counter adn to study statistical nature of radioactive decay.
4. To study spectrum of beta- particles using Gamma ray spectrometer.
5. To calibrate a scintillation spectrometer and determine energy of g-rays from en unknown souroe.
6. Tc study Compton scattering of gamma rays and verify the energy shift formula.
7.Study of Rutherford Scattering.
8.Positron annihilation.
9. Study of Beer's Law.
10. Stefan's Constant of Radiation – High Resistance by Leakage Method.

SUGGESTED READINGS

1. Y.R. Waghmare, 1981, Introductory Nuclear Physics, Oxford-IBH, New Delhi.

2. Ghoshal, Atomic and Nuclear Physics, Volume 2.

3. J.M. Longo, 1971, Elementary Particles, McGraw-Hill, New York.

4. R.D. Evans, 1955, Atomic Nucleus, McGraw-Hill, New York.

5. B.L. Cohen, 1971, Concepts of Nuclear Physics, TMH, New Delhi.

6. M.K. Pal, 1982, Theory of Nuclear Structure, Affl. East-West, Chennai.

7. W.E. Burcham and M. Jobes, 1995, Nuclear and Particle Physics, Addison-Wesley, Tokyo.

M.Sc. in PHYSICS (THIRD SEMESTER)	
COURSE CODE: MSP 303 **COURSE TYPE :** CCC	
COURSE TITLE: CLASSICAL ELECTRODYNAMICS	
CREDIT: 06 **THEORY:** 06	**HOURS:** 90 **THEORY:** 90
MARKS: 100 **THEORY:** 70 **CCA :** 30	
OBJECTIVE: The main objective is to learn classical electrodynamics .	
UNIT-1 15 Hrs.	Electrostatics: Electric field, Gauss Law, Differential form of Gaussian law. Another equation of electrostatics and the scalar potential, surface distribution of charges and dipoles and discontinuities in the electric field and potential. Poisson and Laplace equations, Green's Theorem, Uniqueness of the solution with the Dirichlet or Neumann beundary Conditions, Formal Solutions of electrestatic Beundary value problem with Green's function, Electrostatic potential energy and energy density, capacitance.
UNIT-2 20 Hrs	Boundary Value Problems in Electrostatics: Methods of Images, Point charge in the presence of a grounded conducting sphere, point charge in the presence of a charged insulated conducting sphere, point charge near a conducting sphere at a fixed potential, conducting sphere in a uniform electric field by method of images, Green function for the sphere, General solution for the potential, conducting sphere wit hemispheres at a different potentials, orthogonal functions and expansion.
UNIT-3 20 Hrs	Magnetostaties: Introduction and definition, Biot and Savart Law, the differential equations of magnetostatics and Ampere's law, Vector potential and magnetic induction for a current loop, Magnetic fields of a localized current distribution, Magnetic moment, Force and torque on and energy of a tocalized current distribution in an external induction, Macroscopic equatiens, Boundary conditions on B and H Methods of solving Boundary value Problems in magnetostatics, Uniformly magnetized sphere, maghetized sphere in an external fields, permanent magnets, magnetic shielding, spherical shell of permeable material in an uniferm field
UNIT-4 20Hrs	Time varying fields, Maxwell's equations censervation laws: Energy in a magnetic field, vector and scalar potentials, Gauge transformations, Lorentz gauge, Coulomb gauge, Green funcfion for the wave equation, Derivation of the equations of Macroscopic Electromagnetism,

UNIT-5 15 Hrs	Poynting's Theorem and conservation of energy and momentum for a system of charged particles and EM fields. Conservation laws for macroscopic media. Electromagnetic field tenser, transformation of four potentials and four currents, tensor dissipation of Maxwell's equations.
SUGGESTED READINGS	1. J.D. Jackson: Classical Electrodynamics 2. Panofsky & Phillip: Classical electrodynamics and magnetism 3. Griffith: Introduction to Electrodynamics 4. Landau & Lifshitz: Classical Theory of Electrodynamics 5. Landau & Lifshitz: Electrodynamics of continuous medie

M.Sc. in PHYSICS
(THIRD SEMESTER)

COURSE CODE: MSPS02 **COURSE TYPE : OSC**

COURSE TITLE:INTELLECTUAL PROPERTY RIGHTS, HUMAN RIGHTS & ENVIRONMENT: BASICS

CREDIT: 06	**HOURS : 90**
THEORY: 06	**THEORY: 90**

MARKS : 100
THEORY: 70 CCA : 30

OBJECTIVE:

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data.

UNIT - 1 12 Hrs

- Patents :- Introduction & concepts, Historical Overview.
- Subject matter of patent.
- Kinds of Patents.
- Development of Law of Patents through international treaties and conventions including TRIPS Agreement.
- Procedure for grant of patents & term of Patent.
- Surrender, revocation and restoration of patent.
- Rights and obligations of Patentee
- Grant of compulsory licenses
- Infringement of Patent and legal remedies
- Offences and penalties
- Discussion on leading cases.

UNIT - 2 24 Hrs

- Meaning of Copyright, Historical Evolution.
- Subject matter of copyright.
- Literary works
- Dramatic Works & Musical Works
- Computer Programme
- Cinematographic films
- Registration of Copyrights
- Term of Copyright and Ownership of Copyrights
- Neighboring Rights
- Rights of Performers & Broadcasters
- Assignment of Copyright.
- Author's Special Rights (Moral Rights)
- Infringement of Copyrights and defenses
- Remedies against infringement (Jurisdiction of Courts and penalties)
- International Conventions including TRIPS Agreement WIPO, UCC, Paris Union, Berne Convention, UNESCO.
- Discussion on leading cases.

UNIT - 3 10 Hrs

- Rights: Meaning
- Human Rights- Meaning & Essentials
- Human Rights Kinds
- Rights related to Life, Liberty, Equals & Disable

UNIT - 4 24 Hrs	• National Human Rights Commission • State Human Rights Commission • High Court • Regional Court • Procedure & Functions of High & Regional Court.
UNIT - 5 20 Hrs	• Right to Environment as Human Right • International Humanitaulan Law and Environment • Environment and Conflict Management • Nature and Origin of International Environmentaf Organisations (IEOs) • Introduction to Sustainubfe Development and Environment • Sustainable Development and Environmental Governance
SUGGESTED READINGS	1. G.B.Reddy, *Intellectual Property Rights and Law,* Gogia Law Agency, Hyderabad. 2. S.R.Myneni, *Intellectual Property Law*, Eastern Law House, Calcutta 3. P Narayanan *Intellectual Property Rights and Law (1999)*, Eastern Law House, Calcutta, India 4. Vikas Vashistha, *Law and Practice of Intellectual Property,*(1999) Bharat Law House, New Delhi. 5. Comish W.R *Intellectual Property,3rd ed. (1996),* Sweet and Maxwell 6. P.S. Sangal and Kishor Singh, *Indian Patent System and Paris Convention.* 7. Comish W.R *Intellectual Property, Patents, [illegible]hts and Allied Rights, (2005)* 8. Bibeck Debroy, *Intellectual Property Rights, (1998),* Rajiv Gandhi Foundation.

M.Sc. in PHYSICS
(THIRD SEMESTER)

COURSE CODE: MSPC01 **COURSE TYPE : ECC/CB**

COURSE TITLE: TRIBAL STUDIES

CREDIT: 06	**HOURS : 90**
THEORY: 06	**THEORY: 90**

MARKS : 100
THEORY: 70 **CCA : 30**

OBJECTIVE:

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with varions tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data
- Achieves skills in varions research writings
- Gets acquainted with computer Fundamentals and Office Software Package .

UNIT - 1 12 Hrs	**Tribal Studies :** Meaning, Nature, Scope, Need & importance of tribalstudies. Meaning, Definition & characteristics of Tribe, Caste & Race.
UNIT - 2 24 Hrs	**Scheduled Tribe in India :** Population Composition of tribal, classification of Indian Tribe – Racial, Lingual, Geographical, Culturnl. **Some Major Tribes in India :** Santhal, Khasi, Munda, Bhils. **Some Major Tribes in Central India :** Gond, Baiga, Bharia, Korkus.
UNIT - 3 10 Hrs	**Illiteracy :**Poverty, Indebness, Unemployment, migration & ExploitationEnvironmental & Degradation. **Problem of Health and sanitation :** Prostitution, Culture Decay due to assimilation, Replacement & Rehabilitation of Tribal population.
UNIT - 4 24 Hrs	**Welfare-Concept, Characteristics:** Tribal Welfare in post independenceperiod. Constitutional provision & safe guard after independence, Legislation & Reservation Policy.
UNIT - 5 20 Hrs	**Tribal Development Programs for Scheduled Tribes :** Medical, Education, Economy, Employment & Agriculture Evaluation of Programs **Tribal Welfare & Advisory Agencies in India :** Role of NGO's in tribal development, Role of Christian missionaries in tribal welfare & development, Tribal Welfare Administration.
SUGGESTED READINGS	1. *Tribal Development In India (Orissa)* by Dr. Taradutt 2. *Books on Tribal studies* by PK Bhowmik 3. *Books on 'Tribal Studies'* by W.G. Archer

M.Sc. in PHYSICS (THIRD SEMESTER)	
COURSE CODE: MSP C02	COURSE TYPE : ECC/CB
COURSE TITLE: MICROWAVE ELECTRONICS	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 70 CCA : 30	
OBJECTIVE: The main objective is to learn microwave electronics .	
UNIT-1 20Hrs.	Waveguides and components: Field distribution in rectangular waveguide in TE and TM modes, Phase velocity, Group velocity, Characteristics impedance, wall current, Cavity resonators and their excitation techniques, Scattering matrix for Microwave Tees and hybrid junction directional coupler, Construction and working of precision attenuator and phase shifter.
UNIT-2 20Hrs	CIRCUIT THEORY OF WAVE GUIDES: Power Transmission in Wave Guides, Equivalent Voltages and Currents, Impedance Description of Wave Guide Elements and Circuits, Foster's Reaction Theorem, One Port Circuits, N-Ports Circuits, Scattering Matrix Formulation, Excitation and Coupling of Wave Guides, Dialectric Loaded Wave Guides, Surface Wave Guides.
UNIT-3 20 Hrs	ANTENNAS: Familiarity with Different Types of Antennas, Radiation Properties, Strip-Lines and Microstrip Lines, Strip-Line Characteristics, Strip-Line Components, Microstrip Antennas, Radiation Properties of Microstrip Antennas
UNIT-4 15 Hrs	APPLICATIONS OF MICROWAVES: Applications of Microwave in RADAR, Satellite Communication, Mobile Communication, Microwave Heating
UNIT-5 15 Hrs	FERRITES Microwave Propagation in Ferrites, Nano Ferrites, Synthesis of Nano Ferrites, Dielectric Properties of Ferrites, Ferrites as Microwave Absorbers.
SUGGESTED READINGS	1. Foundations for Microwave Engineering: R.E. Collins, Mc. Graw Hills 2. Solid State Electronic Devices: B. Streetman and S.K. Banerjee, PHI 3. Microwave Devices and Circuits: L.S.Y. Liao, PHI 4. Antenna Theory and Design: C.A. Balanis, John Wiley & Sons 5. Basic Microwave Techniques and Laboratory Manual: M. L. Sisodia, G. S. Raghuvanshi. New Age International, Jan 1, 1987

M.Sc. in PHYSICS (THIRD SEMESTER)	
COURSE CODE: MSPC03	COURSE TYPE : ECC/CB
COURSE TITLE: NANO SCIENCE	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 70	CCA : 30
OBJECTIVE: The main objective is to learn Nano Science .	

UNIT-1 20Hrs.	Introduction to Nanoparticles Introduction - Historical perspective of nanoparticle - Classification of nanomaterials - Nanorods - Nanoparticle - Nanomaterial preparation - Plasma arching - Chemical vapour doposition - Solgel electrodeposition - Ball milling technique.
UNIT-2 20Hrs	Nanocrystals Synthesis of metal nanoparticles and structures - Background on quantum semiconductors - Background on reverse Micellar solution - Synthesis of semiconductors - Cadmium telluroid nano crystals - Cadmium sulfide nano crystals - Silver sulfide nano crystals - Nano manipulator - Nano tweezes - Nanodots.
UNIT-3 20 Hrs	Characteristics of Nanomaterials Magnetism in particle of reduced size dimension - Variation of magnetism with size - Magnetic behavior of small particle - Diluted magnetic semiconductor (DMS) - Fe DME and its applications. Nanoparticle as chemical reagents - Specific heat of nanoparticle crystals - Melting point of Nanoparticle material - Nanolithography - Estimation of nanoparticle size using AFM.
UNIT-4 15 Hrs	Nano Tubes New form of carbon - Types of nanotubes - Formation of nanotubes - Various techniques - Preparation and properties of nanotubes - Uses of nanotubes and applications - Nano material processing for nanotube - Light and Nano technology - Nanoholes and photons - Quantum electronic devices - Quantum electronic devices - Quantum information and Quantum Computers.

UNIT-5 15 Hrs	Applications Micromechanical systems - Robots - Ageless meterials - Nanomechanics - Nanc electronics - Optoelectronic devices - LED - Applications - Colourants and pigments - Nano biotecnnology - DNA chips - DNA array devices - Drag delivery systems.
SUGGESTED READINGS	1. NANOSCIENCE AND NANO TECHNOLOGY : FRONTIERSOF FUNDAMENTALS BY : M.S. RAMCHANDRA RAO . 2. NANO : THE ESSENTIALS . BY : T. PRADEEP

M.Sc. in PHYSICS (THIRD SEMESTER)	
COURSE CODE: MSP C04	COURSE TYPE : ECC/CB
COURSE TITLE: HIGH ENERGY PHYSICS - III	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 70 CCA : 30	
OBJECTIVE: The main objective is to learn High Energy Physics .	
UNIT-1 20Hrs.	Local gauge invariance and Yang-Mills fields, Lagrangian of the Spontaneous symmetry breaking and the Higgs mechanism, The Weinberg-Salam model and beyond.
UNIT-2 20Hrs	Unified models of weak and electromagnetic interactions, Standard Model, flavor group, flavor-changing neutral currents. Weak isospin.
UNIT-3 20 Hrs	Quark and lepton mixing. CP violation. Neutrino oscillations.
UNIT-4 15 Hrs	CKM quark mixing matrix, GIM mechanism, rare processes, neutrino masses, seesaw mechanism
UNIT-5 15 Hrs	QCD confinement and chiral symmetry breaking, instantons, strong CP problem.
SUGGESTED READINGS	1. Francis Halzen and Allan D. Martin, Quarks and Leptons: An Introductory Course in Modern Particle Physics, John Wiley and Sons 2. B.R. Martin and G. Shaw, Particle Physics, 2nd edition, J. Wiley and Sons (1997). 3. Particla Data Group, The Review of Particle Physics, 4. David Griffiths, Introduction to Elementary Particles 5. Donald Perkin, Introduction to high energy physics.

DEPARTMENT OF PHYSICS

- **M. Sc. in PHYSICS** **FACULTY OF SCIENCE**
- **SECOND SEMESTER** (EVEN SEMESTER)

Eligibility Criteria (Qualifying Exams)	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per Week			ESE Duration (Hrs.)	
					L	T	P	Thy	P
After appearing in the first semester examination, irrespective of any number of backlog arrear papers	MSP 201	CCC	Electronics	4	4	1	00	3	0
	MSP 211	CCC	Electronics Lab	2	00	00	4	0	3
	MSP 202	CCC	Atomic and Molecular Physics	4	4	1	00	3	0
	MSP 203	CCC	Quantum Mechanics II	4	4	1	00	3	0
	MSP 221	PROFSTEST	Social Outreach and Skill Development	4	00	00	8	00	4
	MSP 801	ECC/CB	Environmental and Forest Laws	4	4	1	00	3	00
	MSP 802	ECC/CB	Electronic Instrumentation						
	MSP 803	ECC/CB	Condensed Matter - II						
	MSP 804	ECC/CB	High Energy Physics - II						
				TOTAL – 36					

M.Sc. in PHYSICS (SECOND SEMESTER)			
COURSE CODE: MSP 201		COURSE TYPE : CCC	
COURSE TITLE: ELECTRONICS			
CREDIT: 06 THEORY: 06 PRACTICAL: 00		HOURS: 90 THEORY: 90 PRACTICAL: 00	
MARKS: 100 THEORY: 70	CCA : 30	PRACTICAL: 00	
OBJECTIVE: The main objective is to learn about Electronics and it's basic concepts .			
UNIT-1 20 Hrs.	Operational Amplifiers: Differential amplifier - circuit configurations - dual input, balanced output differential amplifier, DC analysis, inverting and non-inverting inputs, CMRR-constant current bias level translator. Block diagram of typical OP-Amp analysis. Open loop configuration, inverting and non-inverting amplifiers, Op-Amp with negative feedback, voltage series feedback, effect of feed back on closed loop gain, input resistance, bandwidth and output offset voltage, voltage follower. Practical Op-Amp, input offset voltage-input bias current-input offset current, total output offset voltage, CMRR frequency response. DC and AC amplifier. integrator and differentiator.		
UNIT-2 15 Hrs	Oscillators: Oscillator Principle, Frequency stability response, the phase shift oscillator, Wein bridge oscillator. LC tunable oscillators.		
UNIT-3 15 Hrs	Wave Shaping Circuits : Multivibrators- Monostable, astable and bistable, Comparators, Square wave and triangle wave generation, clamping and clipping circuits.		
UNIT-4 20Hrs	Digital Electronics: Combinational logic: Standard representations for logic functions, Karnaugh Map Representation of logical functions, Simplification of logical functions using K-Map, Minimization of Logical functions specified in Minterms / Maxterms or truth table, Don't care conditions, Adder (half and full), Subtractor (half and full), comparator, Multiplexers and their uses, Demultiplexer / Decoders and their uses, BCD arithmatics, Parity generators / Checkers, Code Converters, Priority Encoders, Decoder / Drivers for display devices, Seven Segment display device. ROM, Programmable Logic Array. Basic concepts about fabrication and characteristics of integrated circuits.		

UNIT-5 20Hrs	Sequential Logic: Flip-Flops: one - bit memory, RS, JK, JK master slave, T and D type flip flops, shift resisters - synchronous and asynchronous counters, cascade counters, Binary counter, Decada counter. A/D and D/A conversion- Basic principles, circuitry and simple applications. Voltage regulators - fixed regulators, adjustable voltage regulators, switching regulators. Basic idea of IC 555 and its applications as multivibrator and sqaure wave generator. Opto-electronic Devices: Photo diode, Phototransistor, Light emitting Diode and their applications
SUGGESTED READINGS	1. "Electronic Devices and Circuit Theory" by Robert Boylested and Louis Nashdsky, PHI, New Delhi - 110001, 1991. 2. "OP-AMP and Linear Integrated Circuits" by Ramakanth, A. Gayakwad, PHI, Second Edition 1991. 3. "Digital Principle and Applications" by A.P. Malvino and Donald P. Leach, Tata McGraw Hill Company, New Delhi, 1993.

M.Sc. in PHYSICS (SECOND SEMESTER)			
COURSE CODE:	**MSP 211**	**COURSE TYPE :**	**CCC**
COURSE TITLE:	**ELECTRONICS LAB**		
CREDIT: 06 **THEORY: 00**	**PRACTICAL: 06**	**HOURS: 135** **THEORY: 00**	**PRACTICAL: 135**
MARKS: 100 **PRACTICAL: 100**			

LABORATORWORK MSP211

ELECTRONICS LAB

1.Characteristics of SCR and Triac.

2. SCR and Triac - Switching and power control.

3. Op-amp - Inverting, Non-inverting amplifier - Voltage follower - summing, difference, average amplifier - differentiator and integrator.

4. Op-amp - Study of the attenuation characteristics and design of the phase-shift Oscillator.

5. Op-amp - Study of the attenuation characteristics and design of the Wien Bridge Oscillator.

6. Op-amp - Solving simultaneous oquations

7. Op-amp - Design of square wave, sawtooth wave, and Triangular wave generators.

8. Op-amp - Design of schmitt Trigger and construction of Monostable multivibrator.

9. Op-amp - Design of active filters - second order - low pass, high pass, band pass and band rejecter.

10. Op-amp - D.A. convertar - Binary weighted method - R/2R ladder method.

11. IC 7400 - Half adder, Half subtractor, Full adder, Full subtractor.

12. IC 7490 - modulus counters

13.IC 741- OP-AMP

M.Sc. in PHYSICS (SECOND SEMESTER)			
COURSE CODE: MSP 202 COURSE TYPE : CCC			
COURSE TITLE: ATOMIC AND MOLECULAR PHYSICS			
CREDIT: 06 THEORY: 06 PRACTICAL: 00		HOURS: 90 THEORY: 90 PRACTICAL: 00	
MARKS: 100 THEORY: 70 CCA : 30 PRACTICAL: 00			
OBJECTIVE: The main objective is to learn about atomic and molecular physics .			
UNIT-1 20 Hrs.	Gross structure of energy spectrum of hydrogen atom. Non degenerate first order perturbation method, relativistic correction to energy levels of an atom, atom in a weak uniform external electric field – first and second order Stark effect, calculation of the polarizability of the ground state of hydrogen atom and of an isotropic harmonic oscillator		
UNIT-2 15 Hrs	Degenerate stationary state perturbation theory, linear Stark effect for hydrogen atom levels, inclusion of spin orbit intsraction and weak magnetic field, Zeeman effect, effect of strong magnetic field. Magnetic dipole interaction, hyperfine structure and Lamb shift (only qualitative description).		
UNIT-3 20 Hrs	Indistinguishability and exchange symmetry, many particle wave functions and Pauli's exclusion principte, spectroscopic terms for atoms.The helium atom, Variational method and its use in calculation of ground state energy. Hydrogen molecule, Heitler London method fer hydregen molecule. WKB method for one dimensional problem, application to bound states (Bohr Sommerfeld quantization) and the barrier penetration.		
UNIT-4 20Hrs	Spectroscopy (qualitative):General features of the spectra of one and two electron system – singlet, doublet and triplet characters of emission spectra, general features of alkali spectra. Rotation and vibration band spectrum of a molecule, P,Q and R branches. Raman spectra for rotational and vibrational transitions, comparison with infrared spectra – application to learning about molecular symmetry. General features of electronic spectra, Frank and Condon's principle.		

UNIT- 5 15Hrs	Laser cooling and trapping of atoms: The scattering force, slowing an atomic beam, chirp cooling, optical melasses technique, Doppler ceeling limit, magnete optical trap. Introduction to the dipole force, theory of the dipole force, optical fattice. Sisyphus cooling technique – description and its limit. Atomic fountain. Magnetic trap (only qualitative description) for confining low temperature atoms produced by Laser cooling, Bose-Einstein condensation in trapped atomic vapours, the scattering length, Bose-Einstein condensate, coharence of a Bose-Einstein Condensate, The Atem Laser.
SUGGESTED READINGS	1. G. Banewell – Atomic and Molecular spectroscopy 2. Christopher J. Foot – Atomic Physics, Oxford Master series, 2005 3. G.K. Woodgate, Elementray Atomic Structure, Second Edition Clarendon Press, Oxford. 4. T.A. Littlefield - Atomic and Motecular Physics. 5. Eistaberg and Rasmic- Quantum Physics of Atoms, Molecules Solids and Nuclear Particies. 6. Ashok Das and A.C. Melfessions. Quantum Mechanics ; A Modern Approach (Gordon and Breach Science Publishers). 7. White - Atomic Spectra. 8. Herzberg- Molecutar spectra.

M.Sc. in PHYSICS (SECOND SEMESTER)	
COURSE CODE: MSP 203 COURSE TYPE : CCC	
COURSE TITLE: QUANTUM MECHANICS II	
CREDIT: 06 THEORY: 06 PRACTICAL: 00	HOURS: 90 THEORY: 90
MARKS: 100 THEORY: 70 CCA : 30	
OBJECTIVE: The main objective is to learn about quantum mechanics .	

UNIT-1 20 Hrs.	Scattering Theory The scattering problem - formulation - Scattering amplitude - cross sections - Transformation from centre of mass to laboratory frame- Partial wave analysis - optical theorem - Phase shifts - Scattering length and effective range - Low energy scattering - Born approximation and its validity.
UNIT-2 15 Hrs	Perturbation Theory Time dependent perturbation theory - Constant and harmonic perturbatiens - Transition probabilities - Fermi's-Golden rule - Selection rules for dipole radiation - Adiabatic approximation - Sudden approximation - The density matrix - spin density matrix and magnetic resonance - Semi classical treatment of an atom with electromagnetic radiation.
UNIT-3 20 Hrs	Relativistic Quantum Mechanism Klein-Gordon equation - Failures - Dirac equation - Plane - wave solutions - Interpretation of negative energy states - Antiparticles - Spin of electron - Magnetic moment of an electron due to spin - Energy values in a coulomb potential.
UNIT-4 20Hrs	Dirac equation Covariant form of Dirac equation - properties of gamma matrices - Traces - Separatien of the equation and the Hydrogen atom problem - Invariance of Dirac equation under Lorentz transformation - T-Transformation for the Dirac equation in presence of electro magnetic field.

UNIT-5 15 Hrs	Quantisation of Fields Relativistic Lagrangian and Hamiltonian of a charged particle in an electromagnetic field - The Lagrangian and Hamiltonian formulations of field - Second quantization of Kelin-Gordon field - creation and annihilation operators - Commutation relations - Quantization of electromagenetic field - Quantization of Schroedinger's field - Quantization of Dirac field.
SUGGESTED READINGS	1. Ashok Das and A.C. Milissiones : Quantum mechanics - A Modern Approach, Garden and Breach Science Publishers. 2. J.J. Sakurai : Advanced Quantum Mechanics (John Wiley) 3. E. Merzbacher, 1970, Quantum Mechanics, 2nd Edition, Jehn Wiley and Sons, New York. 4. J.D. Bjorken and S.D. Dreil, 1964, Relativistic Quantum Mechanics, McGraw-Hill, New York. 5. V.K. Thankappan, 1985, Quantum Mechanics, 2nd Edition, Wiley Eastern Ltd, New Delhi. 6. L.D. Landau and E.M. Lifshitz, 1958 Quantum Mechanics, Pergomon Press, London. 7. G. Aruldhas, 2002, Quantum Mechanics, Prentice-Hall of India, New Delhi.

M.Sc. in PHYSICS
(SECOND SEMESTER)

COURSE CODE : MSPB01 **COURSE TYPE : ECC/CB**

COURSE TITLE: ENVIRONMENTALAND FOREST LAWS

CREDIT: 06	**HOURS : 90**
THEORY: 06	**THEORY: 90**

MARKS : 100
THEORY: 70 **CCA : 30**

OBJECTIVE:

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data
- Achieves skills in various research writings
- Gets acquainted with computer Fundamentals and Office Software Package .

UNIT - 1 18 Hrs

EVOLUTION OF FOREST AND WILD LIFE LAWS

a) Importance of Forest and Wildlife
b) Evolurion of Forest and Wild Life Laws
c) Forest Policy during British Regime
d) Forest Policies after Independence.
e) Methods of Forest and Wildlife Conservation.

UNIT - 2 18 Hrs

FOREST PROTECTION AND LAW

a) Indian Forest Act. 1927
b) Forest Conservation Act. 1980 & Rules therein
c) Rights of Forest Dwellers and Tribal
c) The Forest Rights Act, 2006
d) National Forest Policy 1988

UNIT - 3 18 H rs

WILDLIFE PROTECTION AND LAW

a) Wild Life Protection Act. 1972
b) Wild Life Conservation strategy and Projects
c) The National Zoo Policy

UNIT - 4 18 Hrs	**CHAPTER – BASIC CONCEPTS** a. Meaning and definition of environment. b. Multidisciplinary nature of environment c. Concept of ecology and ecosystem d. Importance of environment e. Meaning and types of environmental pollution. f Factors responsible for environmental degradation. **CHAPTER– INTRODUCTION TO LEGAL SYSTEM** a. Acts, Rules, Policies, Notification, circulars etc b. Constitutional provisions on Environment Protection c. Judicial review, precedents d. Writ petitions, PIL and Judicial Activism **CHAPTER – LEGISLATIVE FRAMEWORK FOR POLLUTION CONTROL LAWS** a) Air Pollution and Law. b) Water Pollution and Law. c) Noise Pollution and Law.
UNIT - 5 18 Hrs	**CHAPTER- LEGISLATIVE FRAMEWORK FOR ENVIRONMENT PROTECTION** a) Environment Protection Act & rules there under b) Hazardous Waste and Law c) Principles of Strict and absolute Liability. d) Public Liability Insurance Act e) Environment Impact Assessment Regulations in India **CHAPTER – ENVIRONMENTAL CONSTITUTIONALISM** a. Fundamental Rights and Environment i) Right to Equality .....Article 14 ii) Right to Information .....Article 19 iii) Right to Life .....Article 21 iv) Freedom of Trade vis-à-vis Environment Protection b. The Forty-Second Amendment Act c. Directive Principles of State Policy & Fundamental Duties d. Judicial Activism and PIL

SUGGESTED READINGS

Bharucha, Erach. Text Book of Environmental Studies. Hyderabad : University Press (India) Private limited. 2005.
Doabia, T. S. Environmental and Pollution Laws in India. New Delhi: Wadhwa and Company. 2005.
Ioseph, Benny. Environmental Studies. New Delhi: Tata McGraw-Hill Publishing Company Limited. 2006.
Khan. I. A. Text Book of Environmental Laws. Allahabad: Central Law Agency. 2002.
Leelakrishnan. P. Environmental Law Case Book. 2nd Edition. New Delhi: LexisNexis Butterworths. 2006.
Leelakrishnan. P. Environmental Law in India. 2nd Edition. New Delhi: LexisNexis Butterworths. 2005.
Shastri. S.C (ed). Human Rights. Development and Environmental Law. An Anthology. Jaipur: Bharat law Publications. 2006.
Environmental Pollution by Asthana and Asthana, S.Chand Publication
Environmental Science by Dr. S.R.Myneni, Asia law House
Gurdip Singh, Environmental Law in India (2005) Macmillan.
Shyam Diwan and Armin Rosencranz. Environmental Law and Policy in India – Cases, Materials and Statutes (2nd ed., 2001) Oxford University Press.

JOURNALS :-

Journal of Indian Law Institute, ILI New Delhi.
Journal of Environmental Law, NLSIU, Bangalore.

MAGAZINES :-

Economical and Political Weekly
Down to Earth.

M.Sc. in PHYSICS (SECOND SEMESTER)			
COURSE CODE:	MSP B02COURSE TYPE : ECC/CB		
COURSE TITLE:	ELECTRONIC INSTRUMENTATION		
CREDIT: 06 THEORY: 06		HOURS : 90 THEORY: 90	
MARKS : 100 THEORY: 70	CCA : 30		
OBJECTIVE: The main objective is to learn about electronic instrumentation .			
UNIT-1 20Hrs.	Transducers : Classification of Transducers - Principle, construction and working ef Thermistor, LVDT, Electrical strain gauges and capacitive transducers. Measurement of non-electrical quantities - Strain, Displacement, temperature, Pressure and Force.		
UNIT-2 20 Hrs	Digital Instrumentation : Principle, block diagram and working of Digital frequency counter, digital multimeter, digital pH meter, digital conductivity meter and digital storage oscilloscope.		
UNIT-3 20 H rs	Analytical Instrumentation : Principle, block diagram, description, working and applications of UV-VIS spectrometer, IR spectrometer, Flame emission spectrometer and ICP - AES spectrometer - Basic concepts of Gas and Liquid Chromatography.		
UNIT4 15 Hrs	Bio-Medical Instrumentation : Physiological transducers to measure blood pressure, body temperature. Sources of Bio-electric potentials - resting potential, action potential, bio-potential electrodes. Principle, block diagram and operation of ECG and EEG - recorders.		
UNIT-5 15 Hrs	Computer Peripherals : Printers - Printer mechanism - Classification. Dot matrix, Ink jet and laser printers. Basic concepts of key board and mouse. Mass data storage - floppy disk -Hard Disk - Optical disk (CD).		

SUGGESTED READINGS	1. Dr. Rajendra Prasad, Electronic Measurements and Instrumentation, Khanna Publications. 2. S. Ramambhadran, Electronic Measurements and Instrumentation Khanna Publications. 3. S.M. Dhir, Electronics and Instrumentation, Khanna Publishers. Khandpur

M.Sc. in PHYSICS (SECOND SEMESTER)	
COURSE CODE: MSP B03	COURSE TYPE : ECC/CB
COURSE TITLE: CONDENSED MATTER PHYSICS - II	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 70	CCA : 30
OBJECTIVE: The main objective is to learn about condensed matter physics .	

UNIT-1 20Hrs.	Disordered systems: Substitutional, positional and topographical disorder, short and long range order, glass transition, glass forming ability, nucleation and growth processes. Anderson model for random system and electron localization, mobility and hopping conduction. Metal glasses, models for structure of metal glasses. Structure factor for binary metallic glasses and its relationship with radial distribution function. Discussion of electric, magnetic and mechanical properties of glassy systems. Point defects: shallow impurity states in semiconductors. Localized lattice vibrational states in solids. Vacancies, interstitials and colour centres in ionic crystals.
UNIT-2 20 Hrs	Nanomaterials: Free electron theory (qualitative idea), variation of density of states with energy, variation of density of state and band gap with size of crystal. Electron confinement in infinitely deep square well, confinement in two and one dimensional well, idea of quantum well structure , tunneling through potential barrier, quantum dots, quantum wires.

UNIT-3 20 Hrs	Different methods of preparation of nanomaterials. Sol-gel and chemical co-precipitation method, effect of temperature on the size of the particles. Bottom up: cluster beam evaporation, ion beam deposition, top down: ball milling. DC and RF sputtering.
UNIT4 15 Hrs	Films and surfaces: Study of surface topography by multiple beam interferometry, conditions for accurate determination of step height and film thicknesses (Fizeau fringes). Electrical conductivity of thin films, difference of behaviour of thin films from bulk material. Boltzman transport equation for a thin film (for diffuse scattering), expression for electrical conductivity for thin film. Enhancement of magnetic anisotropy due to surface pinning.
UNIT-5 15 Hrs	Experimental techniques: Basic ideas of the techniques of field emission, scanning tunnelling and atomic force microscopy, scanning electron microscopy, transmission electron microscopy, X-ray diffraction line broadening, small angle X-ray scattering and small angle neutron scattering.
SUGGESTED READINGS	1.Tolansky: Multiple beam interferometry 2. Heavens: Thin films 3.Chopra: Physics of thin films 4. Quantum dot heterostructures: D. Bimerg, M. Grundmann and N.N. Ledenstov, John Wiley & Sons, 1998 5. Nano particles and nano structured films – preparation, characterization and applications, Ed. J.H. Fendler, John Wiley & Sons, 1998. 6. Physics of low dimensional semiconductors: John H. Davies, Cambridge Univ. Press, 1997 7. Physics of semiconductor nano structures: K.P. Jain, Narosa, 1997

M.Sc. in PHYSICS (SECOND SEMESTER)	
COURSE CODE: MSP B04 **COURSE TYPE** : ECC/CB	
COURSE TITLE: HIGH ENERGY PHYSICS - II	
CREDIT: 06 **THEORY:** 06	**HOURS :** 90 **THEORY:** 90
MARKS : 100 **THEORY:** 70 **CCA :** 30	
OBJECTIVE: The main objective is to learn about high energy physics .	
UNIT-1 20Hrs.	Moller scattering, trace theorems and properties of gamma matrices, helicity representation at high energies., the electron propagator, the photon propagator.
UNIT-2 20 Hrs	Structure of Hadrons: form factors, e-p scattering, inelastic e-p scattering, Bjorken sceling, Partons, gluons, deep inelastic scattering, evolution equations for parton densities.
UNIT-3 20 Hrs	QCD: Electron positron annihilation into hadrons, heavy qwuark production, three jet events, QCD corrections, Perturbative QCD, Drell-Yan process
UNIT4 15 Hrs	Weak Interactions: Parity violation, V-A form of weak interaction, Nuclear beta decay, muon decay, pion decay, neutrino electron scattering, neutrino quark scattering, weak neutral currents, the Cabibo angle, weak mixing angles, CP invariance.
UNIT-5 15 Hrs	Gauge Symmetries: U(1) Local gaugo invariance and QED, Non-abelian gauge invariance and QCD, massive gauge bosons, spontaneous breakdown of symmetry, the Higgs mechanism.
SUGGESTED READINGS	1. Francis Halzen and Allan D. Martin, Quarks and Leptons: An Intreductery Course in Modern Particle Physics, John Wiley and Sons 2. B.R. Martin and G. Shaw, Particle Physics, 2nd edition, J. Wiley and Sons (1997). 3. David Griffiths, Introduction to Elementary Particles 4. Byron Roo Particle Physics at tho New Millennium 5. Donald Perkin, Introduction to high energy physics).

DEPARTMENT OF PHYSICS

- **M. Sc. in PHYSICS** **FACULTY OF SCIENCE**
- **FIRST SEMESTER** (ODD SEMESTER)

Eligibility Criteria (Qualifying Exams)	Admission Criteria	Course Code	Course Type	Course (Paper/Subjects)	Credits	Contact Hours Per Week			EoSE Duration (Hrs.)	
						L	T	P	Thy	P
Bachelor Degree in the concerned subject/ discipline	1) Merit List 2) Entrance Test/written or advised (if decided by the University 3) Observance of Reservation Policy	MSP 101	CCC	Mathematical Physics	6	4	2	00	3	0
		MSP 111	CCC	General Experiments	6	00	00	3	0	3
		MSP 102	CCC	Classical Mechanics	6	4	2	00	3	0
		MSP 103	CCC	Quantum Mechanics I	6	4	1	00	3	0
		MSP 501	OSC	Research methodology &computer Application basics	6	4	2	00	3	00
		MSP A01	ECC/CB	Constitutionalism &Indian Political System	6	4	1	00	3	00
		MSP A02	ECC/CB	Electronic Devices and Applications						
		MSP A03	ECC/CB	Condensed Matter Physics - I						
		MSP A04	ECC/CB	High Energy Physics - I						
					TOTAL:- 30					

M.Sc. in PHYSICS (FIRST SEMESTER)			
COURSE CODE: MSP 101		**COURSE TYPE :** CCC	
COURSE TITLE: MATHEMATICAL PHYSICS			
CREDIT: 06 **THEORY:** 06 **PRACTICAL:** 00		**HOURS:** 90 **THEORY:** 90 **PRACTICAL:** 00	
MARKS: 100 **THEORY:** 70	**CCA :** 30	**PRACTICAL:** 00	
OBJECTIVE: The main objective is to learn about Mathematical Physics .			
UNIT-1 15 Hrs.	Complex Variables Analytic function - kinds of singularity - Line integrals and Cauchy's theorem - Taylor and Laurent expansions - Residue theorem - Application to evaluation of definite integrals - conformal mapping and invariance of Laplacian in two dimensions - Representation of functions by contour integral.		
UNIT-2 20 Hrs	Linear Differential equations and Green's function Second order linear differential equations - Liouville's Theorem - Orthogonality of eigenfunctions - Illustration with Legendre, Laguerre, Hermite and Chebyshev differential equations - Location of Zeros of these polynomials - Wronskian, ordinary and singular points - Green's function- Eigenfunction expansion of Green's function - Reciprocity theorem - Liouville type equations in one dimension and their Green's function.		
UNIT-3 20 Hrs	Laplace and Fourier transforms Laplace transforms - Solution of linear differential equations with constant Coefficients - Fourier integral - Fourier transforms, Fourier sine and consine transforms - Convolution theorems - Applications.		
UNIT-4 20Hrs	Tensor Analysis Definition of scalars - contravariant Vectors and Covariant Vectors - Einstein's summation convention - Definition of tensors - Second rank cartesian tensor as operator - Symmetric and antisymmetric tensors - tensors of rank higher than two - Specific Tensors - Covariant derivatives.		

UNIT- 5 15Hrs	Group Theory Definition of groups, subgroups and conjugate classes - Symmetry elements, Transformation, Matrix representation - Point groups - representation of a group - Reducible and irreducible representations - Orthogonality theorem - character of a representation - character Table C_{2v} and C_{3v} - Application to Infrared and Raman active vibrations of XY_3 type molecules - Projection operators applied to an equilateral triangle - Rotation group and angular momenta.
SUGGESTED READINGS	1. Mathematical Methods for Physicists: George Arfken , Academic Press 2. Applied Mathematics for Engineers and Physicists: L. A. Pipe , McGraw Hill 3. Mathematical Methods - Potter and Goldberg , Prentice Hall of India 4. Elements of Group Theory for Physicists: A.W. Joshi, Wiley Eastern Ltd. 5. Vector Analysis (Schaum Series), McGraw Hill

M.Sc. in PHYSICS (FIRST SEMESTER)	
COURSE CODE: MSP 111	COURSE TYPE : CCC
COURSE TITLE: GENERAL EXPERIMENTS	
CREDIT: 06 THEORY: 00 PRACTICAL: 06	HOURS: 135 THEORY: 00 PRACTICAL: 135

LABORATORY WORK
MSP 111

GENERAL EXPERIMENTS

1. Cornu's method - Young's modulus by elliptical fringes.

2. Cornu's method - Young's modulus by hyperbolic fringes.

3. Determination of Stefan's constant.

4. Band gap energy - Thermister.

5. Hydrogen spectrum - Rydberg's constant.

6. Co-efficient of linear expansion - Air wedge method.

7. Permittivity of a liquid using RFO.

8. Viscosity of liquid - Meyer's disc.

9. Solar spectrum - Hartmann's Interpolation formula

10. F.P. Etalon using spectrometer.

11. Iron / Copper arc spectrum.

12. Brass / Alloy arc spectrum.

M.Sc. in PHYSICS (FIRST SEMESTER)	
COURSE CODE: MSP 102COURSE TYPE : CCC	
COURSE TITLE: CLASSICAL MECHANICS	
CREDIT: 06 THEORY: 06 PRACTICAL: 00	HOURS: 90 THEORY: 90 PRACTICAL: 00
MARKS: 100 THEORY: 70 CCA : 30 PRACTICAL: 00	
OBJECTIVE: The main objective is to learn about Classical Mechanics .	
UNIT-1 15Hours	Rigid body dynamics Angular momentum, rotational kinetic energy and moment of inertia of a rigid body - Euler's angles - Euler's equations of motion - Torque - free motion of a rigid body - Motion of a symmetrical top under the action of gravity.
UNIT-2 20Hours	Constraints : holonomic and non-holonomic constraints, D'Alembert's Principle and Lagrange's Equation, velocity dependent potentials, simple applications of Lagrangian formulation. Hamilton Principle, Calculus of Variations, Derivation of Lagrange's equation from Hamilton's principle. Extension of Hamilton's Principle for non-conservative and nonholonomic systems, Method of Lagrange's multipliers. Conservation theorems and Symmetry Properties, Noether's theorem. Conservation of energy, linear momentum and angular momantum as a consequence of homogeneity of time and space and isotropy of space.
UNIT-3 20 Hours	Generalized momentum, Legendre transformation and the Hamilton's Equations of Motion, simple applications of Hamiltonian formulation, cyclic coordinates, Routh's procedure, Hamiltonian Formulation of Relativistic Mechanics, Derivation of Hamilton's canonical Equation from Hamilton's variational principle. The principle of least action.
UNIT-4 20Hrs	Canonical transformation, Integral Invariant of poincare: Lagrange's and Poisson brackets as canonical Invariants, equation of motion in Poisson bracket formulation. Infinitesimal contact transformation and generators of symmetry, Liouvilee's theorem, Hamilton-Jacobi equation and its application.

UNIT- 5 15Hrs	Action angle variable adiabatic invariance of action variable: The Kepler problem in action angle variables, theory of small oscillation in Lagrangian formulation, normal coordinates and its applications.
SUGGESTED READINGS	1. H. Goldstein, 2002, Classical Mechanics. 3rd Edition., C. Poole and J.Safko, Pearson Education, Asia, New Delhi. 2. S.N. Biswas, 1998, Classical Mechanics, Books and Atlied Ltd., Kolkata. 3. L.D. Landau and E.M. Lifshitz, 1969, Mechanics, Pergomon Press, Oxford. 4. K.R. Symon, 1971, Mechanics, Addison Wesley, London. 5. J.L. Synge and B.A Griffith, 1949, Principles of Classical Mechanics, Mc. Graw-Hill, New York. 6. C.R.Mondal, Classical Mechanics, Prentice - Hall of India, New Delhi. 7. A. Raychoudhary , Classical Mechanics, Oxford University Press

M.Sc. in PHYSICS (FIRST SEMESTER)	
COURSE CODE: MSP 103 **COURSE TYPE :** CCC	
COURSE TITLE: QUANTUM MECHANICS I	
CREDIT: 06 **THEORY: 06**	**HOURS: 90** **THEORY: 90**
MARKS: 100 **THEORY: 70** **CCA : 30**	
OBJECTIVE: The main objective is to learn about Quantum Mechanics .	
UNIT-1 20Hrs.	Basic formalism Wave functions for a free particle - Interpretation and conditions on the wave function - Postulates of quantum Mechanics and the Schroedinger equation - Ehrenfest's theorem - Operator formalism - Linear operators - Self adjoint operators - Expectation Value - Stationary States - Hermitian Operators for dynamical variables - Eigen values and eigen function - Orthonormality - Uncertainty Principle.
UNIT-2 15Hrs	Applications Ladder operators and simple harmonic oscillator - Rigid rotator - Step Potential - Particle in a central potential - Particle in e periodic potential - Orbital angular momentum and spherical harmonics - Central forces and reduction of two body problem - Particle in a Spherical well - Hydrogen atom.
UNIT-3 15 Hours	General formalism: Hilbert's space - Dirac notation - Representation theory - Co-ordinate and momentum representations - Time evolution - Schroedinger, Heisenberg and Interaction pictures - Symmetries and conservation laws - Unitary transformations associated with translations and rotations.

UNIT-4 20Hrs	Approximation methods Time-independent perturbation theory for non- degenerate and degenerate levels - Application to ground state of anharmonic oscillator and Stark effect in Hydrogen - Variation method - Application to ground state of Helium atom - WKB approximation - WKB quantization rule - Application to simple Harmonic Oscillator.
UNIT- 5 20 Hrs	Angular momentum and identical particles Commutation rules for angular momentum operators - Eigen value spectrum from angular momentum algebra - Matrix representation - Spin angular momentum - Non-relativistic Hamiltonian including spin - Addition of two angular momenta - Clebsch - Gordan coefficients - Symmetry and antl symmetry of wave functions - Pauli's spin matrices.
SUGGESTED READINGS	1. P.M. Mathews and K. Venkatesan, 1976, A Text book of Quantum Mechanics, Tata McGraw-Hill, New Delhi. 2. L.I. Schiff, 1968, Quantum Mechanics, 3rd Edition, International Student Edition, McGraw-Hill Kogakusha, Tokyo. 3. V. Davanathan, 2005, Quantum Mechanics, Narosa Publishing House, New Delhi. 4. E. Merzbacher, 1970, Quantum Mechanics 2nd Edition, John Wiley and Sons, New York. 5. V.K. Thankappan, 1985, Quantum Mechanics, 2nd Edition, Wiley Eastern Ltd, New Delhi. 6. P.A.M. Dirac, 1973, The Principles of Quantum Machanics, Oxford University Press, London. 7. L.D. Landau and E.M. Lifshitz, 1976, Quantum Mechanics, Pergomon Press, Oxford. 8.Ashok Das and A.C. Melissions: Quantum Mechanics - A modern approach (Gordon and Breach Science Publishers).

M.Sc. in PHYSICS
(FIRST SEMESTER)

COURSE CODE: MSPS01 COURSE TYPE: OSC	
COURSE TITLE: RESEARCH METHODOLOGY & COMPUTER APPLICATION: BASICS	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 70 CCA : 30	

OBJECTIVE:

- Understands the concept and place of research in concerned subject
- Gets acquainted with various resources for research
- Becomes familiar with various tools of research
- Gets conversant with sampling techniques, methods of research and techniques of analysis of data
- Achieves skills in various research writings
- Gets acquainted with computer Fundamentals and Office Software Package .

UNIT - 1 15 Hrs

CONCEPT OF RESEARCH :

Meaning and characteristics of research , Steps in research process , Types of research - i) Basic, applied and action research ii) Quantitative and qualitative research , Areas of research in concern discipline

SELECTION OF PROBLEM FOR RESEARCH :

Sources of the selection of the problem , Criteria of the selection of the problem ,Drafting a research proposal , Meaning and types of variables ,Meaning and types of hypotheses.

UNIT - 2 15 Hrs

TOOLS OF RESEARCH :

Meaning and general information about construction procedure of (i) Questionnaire, (ii) Interview, (iii) Psychological test, (iv) observation (v) Rating scale (vi) Attitute scale and (vii) check list . Advantages and disadvantages of above tools

SAMPLING :

Meaning of population and sample , Importance and characteristics of sample , Sampling techniques - i) Probability sampling : random sampling, stratified random sampling, systematic sampling, cluster sampling ii) Non-probability sampling: incidental sampling, purposive sampling, quata sampling

UNIT - 3 15 Hrs

METHODS OF RESEARCH

Meaning and conducting procedure of following methods of research : Historical method , Survey method , Case study , Causal comparative method , Developmental methods , Experimental methods

UNIT - 4 15 Hrs

TREATMENT OF DATA :

Level of measurements of data , Steps in treatment of data: editing, coding, classification, tabulation, analysis and interpretation of results

WRITING RESEARCH REPORT :

Sections of report : Preliminary section , Content section : various chapters , Supplementary section : appendices, references, abstract , Format and style

UNIT - 5 15 Hrs	**Computer Fundamentals** **Computer System :** Features, Basic Applications of Computer, Generations of computers. **Parts of Computer System :** Block Diagram of Computer System ; Central Processing Unit (CPU) ; Concepts and types of Hardware and Software. Input Devices - Mouse, Keyboard, Scanner, Bar Code Reader, track ball : Output Devices - Monitor, Printer, Plotter, Speaker ; Computer Memory - primary and secondary memory, magnetic and optical storage devices. **Operating Systems - MS Windows :** Basics of Windows OS ; Components of Windows - icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders : **Control panel :** display properties, adding and removing software and hardware, setting date and time, screensaver and appearance ; **Windows Accessories :** Calculator, Notepad, WordPad, Paint Brush, Command Prompt, Windows Explorer.
UNIT - 6 15 Hrs	**Office Software Package** **Word Processing - MS Word :**Creating, Saving, Opening, Editing, Formatting, Page Setup and printing Documents ; Using tables, pictures, and charts in Documents ; Using Mail Merge sending a document to a group of people and creating form, letters and label. **Spreadsheet - MS Excel :**Opening a Blank or New Workbook, entering data/Function/ Formula into worksheet cell, Saving, Editing, Formatting, Page Setup and printing Workbooks. **Presentation Software - MS Power Point :** Creating and enhancing a presentation, modifying a presentation, working with visual elements, adding Animations & Transitions and delivering a presentation.
SUGGESTED READINGS	*Agrawal, Y. P. (1988). **Better sampling : Concepts, Techniques and Evaluation.** New Delhi : sterling Publishers Private Ltd. Best, J. W. (1993).* ***Research in Education** (6th ed.) New Delhi : Prentice-Hall of India Pvt. Ltd.* *Broota, K. D. (1992) **Experimental design in Behavioral Research** (2nd ed.)* *New Delhi : Wiley Eastern Limited.* *Dasgupta, A. K. (1968). **Methodology of Economic Research.** Bombay: Asia Publishing House.* *Edwards, A. L. (1957). **Techniques of Attitude Scale construction.** New York : Appleton-Century* *Gall, M. D., Gall, J. P. and Borg, W. R. (2007). **Educational Research : An introduction** (8th ed.) Coston : Allyn and Bacan.* *Garrett, H. E. & Woodworth, R. S. (1969). **Statistics in Psychology and Education.** Bombay : Vakils, Feeffer & Simons Pvt. Ltd.* *Goode, W. J. & Hatt, Paul K. (1952). **Methods in Social Research.** New York : McGraw-Hill.* *Gopal, M. H. (1964). **An Introduction to research Procedure in Social Sciences.** Bombay : Asia Publishing House.* *Hillway, T. (1964) **Introduction to Research** (2nd ed.) Noston : Houghton Miffin.* *Hyman, H. H., et al. (1975). **Interviewing in Social Research.*** *Chicago : University of Chicago Press.* *Kerlinger, F. N. (1983) **Foundation of Behavioural Research.** (2nd Indian Reprint)* *New York : Holt, Rinehart and Winston.* *Kothari, C. R. (2007) **Research Methodology: Methods & Techniques** (3rd ed.)* *New Delhi : Wishwa Prakashan.Fundamentals Of Computers, Dr. P. Mohan, Himalaya Publishing House.* *Microsoft First Look Office 2010. K. Murray, Microsoft Press.* *Fundamental Of Research Methodology And Statistics, Y.K. Singh, New Age International (P) Limited, Publishers.Practical Research Methods, Dr Catherine Dawsan,* *The Essence Of Research Methodology, Jan Jonker & Bartjan Pennink, Springer.*

M.Sc. in PHYSICS
(FIRST SEMESTER)

COURSE CODE: MSPA01COURSE TYPE: ECC/CB

COURSE TITLE:CONSTITUTIONALISM & INDIAN POLITICAL SYSTEM

CREDIT: 06	**HOURS : 90**
THEORY: 06	**THEORY: 90**

MARKS : 100
THEORY: 70 CCA : 30

OBJECTIVE:

- Understands the concept of Constitutionalism
- Gets acquainted with various Indian Political System
- Becomes familiar with various Union Executive
- Gets conversant with Legislatures, Legislative Bills
- Achieves skills in various writings

UNIT - 1 12 Hrs	Unit- I: Meaning: Constitution, Constitutional government & constitutionalism; Difference between Constitution & Constitutionalism; Constitutionalism: Basis, Elements, Features & future. Forms of Government; Democracy & Dictatorship, Unitary & Federal, Parliamentary & Presidential form. Ideals of the Indian Constitution incorporated in the Preamble. Special Features of the Indian Constitution.
UNIT - 2 24 Hrs	Unit-II: Concept of State and Citizenship, Judicial Review and Fundamental Rights, Directive Principles of the State Policy, Fundamental Duties, Procedure to Amend the Indian Constitution, Judiciary: Supreme Court and High Court, Judicial Activism and Public Interest Litigation and Provisions relating to Emergency.
UNIT - 3 10 Hrs	Unit-III: Union Executive- President, Prime Minister, Council of Ministers, State Executive- Governor, Chief Minister and Council of Ministers, Local Bodies & Panchayati Raj
UNIT - 4 24 Hrs	Unit-IV: Parliament of India, State Legislatures, Legislative Bills: Ordinary, Money and Financial, Union State Relations, Principles of the 'Separation of Power and the 'Principles of Check & Balance'. Political Parties and Pressure Groups. Challenges before Indian Democracy: Terrorism, Regionalism, Communalism, *Linguistics* and National Integration.
UNIT - 5 20 Hrs	Unit-V: Controller & Accountant General of India, Solicitor General, Advocate General, Election Commission, Union and State(s) Public Service Commission, Finance Commission.

SUGGESTED READINGS	
	HOBBES, Thomas, The Leviathan, Chapters XIII & XVII [entry] LOCKE, John, The Second Treatise of Civil Government, Chapter IX [entry] ROUSSEAU, Jean-Jacques, The Social Contract or Principles of Political Right MONTESQUIEU, The spirit of the laws, RAZ, Joseph, "The rule of law and its virtue", in The authority of law, Oxford University Press, 1979 Dicey on British constitution P. Ishwara Bhat Inter-relationship between Fundamental Rights M P Jain Indian Constitutional Law H M Seervai Constitutional Law of India V N Shukla Constitution of India D DBasu Shorter Constitution of India B Sivarao Constitutional Assembly Debates J. V R Krishna Iyer Fundamental Rights and Directive Principles Paras Diwan Human Rights and the Law P K Tripathi Some Insight into Fundamental Rights S P Sathe Fundamental Rights and Amendment to the Constitution P B Gajendragadkar Law, Liberty and Social Justice David Karrys Politics of Law

M.Sc. in PHYSICS (FIRST SEMESTER)	
COURSE CODE: MSPA02 COURSE TYPE : ECC/CB	
COURSE TITLE: **Electronic Devices and Applications**	
CREDIT: 06 **THEORY: 06**	**HOURS: 90** **THEORY: 90**
MARKS: 100 **THEORY: 70 CCA : 30**	
OBJECTIVE: The main objective is to learn about Electronic Devices and Applications	
UNIT- 1 20Hrs.	Fabrication of IC and logic families Fabrication of IC - Monolithic integrated circuit fabrication - IC pressure transducers - Monolithic RMS - Voltage measuring device - Monolithic voltage regulators - Integrated circuit multipliers - Intergrated circuit logic - Schottky TTL - ECL - I2L - P and NMOS Logic - CMOS Logic - Tristate logic circuits.
UNIT-2 20Hrs	Opto electronic devices Light sources and Displays - Light emitting diodes - Surface emitting LED - Edge Emitting LED - Seven segment display - LDR - Diode lasers - Photo detectors - Basic parameters - Photo diodes - p-i-n Photo diode - Solar cells - Photo transistors - IR and UV detectors.
UNIT-3 20Hrs	Timer and applications 555 Timer - Description - Monostable operation - Frequency divider - Astabie operation - Schimitt trigger - Phase Locked Loops - Basic principles - Analog phase detector - Voltage Controlled Oscillator - Voltage to Frequency conversion - PLL IC 565 - Description - Lock-in range - Capture range - Application - Frequency multiplication.

UNIT-4 15Hrs	Op-amp applications Instrumentation amplifier - V to I and I to V converter - Op-amp circuits using diodes - Sample and Hold circuits - Log and Antilog amplifiers - Multiplier and Divider - Electronic analog Computation - Schimitt Trigger - Astable, Monostable Multivibrator - Triangular wave generators - Sine wave generators - Rc Active filters.
UNIT- 5 15Hrs	Pulse and digital Communication Pulse communications - Introduction - Types - Pulse-Amplitude Modulation (PAM) - Pulse Time Modulation - Pulse Width Modulation (PWM) - Pulse Position Modulation (PPM) - Pulse Code Modulation (PCM) - Principles of PCM - Quantizing noise - Generation and Demodulation of PCM - Effects of Noise - Advantages and applications of PCM - Pulse systems - Telegraphy - Frequency-Shift keying - Telemetry - Digital communication - Modem classification - Modes of modem operation - Modem interconnection - Modem interfacing.

SUGGESTED READINGS

1. S.M. Sze, 1985, Semiconductor Devices - Physics and Technology, Wiley, New York.

2. Millman and Halkiae, Integrated Electronics, McGraw-Hill, New Delhi.

3. R.A. Gaekwad, 1994, Op-Amps and intergrated circuits EEE.

4. Taub and Shilling, 1983, Digital Integrated Electronics, McGraw-Hill, New Delhi.

5. J. Millman, 1979, Digital and Analog Circuits and Systems, McGraw-Hill, London.

6. George Kenndy, 1987, Electronic communication systems 3rd Edition, McGraw-Hill, London.

7. R.F. Coughlin and F.F. Driscol, 1996, Op-Amp and linear integrated circuits, Prentice Hall of India, New Delhi.

8. M.S.Tyagi, Introduction to Semiconductor Devices, Wiley, New York.

9. P. Bhattacharya, 2002, Semiconductor Optoelectronic Devices, 2nd Edition, Prentice-Hall of India, New Delhi.

10. Deboo/ Burrous, 1985, Integrated circuits and semiconductor Devices - Theory and application, McGraw-Hill, New Delhi.

11. D. Roy Choudhury, 1991, Linear integrated circuits, Wiley Eastern, New Delhi.

12. Ramakant Gaekwad, 1981, Operational amplifiers, Wiley Eastern, New Delhi.

M.Sc. in PHYSICS (FIRST SEMESTER)	
COURSE CODE: MSPA03	COURSE TYPE : ECC/CB
COURSE TITLE: CONDENSED MATTER PHYSICS - I	
CREDIT: 06 THEORY: 06	HOURS : 90 THEORY: 90
MARKS : 100 THEORY: 70	CCA : 30
OBJECTIVE: The main objective is to learn aboutCondensed Matter Physics .	
UNIT- 1 20Hrs.	Phase transformation and alloys: Equilibrium transformation of first and second order, equilibrium diagrams, phase rule, interpretation of phase diagrams, substitutional solid solutions, Vegard's law, intermediate phases, Hume-Rothery rules, interstitial phases (carbides, nitrides, hydrides, borides). Martensitic transitions.
UNIT-2 20Hrs	High temperature superconductors and GMR/CMR materials: High temperature superconductors, normal state properties (structural phase transition) of cuprates, phase separation and charge distribution into CuO2 planes, striped phase, phase diagram, pseudogap, dependence of Tc on crystal structure, effect of impurities .GMR/CMR materials, Ruddlesden-Popper series of perovskites. Onset of ferromagnetism and metallic conduction. Double exchange.
UNIT-3 20 Hrs	Novel organic materials : Special carbon solids, fullerenes and tubules, formation and characterization of fullerenes and tubules. Single wall and multi-wall carbon tubules. Electronic properties of tubules. Carbon nanetubule besed electronic devices.

UNIT-4 15 Hrs	Polymers – amorphous polymers, glass transition temperature, effect of molecular architecture on glass transition temperature, free volume theory for glass transition, conducting polymers, optical band gap of polymers, electrical conduction in conducting polymers, mechanical and thermal properties of polymers, polymer blends and composites.
UNIT- 5 15 Hrs	Structural characterization and eiectron structure determination:Basic theory of X-ray diffraction, indexing of Debye-Scherrer patterns from powder samples, exemples from some cubic and non-cubic symmetries. Neutron diffraction – basic interactions, cross section, scattering length and structure factor. Basic principles of X-ray absorption spectroscopy, photo emission and positron annihilation techniques. Qualitative discussion of experimental arrangement and of typical results for both simple as well as transition metals.
SUGGESTED READINGS	1. Andrei Mourachkine: Room temperature superconductivity, Cambridge International Science Publishing. 2. C.N.R. Rao: Colossal magnetoresistance, charge ordering and related properties of managanese oxide, Woprld Scientific, 1998 3. Polymer Physics by Ulf W. Gedde, Chapmann & Hall, 2001. 4. Introduction to Polymer Physics by David. I. Bower. 5. Polymer Science by J.R. Fried.

M.Sc. in PHYSICS (FIRST SEMESTER)	
COURSE CODE: MSPA04 **COURSE TYPE : ECC/CB**	
COURSE TITLE: HIGH ENERGY PHYSICS I	
CREDIT: 06 **THEORY: 06**	**HOURS : 90** **THEORY: 90**
MARKS : 100 **THEORY: 70 CCA : 30**	
OBJECTIVE: The main objective is to learn about High Energy Physics .	
UNIT- 1 20Hrs.	Elementary particles and the fundamental forces. Quarks and leptons. The mediators of the electromagnetic, weak and strong interactions. Interaction of particles with matter; particle acceleration, and detection techniques. Symmetries and conservation laws.
UNIT-2 20Hrs	Bound states. Discoveries and observations in experimental particle physics and relation to theoretical developments.
UNIT-3 20 Hrs	Symmetries, group theory, The gourp SU92), Finite Symmetry Group: P and C, SU(2) of Isospin, The group SU(3)
UNIT-4 15 Hrs	Quark and Antiquark states: Mesons, Three quark states: Baryon, color factors. Asymptotic freedom. Charged and neutral weak interactions. Electroweak unification.
UNIT- 5 15 Hrs	Decay rates. Cross sectiens. Feynman diagrems Introduction to Feynman integrals. The Dirac equation. Feynman rules for quantum electrodynamics (no derivation).

SUGGESTED READINGS

1. Francis Halzen and Allan D. Martin, Quarks and Leptons: An Introductory Course in Modern Particle Physics. John Wiley and Sons
2. B.R. Martin and G. Shaw, Particle Physics, 2nd edition, J. Wiley and Sons (1997).
3. The Reviaw of Particle Physics, Particle Data Group
4. David Griffiths, Introduction to Elementary Particles
5. Byron Roe Particle Physics at the New Millennium
6. Donald Perkin, Introduction to high energy physics.

Sant Gahira Guru Vishwavidyalaya, Sarguja, Ambikapur (C.G.)

M.Sc. (BOTANY) Syllabus (Choice Based Credit System)

(To be implemented from the Academic Year 2022-23)

SEMESTER-I

Course Code	Course Type	Course Title	Marks	Credits
MBT-101	CCC	MICROBIOLOGY	100	6
MBT-102	CCC	PHYCOLOGY	100	6
MBT-103	CCC	MYCOLOGY	100	6
MBT-104	OSC	RESEARCHMETHODOLOGY & COMPUTER APPLICATION : BACICS	100	6
MBT-105 (ELECTIVE PAPER)	ECC/CB	A 01- BRYOPHYTES AND PTERIDOPHYTES	100	6
	ECC/CB	A 02- ADVANCES IN ARCHEGONIATAE		
LBT-111	CCC	Based on papers MBT101 and MBT102	50	4
LBT-112	CCC & ECC	Based on papers MBT103 and MBT105	50	4

SEMESTER-II

Course Code	Course Type	Course Title	Marks	Credits
MBT-201	CCC	GYMNOSPERMS AND PALAEOBOTANY	100	6
MBT-202	CCC	ANGIOSPERMS: Taxonomy and Embryology	100	6
MBT-203	CCC	PLANT PHYSIOLOGY	100	6
MBT-204	PRJ/FST/EST	SOCIAL OUTREACH AND SKILL DEVELOPMENT	100	6
MBT-205 (ELECTIVE PAPER)	ECC/CB	B01- ENVIRONMENTAL BIOLOGY AND CONSERVATION	100	6
	ECC/CB	B02- ECOLOGY AND PHYTOGEOGRAPHY		
LBT-211	CCC	Based on papers MBT201 and MBT202	50	4
LBT-212	CCC & ECC	Based on papers MBT203 and MBT205	50	4

SEMESTER-III

Course Code	Course Type	Course Title	Marks	Credits
MBT-301	CCC	CELL BIOLOGY	100	6
MBT-302	CCC	GENETICS AND PLANT BREEDING	100	6
MBT-303	CCC	PLANT BIOTECHNOLOGY AND GENETIC ENGINEERING	100	6
MBT-304	OSC	INTELLECTUAL PROPERTY, HUMAN RIGHTS & ENVIRONMENT : BASICS	100	6
MBT-305 (ELECTIVE PAPER)	ECC/CB	C01 - PLANT ANATOMY AND ECONOMIC BOTANY	100	6
	ECC/CB	C02 - DEVELOPMENTAL BIOLOGY		
	ECC/CB	C03 - BIOSTATISTICS		
LBT-311	CCC	Based on papers MBT301 and MBT302	50	4
LBT-312	CCC & ECC	Based on papers MBT303 and MBT305	50	4

SEMESTER-IV

Course Code	Course Type	Course Title	Marks	Credits
MBT-401	CCC	PLANT PHYSIOLOGY	100	6
MBT-402	CCC	PLANT PATHOLOGY	100	6
MBT-403	CCC	INSTRUMENTATION, MOLECULAR TECHNIQUES AND BIOINFORMATICS	100	6
MBT-404	SSC/PRJ	DISSERTATION	100	6
MBT-405 (ELECTIVE PAPER)	ECC/CB	D01 - ETHNOBOTANYAND CONSERVATION OF TRADITIONAL KNOWLEDGE	100	6
	ECC/CB	D02 - PLANT RESOURCE UTILIZATION AND CONSERVATION		
	ECC/CB	D03 -PLANT QUARANTINE		
LBT-411	CCC	Based on papers MBT401 and MBT402	50	4
LBT-412	CCC & ECC	Based on papers MBT403 and MBT405	50	4

SEMESTER-I

Course Code	Course Type	Course Title	Marks	Credits
MBT-101	CCC	MICROBIOLOGY	100	6
MBT-102	CCC	PHYCOLOGY	100	6
MBT-103	CCC	MYCOLOGY	100	6
MBT-104	OSC	RESEARCHMETHODOLOGY & COMPUTER APPLICATION : BACICS	100	6
MBT-105 (ELECTIVE PAPER)	ECC/CB	A 01- BRYOPHYTES AND PTERIDOPHYTES	100	6
	ECC/CB	A 02- ADVANCES IN ARCHEGONIATAE		
LBT-111	CCC	Based on papers MBT101 and MBT102	50	4
LBT-112	CCC & ECC	Based on papers MBT103 and MBT105	50	4

M.Sc. BOTANY			First Semester
COURSE CODE: MBT-101			COURSE TYPE: CCC
COURSE TITLE: MICROBIOLOGY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	

OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Microbes.

UNIT – 1	A brief idea of microbial diversity; Principle of bacterial taxonomy, Bergey's manual. General account of Archaea, Actinomycetes and Mycoplasma
UNIT – 2	Types of microorganisms on the basis of mode of nutrition, symbiotic and non-symbiotic nitrogen fixation, *Rhizobium*-Legume symbiosis, Mycorrhiza
UNIT – 3	Genetics of Bacteria: Mechanism of Transformation, Conjugation and Transduction in bacteria. Role of microorganisms in agriculture and medicines
UNIT – 4	Viruses: General characters and classification; T even phages: Lytic cycle and its regulation; Lysogeny and its reglation in Lambda phage; Viroids and Prions
UNIT – 5	Different types of culture media; sterilization methods; Batch culture, Synchronous culture and Continuous culture methods. Bacterial growth curve and factors affecting growth rates

Suggested readings:

1. Madigan, M.T., Martinko, J.M., Dunlap, P.V., Clark, D.P., 2011. Brock Biology of Microorganiss. 13th edition, Pearson Education Inc.

2. Stanier, R.Y., Ingraham, J.L., Wheelis, M.L., Painter, P.R., 1987. General Microbiology. Fifth edition. MacMillan.

3. Atlas, RM. 1995. Principles of Microbiology. Mobsy.

4. Lim, DV. 2003. Microbiology. Kendall/Hunt.

5. Boundless.2013. Microbiology. Boundless Learning, Incorporated.

6. Comelissen, CN, Harvey, RA and Fisher, BD. 2012. Microbiology. Lippincott Williams & Wilkins.

7. Talaro, K.P., Chess, B. 2011, Foundations in Microbiology. 8th edition. McGraw-Hill.

8. Willey, J.M., Sherwood, L., Woolverton, C.J., 2010. Prescott's Microbiology. 8th edition, McGraw-Hill.

9. Agrios, G. N., 1988. Plant Pathology, Academic Press.

10. John A Lucas, 1998. Plant Pathology and Plant Pathogens, Wiley-Blackwell, CRC Press.

11. Dickinson, C. M., 2003. Molecular Plant Pathology, Bios Scientific Publisher

12. Robert, N., Trigiano, Windham, M. T. and Windham, A.S., 2003. Plant Pathology: Concepts and Laboratory Exercises, CRC Press.

13. Bridge, P.D and Clarkson, J.M., 1998. Molecular Variability of Fungal Pathogens, CAB, International

14. Singh, R. S., 2008. Plant Diseases, Oxford and IBH Publishing Co. Pvt Ltd

15. Pelczar, JM, Chan, ECS and Krieg, MR. 1993. Microbiology. Tata McGraw Hill.

16.Prescott, Harley and Kleins. 2001. Microbiology, McGraw-Hill Education. USA.

M.Sc. BOTANY			First Semester
COURSE CODE: MBT-102			COURSE TYPE: CCC
COURSE TITLE: PHYCOLOGY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Algae.			

UNIT – 1	General characters and classification of Algae; distribution and range of thallus organization, Cell ultra-structure,Pigment constitution, reproduction and life cycle patterns
UNIT – 2	Algae of diverse habitats, algal blooms, phycoviruses and algae in human welfare(algal biofertilizers, algae as food and feed, industrial uses of algae),Techniques of algal culture,
UNIT – 3	Cyanophyta: Thallus organization and reproduction, cell structure, heterocyst and akinete development, chromatic adaptation
UNIT – 4	Thallus organization and reproduction in Chlorophyta, Phaeophyta and Rhodophyta
UNIT – 5	A brief account of Prochlorophyta, Euglenophyta, Eustigmatophyta, Prasinophyta, Xanthophyta, Chrysophyta, Bacillariophyta and Pyrrophyta

Suggested Readings:

1. Hoek, CVD & Chapman, DG (1995). Algae: An Introduction to Phycology, Cambridge University Press, Cambridge
2. Fritsch, FE (1935, 1948). The Structure and Reproduction in Algae, Vol I & II, Cambridge University Press, Cambridge
3. Round, FE (1986). The Biology of Algae, Cambridge University Press, U.K.
4. Bold, HC & Wynne, J (1985). Introduction to Algae: Structure and Reproduction, , 2nd Edition, Prentice-Hall Inc.
5. Lee, RE (2008). Phycology, Fourth edition, Cambridge University Press
6. South, GR & Whittick, A (1998). Introduction to Phyclogy, Blackwell Scientific Publication
7. Vashistha, BR, Sinha, AK & Singh, NP (2013). Algae, Botany for Degree Students, S. Chand, New Delhi.
8. Round, FE (1984). The Ecology of algae, Cambridge University Press, New Delhi.

9. Sharma, OP (2006). Textbook of Algae, Tata McGraw Hill, New Delhi

M.Sc. BOTANY			First Semester
COURSE CODE: MBT-103			COURSE TYPE: CCC
COURSE TITLE: MYCOLOGY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Fungi.			
UNIT – 1	General characteristics of Fungi; Principles of classification and mode of nutrition; Distribution and economic importance of fungi. Heterothallism and Parasexuality in fungi		
UNIT – 2	General account of Myxomycotina. Mastigomycotina: A brief description of Chytridiales, Blastocladiales, Saprolegniales and Peronosporales		
UNIT – 3	Zygomycotina: Mucorales and Entomophthroles; Ascomycotina: Endomycetales, Protomycetales, Taphrinales, Eurotiales, Erysiphales, Spaeriales and Pezizales		
UNIT – 4	Basidiomycotina: Uredinales, Ustilaginales, Lycoperdales, Nidulariales, Sclerodermatales, Phallales and Agaricales		
UNIT – 5	Deuteromycotina: Sphaeropsidales, Melanconiales and Mycelia sterilia Lichens: General characteristics, thallus structure, reproduction and economic importance,		

Suggested Readings:

1. Alexopoulos, CJ, Mims, CW & Blackwell, M (1996). Introductory Mycology, John Wiley Publications, UK.
2. Mehrotra, RS & Aneja KR, An Introduction to Myocology. New Age InternationalPublishers. New Delhi.
3. Webster, J. 2007. An Introduction to Fungi. Cambridge Univ. Press. New Delhi.
4. Hale, M.E. (1983), The biology of lichens (3rd ed.). Edward Arnold.
5. Hawksworth, DL & Hill, DJ 1984: The Lichen-Forming Fungi. - Blackie, Glasgow and London. 158 pp
6. Galun, M. (ed.) (1988) CRC Handbook of Lichenology. Volume III. - CRC Press, Inc., Boca Raton
7. Brown D. H., Hawksworth D. L. & Bailey R. H. 1976, Lichenology: Progress & problems, Academic Press. London.

M.Sc. BOTANY			First Semester
COURSE CODE: MBT-104			COURSE TYPE: OSC
COURSE TITLE: RESEARCH METHODOLOGY & COMPUTER APPLICATION: BASICS			
CREDIT: 6		HOURSE: 90	
THEORY: 6		THEORY: 90	
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 00	

OBJECTIVES:

-Understands the concept and place of research in concern subject.

-Gets acquainted with various resources for research.

-Becomes familiar with various tools research.

-Gets conversant with sampling techniques, methods of research and techniques of analysis of data.

-Achieves skills in various research writings.

-Gets acquainted with computer fundamentals and office software package.

UNIT – 1	CONCEPT OF RESEARCH: Meaning and characteristics of research, Steps in research process, Types of research; i) Basic, applied and action research ii)Quantitative and qualitative research, area of research in concern discipline. SELECTION OF PROBLEM FOR RESEARCH: Sources and criteria of the selection of the problem, Drafting of research proposal, Meaning and types of variables, Meaning and types of hypothesis.
UNIT – 2	TOOLS OF RESEARCH: Construction procedure of (i) Questionnair, (ii) Interview, (iii) Psychological test, (iv) Observation, (v) Rating scale, (vi) Attitute scale, (vii) Check list, Advantages and disadvantages of above tools. SAMPLING: Meaning of population and sample, Importance and characteristics of sample, Sampling techniques- i) Probability sampling; random sampling, stratified random sampling, systematic sampling, cluster sampling, ii) Non – probability sampling; incidental sampling, purposive sampling, quata sampling.
UNIT – 3	METHODS OF RESEARCH: Meaning and conducting procedure of following methods of research : Historical method, Survey method, Case study, Casual comparative method, Developmental methods, Experimental methods.
UNIT – 4	TREATMENT OF DATA : Level of measurements of data, Steps in measurement of data; editing, coding, classification, tabulation, analysis and interpretation of results. WRITING RESEARCH REPORT : Sections of report; preliminary section, Content section; various chapters, Supplimentary section; appendices,references, abstract, abbreviations, format and style.

UNIT – 5	COMPUTER FUNDAMENTALS : Computer system; Features, generations and basic applications of computers. Parts of computer system: block diagram, central processing unit (CPU); Concepts and types of Hardware & software, Input devices: Mouse, Keyboard, Scanner, Bar code reader, Trac ball; Output devices: Monitor, Printer, Plotter, Speaker; Computer memory – primary and secondary memory, magnetic and optical storage devices. Operating Systems – MS Windows: basics of window OS; Components of windows – icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders; Control Panel: display properties, adding and removing software and hardware, setting date and time, screensaver and appearance; Windows Accessories: Calculator, Notepad, Wordpad, Paint Brush, Commond prompt, windows explorer.
UNIT - 6	Office Software Package : - Word Processing- MS Word : Creating, Saving, Opening, Editing, Formatting, Page setup and Printing documents; Using tables, pictures and charts in documents; Using Mail Merge sending a document to a group of people and creating form, letters and lable. Spreadsheet – MS Excel : Opening a blank or new workbook, entering data/function/formula into worksheet cell, saving, editing, formatting, Page setup and printing workbooks. Presentation Software – MS Power point : Creating and enhancing a presentation, modifying a presentation, working with visual elements, adding animations & transitions and delivering a presentation.

SUGGESTED READINGS:

Agrawal, Y. P. (1988). Better Sampling : Concepts, Techniques and Evaluation. New Delhi: Sterling publishers Private Limited .

Best, J. W. (1993) Research in education (6th ed.) New Delhi : Prentice-Hall of India Pvt.Ltd.

Broota K. D. (1992) Experimental Design in Behavioral Research (2nd ed.) New Delhi : Wiley Eastern Limited.

Dasgupta A. K. (1968) Methodology of Economic research. Bombay – Asia Publishing House.

Edwards, A. L. (1957) Techniques of Attitude scale Construction. New York : Appleton-Contury.

Kothari, C.R. (3rd ed.) Research Methodology : Methods and Techniques, New Age International Publishers.

Singh Y.K. (2021), Fundamental of Research Methodology and Statistics, New Age International Publishers.

Dr. P. Mohan, Fundamentals of Computers, Himalaya Publishing House.

M.Sc. BOTANY			First Semester
COURSE CODE: MBT-105 : A01			COURSE TYPE: ECC/CB
COURSE TITLE: BRYOPHYTES AND PTERIDOPHYTES			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of BRYOPHYTES AND PTERIDOPHYTES			

UNIT – 1	Bryophyta: General account, classification and origin of Bryophytes; evolution of sporophyte; fossil Bryophytes, Affinities of Bryophytes with Algae and Pteridophytes,
UNIT – 2	Comparative account of the gametophytes and sporophytes of Hepaticopsida, Anthocerotopsida and Bryopsida. Peristome structure and its significance in the classification of Mosses.
UNIT – 3	General characters and classification of Pteridophytes and their economic importance. Evolution of vascular system in plants, Stellar system, Telome theory, Apogamy and Apospory, Heterospory and seed habit, Affinities of Pteridophytes with Gymnosperms,
UNIT – 4	Study of Early vascular plants: Rhyniophyta, Trimerophytophyta, Zosterophylophyta, *Lepidodendron, Lyginopteris.*
UNIT – 5	Comparative morphology and anatomy of gametophytes and sporophytes of Psilopsida, Lycopsida, Sphenopsida and Filicopsida.

Suggested Readings :

1. Gangulee, H.C. and Kar, A.K., 2011, College Botany Vol. II (Algae+Fungi+Brophyta+Pteridophyta) , New Central Book Agency, Kolkata
2. Singh, Pande, Jain, 2010, A Text Book of Botany (Algae+Fungi+Brophyta+Pteridophyta) , Pub. Rastogi Publication, Meerut
3. Parihar N. S. 1965, An Introduction to Embyophyta- Bryophyta. Central Book Depot. Allahabad.
4. Kashyap S. R. 1972, Liverworts of the Western Himalayas & the Punjab Plains. Part 1 & 2.
5. Richardson D. H. S, The Biology of Mosses.
6. Janice. M. Glime, 2006, Bryophyte Ecology.
7. Goffinet B. & Shaw. A. J. 2008, Bryophyte Biology.
8. Rashid, A, 2011, An Introduction to Pteridopyta, 2nd edition, (Reprint), Pub. Vikas Publishing House Pvt. Ltd., Noida.

9. Gifford, Ernest, M., Foster, Adriance.S., 1989, Morphology and Evolution of vascular plant. W. H. Freeman; Third Edition.
10. Ogura, Yuzuru., 1972, Comparative Anatomy of Vegetative Organs of The Pteridophytes. Gebr. Borntraeger; 2nd edition.
11. Rashid, A.1999, An Introduction to Pteridophta: Diversity,Development,Differentiation. Vikas Publishing House Pvt Ltd.
12. Parihar, Narayan Singh., 1977, The Biology and Morphology of The Pteridophyte. Central Book Depot.

M.Sc. BOTANY			First Semester
COURSE CODE: MBT-105 : A02			COURSE TYPE: ECC/CB
COURSE TITLE: ADVANCES IN ARCHEGONIATAE			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Bryophytes & Pteridophytes.			
UNIT – 1	Bryophytes : Vegetative and reproductive innovations of earlyland plants, Role of bryophytes in ecosystem dynamics and in the global carbon budget, bryophytes association with microorganism and animals, Symbiotic fungal associations in early land plants.		
UNIT – 2	Poikelohydry, Desication tolerance. Bryogeography and conservation. Hormonal regulation of gametophyte developmentin bryophytes. Breeding system, population ecology and population genetics, Anisospory and sexual dimorphism. Biologically active compounds in Bryophytes. Cytogenetics of bryophytes, Molecular genetics studies of moss species.		
UNIT – 3	Pteridophytes : Morphological diversity and evolution of vegetative organs in Pteridophytes, Diversity of ferns- an ecological perspective, Genetics and reproductive biology of ferns, Culture of fern gametophyte for experimental investigation, Photomorphogenesis, Model System in Ceratopteris, Osmunda, Marsilea.		
UNIT – 4	Gymnosperms : Evolution of pollination mechanisms and embryogeny of gymnosperms, Propagation of conifers using plant tissue culture approaches, advances in synthetic seeds technology of conifers, somatic embryogenesis and plantlet regeneration;		
UNIT – 5	Diversity of non living gymnosperms, morphological diversity and reproductive variations in cycadales, ginkgoales, coniferales and gnetales. Origin of vascular system in coniferales. Conifer plantation, uses and impact of coniferous forest on human life.		

Suggested Readings :

1. Shaw A.J. and B. Goffinet (2000) Bryophyte Biology, Cambridge University Press.
2. Geissler and Greene SW (1982) Bryophyte Taxonomy, Methods, Practices and floristic exploration, J Cramer, Germany.
3. Dyer AF (Ed) (1979) The experimental biology of ferns. Academic London.
4. Richardson DHS (1981) The Biology of mosses. John Wiley & Sons, Inc New York.
5. Bhatnagar SP and Moitra A (1996) Gymnosperms. New Age International (P) Limited, Publishers, New Delhi.
6. Singh Hardev (1978) Embryology of Gymnosperms. Encyclopedia of Plant Anatomy. Vol. X Gebruder Borntraegrl, Berlin, Stuttgart.

LBT111: Based on papers MBT101 and MBT102
LBT112: Based on papers MBT103 and MBT105

SEMESTER-II

Course Code	Course Type	Course Title	Marks	Credits
MBT-201	CCC	GYMNOSPERMS AND PALAEOBOTANY	100	6
MBT-202	CCC	ANGIOSPERMS: Taxonomy and Embryology	100	6
MBT-203	CCC	PLANT PHYSIOLOGY	100	6
MBT-204	PRJ/FST/EST	SOCIAL OUTREACH AND SKILL DEVELOPMENT	100	6
MBT-205 (ELECTIVE PAPER)	ECC/CB	B01- ENVIRONMENTAL BIOLOGY AND CONSERVATION	100	6
	ECC/CB	B02- ECOLOGY AND PHYTOGEOGRAPHY		
LBT-211	CCC	Based on papers MBT201 and MBT202	50	4
LBT-212	CCC & ECC	Based on papers MBT203 and MBT205	50	4

M.Sc. BOTANY			**Second Semester**
COURSE CODE: MBT-201			COURSE TYPE: CCC
COURSE TITLE: **GYMNOSPERMS AND PALAEOBOTANY**			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Gymnosperms and Fossil Plants.			
UNIT – 1	General introduction of gymnosperms with special reference to its salient features, similarities and dissimilarities with other groups like pteridophytes and angiosperms. Classifications of gymnosperms. Origin and Evolution of gymnosperms with special reference to Progymnosperms, Devonien pre ovules and origin of seed.		
UNIT – 2	Comparative morphology, anatomy, reproductive biology and phylogenetic studies of the following groups: Pteridospermopsida-Lyginopteridales, Medullosales, Callistophytales, Glossopteridales, Peltaspermales Corystospermales and Caytoniales. Cycadopsida, Pentoxylopsida, Bennettiopsida, Ginkgopsida Coniferopsida and Gnetopsida.		
UNIT – 3	Global distribution of gymnosperms with special reference to Indian plants. Endangered gymnosperms, their conservation and present status. Cytogenetics of Gymnosperms; Economic importance and biotechnology of gymnosperms.		
UNIT – 4	Basic geological information – structure of Earth, Types of rocks, stratigraphy,		

	basic concepts of continental drift and plate tectonics. Dating the past, Geological time scale. Fossilization process, Types of fossils, including chemical fossils and fossil techniques to study fossils, reconstruction and nomenclature of fossil, concepts of Parataxa and Eutaxa, objectives of palaeobotany. Prebiotic Environment, chemical evolution and origin of life, Pre-Cambrian life. Indian Pre-cambrain stratigraphy and life forms.
UNIT – 5	Applied Palaeobotany Life as fuel maker, sources of natural fossil fuels, Peat, coal and its varieties, constitution of coal, Coal Palynology, coal maceral, Petroleum – its origin, Palynology in oil exploration. Fundamentals of Paleofloristics, Palaeogeography and Palaeoclimatology. Applicaion of Palaeopalynology .Plant and animal interactions correlation Archaeobotany with special reference to phytoliths and palynological studies.

Suggested readings:

1. Eames, A.J. (1936) Morphology of Vascular plant-lower group. Tata Mc Graw Hill, New Delhi.
2. Chamberlain, Charles Joseph, b.(1863), Gymnosperm; Structure and Evolution. Chicago, III., The University of Chicago Press
3. Chhaya Biswas and B.M.Johri. The Gymnosperm. Springer; 1997, edition (16 April 2014)
4. Bhatnagar, S.P. Moitra, Alok. (1996). Gymnosperms. New Age International.
5. Pant DD. (2002), An Introduction to Gymnosperms, Cycas, and Cycadales, Birbal Sahni Institute of Palaeobotany.
6. Steward W.N., Palaeobotany and evolution of plant. Cambridge University Press, New York.405 p.(1)
7. Stewart,W.N.,and G.W.Rothwell.(1993) Palaeobotany and the evolution of plant. 2nd ed. Cambridge University Press, New York.521 p.(1)
8. Andrews ,H.N.,jr.1974 Palaeobotany (1947-1972) Annals of the Missouri Botanical Garden 61:179-202.(8) Page **7** of **21**
9. Thomas N.Taylor.Edith L. Tailor.Michael Krings (2009) Palaeobotany: The biology and Evolution of Fossil Plants Amsterdam ; Boston, Mass. : Academic Press, c2009
10. Wilson N Stewart and Gar W. Rothwell - 1993. Palaeobotany and the evolution of plants. Cambridge university press.
11. Edith L. Taylor, Thomas N. Taylor, Michael Krings – 2009. Palaeobotany: The Biology and Evolution of Fossil Plants. Academic Press.

M.Sc. BOTANY			Second Semester
COURSE CODE: MBT-202			COURSE TYPE: CCC
COURSE TITLE: **ANGIOSPERMS: Taxonomy and Embryology**			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of identification, importance and applications of Higher Plants .			
UNIT – 1	Taxonomic Principles, Botanical nomenclature: Binomial system, ICBN rules and recommendations, Priority, Typification, rules of effective and valid publications. Outline of classification proposed by Bentham and Hooker and Hutchinson, Takhtajan, Cronquist,		
UNIT – 2	Taxonomic features and economic importance of following families: Magnoliaceae, Ranunculaceae, Papaveraceae, Capparidaceae, Brassicaceae, Caryophyllaceae, Malvaceae, Rutaceae, Meliaceae, Leguminosae, Rosaceae, Combretaceae, Cucurbitaceae, Umbelliferae, Rubiaceae, Asteraceae, Asclepiadaceae, Apocyanaceae, Convolvulaceae, Solanaceae, Scrophulariaceae, Acanthaceae, Lamiaceae, Verbenaceae, Polygonaceae, Euphorbiaceae, Orchidaceae, Zingiberaceae, Araceae, Liliaceae, Cyperaceae and Poaceae		
UNIT – 3	Numerical Taxonomy: Aims and objectives, merits and demerits; Chemotaxonomy: Role of phytochemicals in taxonomy; Morphology, Anatomy, Embryology and Cytology in relation to taxonomy;		
UNIT – 4	Structure of a typical flower; Anther and Microsporangium, Microsporogenesis, pollen wall features, development of male gametophyte; Megasporangium: Types of ovules, structure of ovule, Megasporogenesis, development of female gametophyte, types of embryo sacs. Pollination: Definition, types and agencies of pollination; Pollen - pistil interaction, fertilization and Double fertilization; Endosperm: types and development; Embryogeny; Sexual incompatibility		
UNIT – 5	Experimental Embryology: Tissue culture, Apomixis, haploid production, Androgenesis, Gynogenesis, Embryo culture, Ovule and seed culture, Parthenocarpy, Synthetic seed production		

Suggested readings:

1. Sambamurty, A.V. S. S. 2005. *Taxonomy of Angiosperms*. I. K. International Pvt. Ltd., New Delhi.

2. APG III 2009. An update of the Angiosperm Phylogeny Group Classification for the Orders and Families of Flowering Plants: APG III. *Bot. J. Linn. Soc.* 161: 105-121.

3. Bhattacharyya, B. and B. M. Johri. 1998. Flowering Plants - Taxonomy and Phylogeny. Narosa Publishing House, New Delhi.

4. Heywood, V. H. and Moore, D. M. 1984. Current Concepts in Plant Taxonomy. Oxford University Press.

5. Duthie, J. F. "*Flora of upper gangetic plain and of the adjacent siwalik & sub-himalayan tracts*," Calcutta, Vol. 3, No. 1, 1915.

6. Jain, S.K. and Rao, R.R. 1977. *A Handbook of Field and Herbarium Methods*. Today and Tomorrow's Printers and Publishers, New Delhi-

7. Rao, R. R. 1994. *Biodiversity in India* (Plant Aspects), Bishan Singh Mahandrapal Singh, Dehradun.

8. Sharma, O. P. 1993. *Plant Taxonomy*. Tata McGraw Hill Publishing Co. Ltd., New Delhi.

9. Singh, V. & Jain, D.K. 2006. Taxonomy of Angiosperms. : Rastogi Publications, Meerut.

10. Singh, Gurcharan 2012. Plant Systematics: An Integrated Approach- Science Publishers, Enfield, (3rd edn.)

11. Stace, C. A. 1989. Plant Taxonomy and Biosystematics. University Park Place, Baltimore (2nd edn.)

12. Takhtajan A. 2009. *Diversity and classification of flowering plants*, 2nd edn. Berlin: Springer.

13. Verma, B. K. 2010. *An introduction to Taxonomy of Angiosperms*. PHI Learning Pvt. Ltd. New Delhi.

14. Jones, SB Jr. and Luchsinger, AE. 1986. Plant Systematics (2nd edition). McGraw Hill Book Co., New York.

15. Pandey, A. K., J.V.V. Dogra & Wen, J. 2006. Plant Taxonomy: Advances and Relevance. CBS Publishers & Distributors Pvt. Ltd.

16. Subrahmanyam, N. S. Taxonomy of Angiosperm, Vikas publishing house Pvt Ltd.

17. Pullaih, T. 2007. Taxonomy of angiosperm. Regency publications, New Delhi.

18. Bhojwani, S.S. and Bhatnagar, S.P.(1985), Embryology of Angiosperms, Vikash Publishing House, New Delhi

19. Johri, B.M (1984) Embryology of Angiosperms.Springer-Verlog Berlin Heidelberg.

20. Maheshwari, P. (1950) An Introduction to the Embryology of Angiosperms.Tata McGraw Hill.

21. Pandey, B.P., Angiosperms-Taxonomy, Emrbyology and Anatomy, S. Chand and Co., New Delhi

22. Bhojwani, S.S. and Bhatnagar, S.P., Embryology of Angiosperms, Vikash Publishing House, New Delhi

23. Butenko RG (2000) Plant Cell Culture, University Press of Pacific.

24. Davies PJ (2004) Plant Hormones, Kluwer Academic Publishers, Netherlands.

25. Halford N (2006) Plant Biotechnology - Current and future applications of genetically modified crops, John Wiley and Sons, England.

M.Sc. BOTANY			Second Semester
COURSE CODE: MBT-203			COURSE TYPE: CCC
COURSE TITLE: PLANT PHYSIOLOGY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Life Processes of Plants.			
UNIT – 1	Water relations: Properties of water, Water potential, Osmosis, Diffusion, Osmotic Pressure, Diffusion Pressure Deficit (DPD), Absorption of water and minerals, Mechanism of water and mineral absorption Phloem transport: Loading and unloading of photosynthate, theories of phloem transport		
UNIT – 2	Photosynthesis: Photosynthetic pigments, absorption of light, absorption spectra, Light harvesting Complex (LHC), Z- Scheme, Photo-oxidation of water, carbon assimilation pathways-C3, C4 and CAM, Photorespiration		
UNIT – 3	Respiration: Glycolysis, TCA cycle, ETS, ATP synthesis, Pentose phosphate pathway, alternative oxidase system		
UNIT – 4	Plant Growth Regulators: Physiological effects and mechanism of action of plant growth hormones (Auxin, Gibberellins, Cytokinins, ABA, Ethylene and Brassinosteroids), hormone receptors, signal transduction and gene expression		
UNIT – 5	Sensory Photobiology: Structure and function of Phytochrome Cryptochrome and Phototropins; Molecular mechanism of phytochrome action. The Flowering Process: Photoperiodism and its significance, endogenous clock and its regulation, flowering stimulus, florigen concept and vernalization		

Suggested readings:

1. Taiz and Zeiger, 2010, Plant Physiology, 5th Edition , Sinurer Associates
2. Hopkins, W.G. and Huner N.P.A., 2009, Introduction to Plant Physiology, 4th Edition Wiley International Edition, John Wiley & Sons, USA
3. Jones, Russell L. Buchanan, Bob B. Guissem, Wilhelm., 2002, Biochemistry and Molecular Biology of Plants. American Society of Plant Physiologists.
4. Peter Scott, Physiology and Behaviour of Plants. Wiley-Blackwell.
5. Frank Boyer Salisbury and Cleon Ross, 1991, Plant Physiology, CA

MBT-204	PRJ/FST/EST	SOCIAL OUTREACH AND SKILL DEVELOPMENT

M.Sc. BOTANY			Fourth Semester
COURSE CODE: MBT-205: B01			COURSE TYPE: ECC/CB
COURSE TITLE: ENVIRONMENTAL BIOLOGY AND CONSERVATION			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Microbes.			
UNIT – 1	Gaseous and particulate pollutants, indoor air pollution, Effects of important air pollutants on plants, human health and ecosystems.		
UNIT – 2	Photochemical smog, stratospheric ozone depletion; effects of enhanced UV-B on plants, microbes and human health. Acid rain: Formation, dispersion and deposition; consequences on soil fertility, rivers, lakes and plants,		
UNIT – 3	Greenhouse effects: consequences, global warming, sea level rise, albedo, oceanic influences; effects of increased CO2 on plants; human implications. Surface cooling		
UNIT – 4	Sources of water pollution, Physico-chemical and biological properties of sewage, industrial effluents produced from textile, leather, thermal power, chemical, and mining industries and their effects on water quality, bio-indicators of water pollution.		
UNIT – 5	Biodiversity: Definition, magnitude and global pattern of Biodiversity, Hypothesis related to global patterns of biodiversity, regional pattern of biodiversity; Biodiversity of Hot Spots, Threats to Biodiversity; Extinction of species, IUCN Red list categories; Conservation Strategies: ex situ and in situ conservation; India's biodiversity and its conservation		

Suggested Readings:

1. Adger, W. N. 2005. Adapting to climate change**.** Wiley Publication. UK.
2. Arthur, C. Stern. 1997. Fundamentals of air pollution, Wiley Publishers, UK.
3. Arya Arun. 2009. Eco-degradation due to air pollution. Narosa Publishers. New Delhi
4. Bell and Treshow 2002. Air Pollution and Plant Life. Willey Publication. UK.
5. Kenneth, Wark. 1997. Air Pollution its origin and control, Prentice Hall publication.UK
6. Pepper, Ian. 2003. Environmental chemistry. Wiley Publication. UK.
7. Sharma, P. D. 2006. Ecology and Environment. Rastogi Publication, Meerut.

8. Singh, J.S. Singh, S.P. and Gupta, S.R. 2008. Ecology Environment and Resource Conservation. Anamaya Publishers. New Delhi.
9. Agrawal S.K., 2009. Water Pollution. APH Publishing House. New Delhi.
10. Goel P.K., 2006. Water Pollution. New Age International. New Delhi.
11. Henze M., Harremoës P., Jansen, and Arvin, E., 2002. Wastewater Treatment: Biological and Chemical processes, Springer Publication. Germany.
12. Marcos von Sperling, 2007. Basic Principles of Wastewater Treatment: IWA Publishing Company. UK.
13. Wang Lawrence. 2009. Handbook of advanced industrial and hazardous wastes treatment. CRC Press. UK.
14. Wun Jern Ng. 2006. Industrial Waste water Treatment. Imperial College Press. UK.

M.Sc. BOTANY			Second Semester
COURSE CODE: MBT-205 : B02			COURSE TYPE: ECC/CB
COURSE TITLE: ECOLOGY AND PHYTOGEOGRAPHY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance, distribution and applications of Plants for healthy environment.			
UNIT – 1	Introduction to ecology, and environmental terminology, population dynamics, population characteristics, population growth forms, density dependent and density independent controls, population structure (distribution, aggregation, isolation territoriality) energy partitioning , r - and k-selection, concept of carrying capacity; Wild life sanctuaries, botanical gardens		
UNIT – 2	Vegetation organization and characteristics: Concepts of Community and Continuum; Community coefficients, interspecific associations, ordination, Ecological Niches, Species diversity (alpha, beta and gama).		
UNIT – 3	Ecosystem: Structure and function, Primary productivity, Trophic organization, Energy flow pathways, Ecological coefficients; Mechanism of Decomposition and its control; Nutrient cycling in ecosystem, Eutorphication, BOD		
UNIT – 4	Ecosystem stability (resistance and resilience), ecological perturbation (natural and anthropogenic) and their impact on plants and ecosystems; Plant invasion Ecological Succession: Modes and mechanism; Xerarch and Hydrarch		
UNIT – 5	Phytogeography: Definition and scope, Endemism, factors governing distribution of plants, phytogeographical regions of India, plants endemic to Indian subcontinent, Major biomes.		

Suggested reading:

1. Odum, E. P. and Barret G.W. 2005. Fundamentals of Ecology. Cengage publication
2. Singh, J.S., Singh S.P. and Gupta S.R. 2006. Ecology Environment and Resource Conservation. Anamaya Publishers
3. Kormondy E. J., 2000. Concept of Ecology. 4th Edition. Benzamin Cummings. UK
4. Odum E.P., 1996. Fundamentals of Ecology, Natraj Publishers, Dehradun.
5. Patrick L. 2000. Tropical Ecosystems and Ecological Concepts. Cambridge University Press. UK.
6. Sharma P.D. 2007. Ecology and Environment. Rastogi Publication, Meerut.
7. Singh J.S., S.P. Singh and S.R. Gupta 2006. Ecology, Environment and Resource Conservation, S. Chand Publication, New Delhi.

LBT211: Based on papers MBT201 and MBT202

LBT212: Based on papers MBT203 and MBT205

SEMESTER-III

Course Code	Course Type	Course Title	Marks	Credits
MBT-301	CCC	CELL BIOLOGY	100	6
MBT-302	CCC	GENETICS AND PLANT BREEDING	100	6
MBT-303	CCC	PLANT BIOTECHNOLOGY AND GENETIC ENGINEERING	100	6
MBT-304	OSC	INTELLECTUAL PROPERTY, HUMAN RIGHTS & ENVIRONMENT : BASICS	100	6
MBT-305 (ELECTIVE PAPER)	ECC/CB	C01 - PLANT ANATOMY AND ECONOMIC BOTANY	100	6
	ECC/CB	C02 - DEVELOPMENTAL BIOLOGY		
	ECC/CB	C03 - BIOSTATISTICS		
LBT-311	CCC	Based on papers MBT301 and MBT302	50	4
LBT-312	CCC & ECC	Based on papers MBT303 and MBT305	50	4

M.Sc. BOTANY			Third Semester
COURSE CODE: MBT-301			COURSE TYPE: CCC
COURSE TITLE: CELL BIOLOGY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Cells and Plant Science.			
UNIT – 1	Structural organization of typical plant cell; Structure of cell wall and its biogenesis; Plasma membrane; Cell organelles: Structure and function, nuclear envelope, Nuclear pore complex (NPC), Nucleolus: structure and function		
UNIT – 2	Cell cycle: control mechanism, role of cyclins and cyclin dependent kinesis. Study of different types of cell divisions; Cell-cell interaction and signaling: signaling molecules and mechanism of signaling, secondary messenger, Ca+, c-AMP, MAP kinase		
UNIT – 3	Chromatin organization and replication: Chromosome structure and types, Nucleosome organization, assembly and disassembly of histones during replication; Karyotype analysis, chromosome banding patterns: types of chromosome banding, uses of chromosome banding in cytogenetics; Special types of chromosomes,		
UNIT – 4	RNA structure and types,DNA structure and types Replication of DNA, semiconservative mode of replication, DNA polymerases, Centarl dogma, Genetic codes, transcription and translation in prokaryotes and eukaryotes; Regulation of gene expression in prokaryotes and eukaryotes.		
UNIT – 5	Cellular differentiation and specialization, Molecular mechanisms of cellular differentiation, Cell senescence and death; Programmed cell death-necessity, classes, signals; Cell apoptosis		

Suggested Readings:

1. Alberts B. Johnson, A. Lewis, J. Raff, M. Roberts, K. Walter, P. 2008. Molecular Biology of the Cell. Garland Science Publisher. USA.
2. Berg, J M; Stryer L. 2010. Biochemistry, W. H. Freeman; Seventh Edition edition
3.De Robertis and De Robertis. 2010. Cell and Molecular Biology: Saunders College Publisher. UK.
4. Lewin Benzamin 2011. Gene X: Jones and Bartlett Learning Publisher. USA.
5. Lodish and Baltimore.2005. Molecular Cell Biology: WH Freeman Publisher. UK.
6. Nelson and Cox. 2002. Lehninger Principle of Biochemistry: 3rd Edition: WH Freeman Publisher. UK.

M.Sc. BOTANY			Third Semester
COURSE CODE: MBT-302			COURSE TYPE: CCC
COURSE TITLE: GENETICS AND PLANT BREEDING			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Genetics of Plants & Breeding in Plants.			

UNIT – 1	Mendelian Inheritance: Segregation and Independent assortment; Incomplete dominance, Co-dominance, Gene interactions, Epistasis, Chromosomal theory of inheritance, Sex chromosomes and determination, Dosage compensation, Extra nuclear inheritance
UNIT – 2	Linkage and recombination, Crossing over, Chromosome mapping, Structure of genetic material, Chromosomal aberrations: Structure and numerical changes in chromosomes- Deletion, Duplication, Translocation, Aneuploidy and Euploidy, Gene mutation
UNIT – 3	Population Genetics: Population models, probability and distributions, Genotypic and phenotypic variations, Hardy- Weinberg measures of genetic variation, Gene frequencies and equilibrium, Optimum phenotype and selection pressure, kinds of selection, Fischer's fundamental theorem of natural selection
UNIT – 4	Genomics and Molecular Genetics: Maps of chromosomes, Map position- based cloning of genes, Chromosome walks, Chromosome jumps, Expressed sequences, Comparative genomics: Mitochondrial and Chloroplast genomes
UNIT – 5	Plant Breeding: Objective and scope, Hybridization in self pollinated and cross pollinated crops, Inbreeding depression and Heterosis, Polyploid breeding, Breeding for disease resistance plants, Molecular Markers and plant breeding

Suggested reading:

1. Clark, M.S. and Wall, W.J. 1996, Chromosomes : The Complex Code. Chapman & Hall, London.

2. Stebbins, G.L.1950, Variation and Evolution in Plants. Columbia Univ. Press, New York.

3. Swanson, C. P., Mertz, T.F. and Young, W.J. Cytogenetics : The Chromosomes in Division, Inheritance and Evolution (2nd Edn). Englewood Cliff, Prentice-Hall, New Jersey.

4. Sharma, A.K. and Sharma, Archana. 1985. Advances in Chromosome and Cell Genetics. Oxford & IBH Publishing Co., Calcutta.

5. Schnedl, W.. Banding patterns in chromosomes. In: International Review of Cytology (Suppl.4).

6. Lewine, Benjamin, Jones and Bartlet, Genes X, Sudburry, Masschusetts

7. Gupta, P.K., Cytogenetics, Rastogi Publication, Meerut

8. Peter, D, Snustand and Simmons, M.J., John Wiley and Sons Inc.

M.Sc. BOTANY			Third Semester
COURSE CODE: MBT-303			COURSE TYPE: CCC
COURSE TITLE: PLANT BIOTECHNOLOGY AND GENETIC ENGINEERING			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Plant Biotechnology & GMOs.			
UNIT – 1	Basic concepts of Biotechnology, biotechnology and its components, need of R and D and pilot scale production using biotechnology, current global scenario, fermentation technology, environmental biotechnologies, biosensors, phytoremediation, biotechnology and information technology (BT and IT) interdependence, management of biotech related industries		
UNIT – 2	Introduction of plant tissue culture and cell suspension culture, physic chemical conditions for propagation of plant cells and tissues, composition of media nutrient and hormone requirement, single cell culture, somaclonal variation, protoplast isolation and hybridization; concept of artificial seeds.		
UNIT – 3	Methods for the plant genetic transformation, particle bombardment method,electroporation, microinjection, mechanism of Agrobacterium mediated gene transformation		
UNIT – 4	Promoters and genetic markers, transgenic plant analysis, biosafety related issues to transgenics, field trials and risk management, intellectual property rights.		
UNIT – 5	GMO case study, GM crops, Transgenics plant resistant to biotic and abiotic stresses, molecular techniques for marker free transgenics.		

Suggested Readings:

1. Brown T.A. 2007. Genomes 3. Garland Science Publication. USA.
2. Brown.T.A.2011. Gene Cloning and DNA Analysis. Taylor and Francis. UK.
3. Karp, G. 2009. Cell and Molecular Biology Concepts and Experiments. Willey Publication. UK.
4. Primrose and Twyman, 2009. Principles of Gene manipulation and Genomics, Wiley Blackwell. UK.
5. Sambrook and Russell. 2001. Molecular Cloning. 3rd Edn. CSHL Press. USA.
6. Senger, Gupta and Sharma. 2010. Laboratory manual on Biotechnology. WH Publishers. USA.
7. Singh, B.D. 2008. Biotechnology. Narosa Publishing House. New Delhi

M.Sc. BOTANY			Third Semester
COURSE CODE: MBT-304			COURSE TYPE: OSC
COURSE TITLE: INTELLECTUAL PROPERTY, HUMAN RIGHTS & ENVIRONMENT : BASICS			
CREDIT: 6		HOURSE: 90	
THEORY: 6	PRACTICAL: 00	THEORY: 90	PRACTICAL: 00
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 00	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of Intellectual property, Patenting, Human rights and importance of laws.			
UNIT – 1	Patent :- Introduction and concepts, Historical overview. Subject matter of patent, Kinds of patents. Development of Law of Patents through international treaties and conventions including TRIPS. Agreements. Procedure for grantof patents and term of patent. Surrender, revocation and restoration of patent. Rights and obligationsof Patentee. Grant of compulsory licenses. Infringment of patent and legal remedies. Offences and penalties. Discussionon leading cases.		
UNIT – 2	Meaning of Copyright, Historical Evolution. Subject matter of copyright.Literary works, Dramatic works & Musical works. Computer Programme, Cinematographic films. Registration of Copyrights. Term of Copyright and Ownership of Copyrights. Neighboring Rights. Rights of Performers & Broadcasters. Assignment of Copyright. Author's Special Rights (Moral Rights). Infringment of Copyrights and defenses. Remedies against infringement (Jurisdictionof Courts and penalties). International conventions including TRIPS. Agreement WIPO, UCC, Paris Union, Beme convention, UNESCO. Discussion on leading cases.		
UNIT – 3	Rights: Meaning Human Rights – Meaning and Essentials Kinds of Human Rights Rights related to Life, Liberty, Equals & Disable		
UNIT – 4	National Human Rights Commission. State Human Rights Commission. High Court. Regional Court Procedure & Functions of High & Regional Court.		
UNIT – 5	Right to Environment as Human Right. International Humanitarian Law and Environment Environment and Conflict Management Nature and Origin of International Environmental Organisations (IEOs) Introduction to Sustainable Development and Environment		

	Sustainable Development and Environmental Governance.

Suggested Readings :-

1. **G.B. Reddy, Intellectual Property Rights and Law, Gogia Law Agency, Hyderabad.**
2. **S.R. Myneni, Intellectual Property Law, Eastern Law House, Calcutta.**
3. **P. Narayanan, Intellectual Property Rights and Law (1999), Eastern Law House, Calcutta.**
4. **Vikas vashistha, Law and Practice of Intellectual Property, (1999), Bharat Law House, New Delhi.**
5. **Comish W.R. Intellectual Property, 3rd,ed. (1996), Sweet and Maxwell**
6. **P.S. Sangal and Kishor Singh, Indian Patent System and Paris Convention.**
7. **Comish W.R. Intellectual Property, Patents, Copyrights and Allied Rights, (2005)**
8. **Bibeck Debroy,Intellectual Property Rights, (1998), Rajiv Gandhi Foundation.**

M.Sc. BOTANY			Third Semester
COURSE CODE: MBT-305 : C01			COURSE TYPE: ECC/CB
COURSE TITLE: PLANT ANATOMY AND ECONOMIC BOTANY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Plants for society.			
UNIT – 1	Shoot apical meristem, Root apical meristem, Control of cell and tissue differentiation especially xylem and phloem, secretory ducts and laticifers, wood development in relation to environmental factors.		
UNIT – 2	Types and phylogeny of stomata, types of nodal anatomy, phylogenetic and evolutionary consideration of nodal anatomy, types of cambium, factors influencing the growth of cambium, experimental control of cambial activity.		
UNIT – 3	Seed anatomy of Monocotyledonous and Dicotyledonous, special features of seeds or seed appendages, seed germination seedling growth, hormonal control of seedling growth.		
UNIT – 4	Origin of Cultivated Plants, Cereals, Millets, Pulses, Oil yielding plants, Spices and condiments, Beverage plants		
UNIT – 5	Plants of medicinal importance, Fumitories and Masticatories, Fibres, Wood, Energy Plantation: Petrocrops and Firewood		

Suggested Readings:

1. Carlquist, S.C. (1961),Comparative Plant Anatomy Holt, Rinehart and Winston, New York Press.
2. Carlquist S. (2001), Comparative Wood Anatomy Systematic, Ecological and Evolutionary Aspects of Dicotyledon Wood.
3. Cutter, Elizabeth (1969), Plant Anatomy part –I Cells and Tissues IInd edition,Edward Arnold,London
4. Cutter, Elizabeth (1971), Plant Anatomy Part- II Organs ,Edward Arnold London
5. Dickison W.C. (2000), Integrative Plant Anatomy. Academic Press
6. Eames, Arthur J. & Mac Daniels Laurence H. (1951), An Introduction To Plant Anatomy, McGraw Hill.
7. Esau, Katherine, (1965), Plant Anatomy, , John Wiley and Sons. Inc, New York.

8. Esau, Katherine, (1960), Anatomy of seed Plants. Wiley, New York.
9. Evert, Ray. F. (1960), Esau's Plant Anatomy. John Wiley & Sons.
10. Fahn, A. (1982), Plant Anatomy Vol I and Vol II Pergamon Press. Oxford New York.
11. Jane F.W (1934)-Aspects of the Study of Wood Anatomy. Science Reviews2000 Ltd.
12. J. Mauseth, James D. (1988) Plant Anatomy. Benjamin/Cummings.

M.Sc. BOTANY			Third Semester
COURSE CODE: MBT-305 : C02			COURSE TYPE: ECC/CB
COURSE TITLE: DEVELOPMENTAL BIOLOGY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of internal tissue system of plants and development of stem, root, flower and embryo.			
UNIT – 1	Archegoniatae : Comparative morphology and developmental anatomy of Hepaticae, Anthocerotae and Musci. Comparative anatomy of vegetative organs of Pteridophytes. Study of stem apex, leaf initiation and early leaf ontogeny in ferns. Development of long and short shoots. Origin and pattern of development of cortex, pith and procambium in conifers.		
UNIT – 2	Vascular Plants : Meristems; patterns of cell fate, determination and lineage in root and shoot. Leaf growth and differentiation. Secondary growth. Wood development and its diversity. Cambial variants. Ultrastructure and control of xylem and phloem differentiation. Secretory ducts and laticifers. Flower, seed and fruit anatomy. Patterns of evolution in seed. Anatomical adaptationsfor special habitates, biotic and abiotic stresses.		
UNIT – 3	Development of Flower : Transition to flowering-vegetative to reproductive evocation. Floral homeotic mutations in Arabidopsis, Antirrhinum and Petunia. Axis development in flower. Gender expression in monoecious and dioecious plants. Develpmental biology of male and female gametophytes: Regulation of anther and ovule development. Microsporogenesis and microgametogenesis. Megasoprogenesis and megagametogenesis. Male sterility- mechanism and applications. Pollen embryogenesis.		
UNIT – 4	Pollen-Pistil Interaction: In vivo and in vitro pollen germination. Pollen tube growth and guidance. Double fertilization. Self-compatibility mechanisms, incongruity.		
UNIT – 5	Embryogenesis and seed development: Polarity during embryogenesis, Pattern mutants. In vitro fertilization, Endosperm development, Apomixis, Polyembryony, Somatic embryogenesis.		

Suggested Readings:-

1. Bhatnagar S.P. and Moitra A.(2005) Gymnosperms, New Age Interactive(P) Ltd. Publishers, New Delhi.
2. Carlquist S.(2001). Comparative Wood Anatomy, Springer-Verlag, Germany.
3. Culter D.F.(1978). Applied Plant Anatomy, Longman, United Kingdom.
4. Howell S.H.(1998), Molecular Genetics of Plant development, Cambridge University Press.
5. Leyser O. and Day S.(2003), Mechanism of Plant Development, Blackwell Press.
6. Parihar N.S.(1993), An Introduction to Embryophyta: Vol. I- Bryophyta, Vol. II- Pteridophyta, Central Book Dept. Allahabad.
7. Raghavan V. (2000) Developmental Biology of Flowering Plants, Cambridge University Press.
8. Richards A.J.(1986), Plant Breeding System, George Allen and Unwin.
9. Shivanna K.R.(2003), Pollen biology and Biotechnology, Science Publishers.

M.Sc. BOTANY			Third Semester
COURSE CODE: MBT-305 : C03			COURSE TYPE: ECC/CB
COURSE TITLE: BIOSTATISTICS			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Biostatistics in Plant Sciences.			
UNIT – 1	Unit-1 Scope of Biostatistics, variables in biology, collection, classification, tabulation of data. Frequency distribution, Diagrammatic and graphical presentation of statistical data, Sampling techniques. Measures of central location and dispersion,Simple measure of skewness and Kurtosi, Probability, conditional probability.		
UNIT – 2	Unit-2 Binomial, Poisson and Normal Distribution Correlation and Regression, Least Square method of fitting, Standard error of estimate, Correlation and regression coefficient. Basic idea of significance testing, level of significance, students,'t'test, χ^2 (chi-square) test and F-test, Analysis of variance.		
UNIT – 3	Unit-3 Biological databases, EMBL, DDBJ, TAIR, KEGG, Swis-prot, Optimal Pairwise Alignment- Biological Sequences and the Exact String Matching Problem-Fast Alignments: Genome Comparisons and Database Searches		
UNIT – 4	Unit-4 Multiple Sequence Alignment-Sequence Profiles and Hidden Markov Models.- Gene Prediction-Phylogeny-Sequence Variation and Molecular Evolution		
UNIT – 5	Unit-5 Testing Evolutionary Hypotheses, In silico analysis of phylogeny, construction of phylogenetic tree, dendrogram, Computational phylogenetics, Construction of QTL mapping, Microarray data analysis.		

Suggested Readings:

1. Bernard, A. Rosner, 2006. Fundamentals of Biostatics. Thompson Publication. Canada.
2. Khan and Khanam. 2003. Fundamental of Biostatistics. Ukaaz Publications. Hyderabad.
3. Krawetz. 2003. Introduction to Bioinformatics: A theoretical and Practical Approach. Humana Press. USA.
4. Miguel and Rade. 2003. Bioinformatics and Genome. Horizon Scientific Press.Utah. USA.

LBT311: Based on papers MBT301, MBT302 and MBT303
LBT312: Based on papers MBT304 and MBT305

SEMESTER-IV

Course Code	Course Type	Course Title	Marks	Credits
MBT-401	CCC	PLANT BIOCHEMISTRY	100	6
MBT-402	CCC	PLANT PATHOLOGY	100	6
MBT-403	CCC	INSTRUMENTATION, MOLECULAR TECHNIQUES AND BIOINFORMATICS	100	6
MBT-404	SSC/PRJ	DISSERTATION	100	6
MBT-405 (ELECTIVE PAPER)	ECC/CB	D01 - ETHNOBOTANYAND CONSERVATION OF TRADITIONAL KNOWLEDGE	100	6
	ECC/CB	D02 - PLANT RESOURCE UTILIZATION AND CONSERVATION		
	ECC/CB	D03 -PLANT QUARANTINE		
LBT-411	CCC	Based on papers MBT401 and MBT402	50	4
LBT-412	CCC & ECC	Based on papers MBT403 and MBT405	50	4

M.Sc. BOTANY			FOURTH Semester
COURSE CODE: MBT-401 :			COURSE TYPE: CCC
COURSE TITLE: PLANT BIOCHEMISTRY			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Biochemical Compounds of Plants.			

UNIT – 1	Law of mass action, dissociation of water and its ion product (Kw), pH, ionization of weak acids and weak bases, the Henderson-Hasselbalch equation, physiological buffers. Biochemical energetics: General concept, laws of thermodynamics, entropy, enthalpy, free energy, redox potential, energy rich phosphorus compounds
UNIT – 2	Biosynthesis and degradation of carbohydrates in higher plants Structure of protein, Ramchandran plot Biosynthesis of fatty acids, ß oxidation of fatty acids, glyoxylate cycle
UNIT – 3	Enzymology: General aspects, prosthetic groups and coenzymes, mechanism of action, kinetics, Michaelis- Menton equation, factors affecting enzyme catalysis, enzyme inhibition, regulatory enzymes, isoenzymes, ribozymes
UNIT – 4	Biological Nitrogen Fixation: Nitrogenase enzyme, substrate for nitrogenase, reaction mechanism, strategies to exclude oxygen and need to control hydrogen evolution Inorganic nitrogen metabolism: Introduction, nitrate transport, nitrate and nitrite reductases, inhibitors, localization and regulation of nitrate and nitrite reductases, pathways of ammonia assimilation, regulation of nitrogen assimilation
UNIT – 5	Sulphur and phosphorus metabolism: Sulphate uptake, activation and transfer, assimilatory pathways of sulphate reduction, transport and assimilation of phosphate

Suggested readings:

1. Wilson, K. and Walker, J., 2000, Practical Biochemistry: principles & techniques. Cambridge University Press. ISBN 0521799651.

2. Buchanan, B., Gruissem, W., & Jones, R.L., 2002, Biochemistry and Molecular Biology of Plants. American Society of PlantBiologists, USA.

3. Watson, JD, Baker, TA, Bell, SP, Gann, A, Levine, M and Richard, L. 2008. Molecular Biology of the Gene. Pearson Education Inc.

4. Nelson, D .L. and Cox, M.M., 2008, Lehninger Principles of Biochemistry, W. H. Freeman & Co, New York, USA

5. Murray, R, Murray, RK, Bender, D, Gotham, KM, Kennelly, PJ, Rodwell, V and Weil, PA. 2012. Harper's Illustrated Biochemistry McGraw Hill

6. Wilhelm Gruissem, Russell L.Jones, 2000, Biochemistry and molecular biology of plants. American Society of Plant Physiologists,

7. .Berg, J.M., Tymoczko, J.L. & Stryer, L. 2011, Biochemistry, Freeman & Co., New York, USA.

8. Weil, J.H., 1990, General Biochemistry, Wiley Eastern Limited, New Age International Limited. New Delhi.

9. Lea P.J. and Leegood R.C., 1999, Plant Biochemistry & Molecular Biology, John Wiley & Sons, NewYork

M.Sc. BOTANY			Fourth Semester
COURSE CODE: MBT-402			COURSE TYPE: CCC
COURSE TITLE: **PLANT PATHOLOGY**			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of Plant diseases and their control.			
UNIT – 1	History of plant pathology, identification of symptoms and signs, observation of symptoms, isolation, growth and identification of causal agents, losses caused by plant diseases, basic procedure in diagnosis of plant diseases.		
UNIT – 2	Parasitism and pathogenecity, development of plant diseases, inoculations, penetration, infection, dissemination of pathogen, oxidative burst, PR proteins, SAR, phytoalexins, factors affecting distribution of disease.		
UNIT – 3	Pathogenesis, Chemical weapons of pathogens, microbial toxins, growth regulators and detoxification of antimicrobial molecules in disease development Pre-existing defense structures, pre-existing chemical defense, induced structural and biochemical defense.		
UNIT – 4	Nature and properties of pathogenic bacteria, viruses, mycoplasma and nematodes, symptoms, transmission, characterization. Study of plant disease caused by Bacteria, Viruses, Mycoplasma and Nematodes and their control		

	measures.
UNIT – 5	Study of fungal diseases, symptoms caused by fungi on plants, mechanisms of infection, penetration, colonization and their control measures. General account of some important fungal diseases of economically important crops of central India and their control measures.

Suggested Readings:

1. Aggrawal Ashok and Mehrotra R S. 2002. Plant Pathology. Tata Mcgraw Hill, 2nd edition. Mumbai.
2. Agrios George N. 2005. Plant Pathology, Academic Press, 5th Edition. UK.
3. Robert B. 2008. Plant Pathology: Techniques and Protocols (Methods in Molecular Biology), Humana Press. USA.
4. Gail L. Schumann and Cleora J. D'Arcy 2009. Essential Plant Pathology, 2nd Edition. American Phytopathological Society. USA.
5. Sharma P. 2006. Plant Pathology, Alpha Science International Ltd. New Delhi.
6. Trigiano Robert N. 2007. Plant Pathology Concepts and Laboratory Exercises. 2nd Edition, CRC Press. U.K

M.Sc. BOTANY			Fourth Semester
COURSE CODE: MBT-403			COURSE TYPE: CCC
COURSE TITLE: INSTRUMENTATION, MOLECULAR TECHNIQUES AND BIOINFORMATICS			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Modern techniques in Plant Science.			
UNIT – 1	**Microscopy:** Bright-field microscope, Dark-field, Phase-contrast, Differential interference contrast, Fluorescence, Transmission and scanning electron microscopy, confocal microscopy; Staining of different cells, cell organelles and tissues.		
UNIT – 2	**Chromatography:** Thin layer, ion exchange, gel filtration, affinity chromatography, GLC, HPLC. Spectroscopy: Beer-Lambert's law, molar extinction coefficient and calculation, Absorption spectrum, Colorimeter and UV-Vis Spectrophotometer, Nuclear Magnetic Resonance (NMR). ESI MS, MALDI-TOF Application of tracer techniques in biology, radioactive isotopes, autoradiography		
UNIT – 3	**Electrophoresis:** Polyacrylamide Gel Electrophoresis (PAGE), Agarose Gel Electrophoresis (AGE), native-Page, SDS-PAGE, Isoelectric focusing (IEF), 2D-		

	electrophoresis Isolation and purification of genomic and plasmid DNA, RNA and proteins Blotting Technique: Southern, Northern and Western blotting
UNIT – 4	**DNA Amplification:** PCR, RT-PCR, genome mapping and expression analysis, RFLP, RAPD, AFLP, *In situ* hybridization, FISH, EST, Microarray
UNIT – 5	Bioinformatics: Bioinformatics in genome sequencing and annotation; Databases - NCBI, EMBL, DDBJ, Genbank, Pubmed, Patent databases, TAIR, PDB, ATIDB. Online tools - BLAST, ORF finder, Primer3, protein motif and structure prediction tools.

Suggested Readings:

1. Becker, JM, Caldwell, GA & Zachgo, EA (1996). Biotechnology: A Laboratory Course, Academic Press, Inc, San Diego,California
2. Wilson, K, Walker, J (1997). Principles and Techniques of Biochemistry and Molecular Biology,
Cambridge University Press, Cambridge
3. Sambrook, J, Fritsch EF, Maiatis,T (2000). Molecular Cloning: A Laboratory Manual Cold Spring
Harbor Laboratory Press, New York
4. Primrose, SB (1994). Molecular Biotechnology, Blackwell Scientific Pub, Oxford.
5. Reece, RJ (2004). Analysis of Genes and Genomes, Wiley
6. Arthur, M. 2002. Introduction to Bioinformatics. Oxford University Press. New
Delhi.
7. Krawetz. 2003. Introduction to Bioinformatics: A theoretical and Practical Approach. Humana Press. USA.
8. Miguel and Rade. 2003. Bioinformatics and Genome. Horizon Scientific Press.Utah. USA.

MBT-404	SSC/PRJ	DISSERTATION	100	6

M.Sc. BOTANY			Fourth Semester
COURSE CODE: MBT-405 : D01			COURSE TYPE: ECC/CB
COURSE TITLE: ETHNOBOTANY AND CONSERVATION OF TRADITIONAL KNOWLEDGE			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Local Plants and Traditional Knowladge.			
UNIT – 1	Ethnobotany: Knowledge of culture and belief, Introduction and relevance in the modern context, documentation of Ethnobotanical wisdom		
UNIT – 2	The centres of Ethnobotanical studies in the world, Ethnobotanical Hot Spots, Scope of Ethnobotanical research in Chhattisgarh, Plants in magico-religious beliefs, social customs and beliefs		
UNIT – 3	Tribal societies of Chhattisgarh: origin, customs and beliefs		
UNIT – 4	Plants in Traditional medical practices, Ethnoveterinary medicines, Important ethnobotanical drugs of India, WHO and Ethno-directed drug discovery		
UNIT – 5	Conservation of Traditional Knowledge, IPR, Convention on Biodiversity, Conservation of Biodiversity, Conservation strategies, IUCN Red list categories		

Suggested Readings:

1.Brain K.R, and Turner T.D. 1976. The Practical evaluation of Phytopharmaceuticals. Bristol Wright-Scientehnica. Italy.

2.Chopra, R.N., Nayar S.L. and Chopara I.C. 1956. Glossary of Indian Medicinal plants. CSIR. New Delhi.

3.Das, A.P. and Pandey, A.K. 2007. Advances in Ethnobotany. Bishen Singh and Mahendra Pal Singh, Dehradun.

4. Jain and Mudgal. 1996. Dictionary of Ethnobotany. Deep Publication, Delhi.

5. Jain, S.K. 1990. Contributions of Indian Ethnobotany. Scientific publishers, Jodhpur.
6. Jain, S.K. 1995. Manual of Ethnobotany, Scientific Publishers, Jodhpur.
7.Kokate C. K., Purohit A. P. and Gokhale S. B. 2003. Pharmacognosy 22nd Edition, Nirali Prakashan. Pune.
8.Mukherjee P.K. 2002. Quality control of Herbal Drugs – An approach to Evaluation of Botanicals, Business Horizons, New Delhi, 1st Edition.
9.Trease G. E. and Evans, W. C. 2006. Pharmacognosy. 10th Edition, Williams and Wilkins, Baltimore. USA.

M.Sc. BOTANY			Fourth Semester
COURSE CODE: MBT-405 : D02			COURSE TYPE: ECC/CB
COURSE TITLE: **Plant Resource Utilization and Conservation**			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Microbes.			
UNIT – 1	General aspects on resource types: Renewable resources, non-renewable resources, Resource degradation, Resource conservation; Natural resources, biological resources, plants as natural resources		
UNIT – 2	Utilization of plant resources, Bio-control- soruces and advantages, Bio-control as agribusiness, Untapped potential plant resources, seaweeds as potential resources– food, fodder and biofertilizer; Plant resources used in cosmetics, aromatics and pharmaceuticals, fibres; forest as potential resources: vegetable oil yielding plants, bioenergy		
UNIT – 3	Biodiversity, Levels and types of biodiversity, uses of biodiversity, Distribution of biodiversity, Regional pattern of biodiversity, Hot spots of biodiversity, Threats to biodiversity – Habitat loss and fragmentation, Alien invasive species, disturbance and pollution, harvesting and overexploitaion.		
UNIT – 4	An overview of Indian biodiversity; Biogeographic regions (zone) of India; Hot spots of Indian biodiversity; Status of biodiversity conservation in India; Protected area network of India; The Biological Diversity Act 2002; Bio-prospecting – Biochemical resources from plants.		

UNIT – 5	Conservation of Biodiversity; IUCN red list categories, In situ conservation strategies – Protected areas, Biosphere reserves; Ex-situ conservation strategies – Restoration of endangered species, Sustainable use and public participation; International efforts for conserving biodiversity

Suggested Readings:

1. Chandel K. P. S. Shukla G. and Sharma Neelam.1996. .Biodiversity in Medicinal and Aromatic Plants in India – Conservation and Utilization, Indian Bureau of Plant Genetic Resources, New Delhi,
2. Kaufman Peter B. et al. 1999. Natural Products from Plants, CRC Press. UK.
3. Primack R.B. 2000. A Primer of Conservation Biology, Sinauer Asso. Publ., Massachusetts. USA.
4. Sahoo S. 2002. Plant Resource Utilization. Allied Publishers. Nagpur.
5. Singh J.S. Singh S.P. and Gupta S.R., 2006, Ecology, Environment and Resource Conservation, S. Chand Publication, New Delhi,
6. Trivedi P.C. and Sharma N. 2010. Plant Resource Utilization and Conservation, Pointer Publishers. Jaipur.

M.Sc. BOTANY			Fourth Semester
COURSE CODE: MBT-405 : D03			COURSE TYPE: ECC/CB
COURSE TITLE: **PLANT QUARANTINE**			
CREDIT: 8		HOURSE: 135	
THEORY: 6	PRACTICAL: 2	THEORY: 90	PRACTICAL: 45
MARKS			
THEORY: 100 (30+70)		PRACTICAL: 25	
OBJECTIVES: This course is aimed towords generating fundamental knowledge, concepts and dimensions of importance and applications of Rules of Plant Quarentine.			
UNIT – 1	Definition of pest, pesticides and transgenics as per Govt. notification; relative importance; Quarantine – domestic and International Quarantine restrictions in the movement of agricultural produce, seeds and planting materials.		
UNIT – 2	Case histories of exotic pests/diseases and their status. Plant protection organization in India. Acts related to registration of pesticides and transgenics.		
UNIT – 3	History of quarantine legislation, PQ Order 2003. Environmental acts, Industrial registration; APEDA, Import and Export of bio-control agents.		
UNIT – 4	Identification of pest/disease free areas; contamination of food with toxigens, microorganisms and their elimination; Symptomatic diagnosis and their techniques to detect pest/pathogen infestation; VHT and other safer techniques of disinfestation/ salvaging of infected material.		
UNIT – 5	WTO regulations; non-tariff barriers; Pest risk analysis, good laboratory practices for pesticide laboratories; Pesticide industry; Sanitary and Phytosanitary measures.		

Suggested Readings:

1 Rajeev K & Mukherjee RC.1996.Role of Plant Quarantine in IPM. Aditya Books.

2 Rhower GG. 1991. Regulatory Plant Pest Management. In; Hand book of Pest Management in Agriculture. 2nd Ed. Vol. II (Ed. David Pimental). CRC Press.

LBT411: Based on papers MBT401 and MBT402
LBT412: Based on papers MBT403 and MBT405

SYLLABUS

BOTANY (C.G.) : B.Sc. III

FIRST PAPER

ANALYTICAL TECHNOLOGY, PLANT PATHOLOGY, EXPERIMENTAL EMBRYOLOGY, ELEMENTARY BIOSTATISTICS, ENVIRONMENTAL POLLUTION AND CONSERVATION

Unit 1. Structure, principle and applications of analytical instrumentation. Chromatography technique, oven, incubator, autoclave, centrifuge, spectrophotometer.

Unit 2. Plant tissue culture techniques, growth media, totipotency, protoplast culture, somatic hybrids and cybrids, micropropagation, somaclonal variations, haploid culture. Analytical techniques : Microscopy–light microscope, electron microscope.

Unit 3. General principles of plant pathology, general symptoms of fungal, bacterial and viral diseases, mode of infection, diseases resistance and control measures, plant quarantine. A study of epidemiology and etiology of following plant diseases : rust diseases of wheat, tikka diseases of ground nut, red rot of sugarcane, bacterial blight of rice, yellow vein mosaic of bhindi, little leaf of brinjal.

Unit 4. Introduction to pollution, green house gases, ozone depletion, dissolve oxygen, B.O.D., C.O.D. biomagnification, eutrophication, acid precipitation, phytoremediation, plant indicators, biogeographical zones of India, concept of biodiversity, CBD, MAB, national parks and biodiversity, hot spots, conservation strategies, red data book, IUCN threat categories, invasive species, endemic species, concept of sustainable development.

Unit 5. Elementary biostatistics : Introduction and application of biostatistics, Measure of central tendency : mean, median, mode, Measures of dispersal : standard deviation, standard error.

SECOND PAPER

GENETICS, MOLECULAR BIOLOGY, BIOTECHNOLOGY AND BIOCHEMISTRY

Unit 1. Cell and cell organelles, organization and morphology of chromosomes, giant chromosomes, cell division, Mendel's laws, gene interactions. Linkage and crossing over, chromosomal aberration, polyploidy, sex linked inheritance, sex determination, cytoplasmic inheritance, gene concept : cistron, muton, recon.

Unit 2. Nucleic acids, structure and forms of DNA and RNA, DNA/ RNA as genetic material, replication of DNA, biochemical and molecular basis of mutation, genetic code and its properties, mechanism of transcription and translation in prokaryotes, regulation of gene expression, Operon model.

Unit 3. Recombinant DNA, enzymes in recombinant DNA technology, cloning vectors (Plasmid, Bacteriophages, Cosmids, Phagemids), gene cloning, PCR, application of biotechnology, G.M. plants, monoclonal antibodies, DNA fingerprinting.

Unit 4. Protein : Chemical composition, primary, secondary and tertiary structure of proteins. Carbohydrats : general account of monosaccharides, disaccharides and polysaccharides.

Fat : Structure and properties of fats and fatty acids, synthesis and breakdown.

Unit 5. Enzymes : Nomenclature and classification, components of enzyme, theories of enzyme action, enzyme kinetics (Michaelis-Menten constant), allostoric enzymes, isozymes, abzymes, ribozymes, factors affecting enzyme activity.

Part A: Introduction

Programme/Certificate/Course	Class: B.Sc. 1st Year	Year: 2022	Session: 2022-2025
1 Course Code	ZOOL-IT		
2 Course Title	Animal Diversity: Non-Chordata and Chordata, Comparative Anatomy and Physiology of Non-chordates		
Course Type	Theory		
4 Pre-requisite (If any)	No		
5 Course Learning Outcomes (CLO)	Upon completion of the course students should be able to : • Learn about the importance of systematic,taxonomy and phylogeny to get a concrete idea of evolution of non-chordate phyla. • Understand the various morphological, anatomical structures and functions ofanimals of different phyla • Get the knowledge about economic,ecological and medical significance ofvarious animals in human welfare. • Understand the important parasites andtheir control measures. • Comparison of the anatomy and physiology of the different taxa of non-chordates.		
6 Credit Value	4		
7 Total Marks	Max. Marks: 50	Min Passing Marks : 17	

Part B: Content of the Course

Total Lectures: 60

Unit	Topics	No. of Lectures
I	**Taxonomy, Protozoa, Porifera** **Taxonomy**- Elementary knowledge of Zoological Nomenclature and International Code. Classification of Animal Kingdom upto Phylum of acoelomate and coelomate non-chordates according to Parker and Haswell's edition. **Protozoa**- Phylum Protozoa: General characters of the phylum and classification up to order with characters and suitable examples. Structure, life history and pathogenicity of malaria parasite (*Plasmodium vivax*) Protozoa and disease. **Porifera**- Phylum Porifera: General characters of the phylum and classification up to order with characters and suitable examples. Type study of Sycon.	12
II	**Coelenterata, Platyhelminthes, Nemathelminthes :** **Coelenterata**- PhylumCoelenterata: General characters of the phylum and classification up to order with characters and suitable examples. Type Study of Obelia. **Platyhelminthes** - Phylum Platyhelminthes: General characters of the phylum and classifiction up to order with characters and suitable examples. Type Studyof Liverfluke. **Nemathelminthes**- PhylumNemathelminthes: General characters of the phylum and classification up to order with characters and suitable examples. Pathogenic nematodes and diseases.	12
III	**Annelida, Arthropoda, Mollusca :** **Annelida**- Phylum Annelida: General Characters of the phylum and classification up to order with characters and suitable examples. Types study of Earthworm (*Pheretima*). **Arthropoda** - Phylum Arthropoda: General Characters of the phylum and classification up to order with characters and suitable examples. Type study of Prawn. Insects as a vector of human disease. **Mollusca** - Phylum Mollusca: General characters of the phylum and classification up to order with characters and suitable examples. Type study of *Pila*.	12

31-5-2022

IV	**Echinodermata, Hemichordata, Classification of Chordata :** **Echinodermata** - Phylum Echinodermata: General characters of the phylum and classification up to order with characters and suitable examples. Type study of Starfish(*Asterias*). **Hemichordata** - Phylum Hemichordata: General characters of the phylum hemichordate and relationship with non-chordates and chordates. Type study of*Balanoglossus*. **Classification of Chordata** - Classification of Chordata up to order with characters and suitable examples. Brief account of Urochordata, Cephalochordata and Vertebrata.	11
V	**Comparative Anatomy and Physiology of Non-chordates:** Coelom and coelomoductsin Non- chordate. Locomotory organs and locomotion in Non- chordate. Pattern of feeding and digestion in lower Metazoans. Comparative anatomy and physiology of respiration and excretion in Non- chordate. Primitive,diffused and advance nervous system in Non- chordate. Reproduction in Non-chordates.	13

Keywords : Locomotory organ, feeding and digestion, respiration, International Comission on Zoological Nomenclature (ICZN), Classification, Protozoa, Classification, Liver Fluke, Trochophore, Arthropoda, Crustacean larva , Echinodermata larva

Part C –Learning Resource

1. **Text Books, Reference Books, Other Resources –**
2. Parker, J, Haswell, WA, "A Text Book of Zoology", VII edition Vol. I & II, Low Price Publications, Delhi, 1990.
3. Barnes, RD, "Invertebrate Zoology", VII Edition, Cengage Learning, India, 2006.
4. Pechenik, JA, "Biology of the Invertebrates" McGraw-Hill Education, VII Edition, 2015.
5. Sedgwick, A, "A Students Text Book of Zoology", Vol.I, II & Vol. III., Low Price Publications, Delhi, 1990.
6. Dhami and Dhami, "Invertebrate Zoology" R., Chand & Co., India, 2009.
7. Jordan and Verma, "Invertebrate Zoology," S. Chand & Company, New Delhi, 2013.
8. Agarwal, VK "Zoology for Degree Students: Non-Chordata", S Chand & Company, 2017.
9. Kotpal, R, "Modern Text Book of Invertebrates", Rastogi Publications, Meerut, 2017.
10. Kotpal, R, "Protozoa to Echinodermata (Phylum Series)", Rastogi Publications, Meerut, 2017.
11. Kardong, K.V. (2006) Vertebrates: Comparative Anatomy, Function, Evolution (4th edition), McGraw-Hill
12. Jordan, E. L. and Verma, P. S. (2013) Chordate Zoology (14th edition).
13. Saxena, R. K. and Saxena,S. (2015) Comparative Anatomy of Vertebrates (2nd edition).

E- Resources :

1. SWAYAM- https://swayam.gov.in/explorer?searchText=
2. https://academic.oup.com
3. https://medlineplus.gov
4. https://ncbi.nlm.nih.gov
5. https://zoologylearningpoint.wordpress.com
6. https://zoologyresources.com
7. National digital library – https://ndl.iitkgp.ac.in
8. e-PG Pathshala (MHRD) Portal https://epgp.inflibnet.ac.in
9. Science Direct Open Access Content – https://www.sciencedirect.com/book/9781483142038/ open – Access
10. https://egyankosh.ac.in

Part A: Introduction

Programme Certificate Course	Class: B.Sc. I Year	Year: 2022	Session: 2022-2023

1	Course Code	ZOOL-2T
2	Course Title	Cell Biology, Histology and Comparative Anatomy & Physiology of Chordates
3	Course Type	Theory
4	Pre-requisite (If any)	To study this course, a student must have/had the subject Biology in class 12th.
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able : • Understand the basic structure, functioning of the cell and cell organelles and understand the intricate cellular mechanisms involved. • Understand the tissues, how tissues are produced from cells in a normal course and about any malfunctioning which may lead to benign or malignant tumor. • Develop an understanding of the evolution of vertebrates thus integrating structure, function and development. • Understand the morphological, anatomical and physiological adaptation in diverse habitats. • 5. Develop an understanding of the evolution of vertebrates thus integrating structure, function and development.
6	Credit Value	Theory : 4
7	Total Marks	Max. Marks: 50 Min Passing Marks : 17

Part B: Content of the Course
Total Lectures: 60

Unit	Topics	No. of Lectures
I	**Prokaryotic and Eukaryotic cells :** General structure of prokaryotes, bacteria, archaea and eukaryotes. Ultra structure and function of endoplasmic reticulum, ribosomes, Golgi apparatus, lysosome, Mitochondria, nuclear apparatus. **Cell membrane and transport mechanism :** Structure, composition, models and function. Fluid mosaic model. Junctional complexes, membrane receptor modifications : microvilli, desmosomes and plasmodesmata.	12
II	**Cell cycle, cell signaling and cell culturing :** Cell cycle, cell division – mitosis and meiosis. Cell division check points and their regulation. Role of growth factors. Programmed cell death (Apoptosis). **Cell regulation and cell signaling :** Signaling molecules and their receptors. Functions of cell surface receptors. Regulation of signaling pathways. **Cell culture :** Types of cell culture – monolayer and suspension culture. Types of culture media. Basic characteristics of tissue culture media. Tissue culture and engineering.	12
III	**Structure and functional significance of animal tissues :** Introduction to tissues. Epithelial tissue: types, structure and characteristics. Exocrine and endocrine glands: type and structure. Structure and function of loose, dense and adipose tissue. Muscular tissue: Ultra structure of smooth, skeletal and cardiac muscles. Muscle contraction. Membranes of the brain and spinal cord.	11
IV	**Structure and function of integument, skeletal, digestive, circulatory system :** **Integument :** Structure of integument from fish to mammals. Function of integument. Epidermal and dermal derivatives of integument and their functional significance. **Skeletal system :** Comparative account of pelvic and pectoral girdles from fishes (cartilaginous and bony) to mammals. **Digestive system :** Dentition in mammals. Comparative study of alimentary canal and digestive glands from fish to mammal. Physiology of digestion in mammal.	13

	Circulatory system: Evolution of aortic arches and their significance. Structure and evolution of heart in vertebrates. Cardiac cycle. **Blood** : Composition and function.	
V	**Structure and function of circulatory, respiratory, excretory, reproductive and endocrine system :** **Respiratory system :** Aquatic and terrestrial respiration. Comparative anatomy of lungs in amphibian, reptile, bird and mammals. **Excretory system :** Physiology of excretion, urine formation. **Reproductive system :** Comparative details of testes and ovaries from fishes to mammals. Estrous and menstrual cycle. **Endocrine system :** Types and functional significance of endocrine glands and hormones.	12

Keywords: Tissue, Endocrine glands, Girdles, Cell signaling, Cell culture, Excretion, Circulatory system, Aortic arches, Heart, Reproductive cycle.

Part C - Learning Resource

Text Books, Reference Books, Other Resources -

1. Books of M. P. Hindi Granth Academy
2. Rastogi V. B. : Introduction to Cytology
3. Cell Biology and Molecular Biology : N. Arumugam
4. Cell Biology : N. Arumugam
5. Molecular Cell Biology : N. Arumugam
6. Cell Biology, Genetics, Molecular Biology and Evolution : Verma P. S., Agrawal V. K
7. Sheelar and Binachi : Cell and Molecular Biology
8. Karp : Cell and Molecular Biology
9. De Robertis : Cell and Molecular Bology
10. Powar C. B. : Cell Biology
11. A Textbook of Animal Histology : A. K. Berry, Emkey Publication, Delhi
12. A Textbook of Histology and Practical guide: J. P. Gunasegaran
13. Animal Cell Culture : R. Freshney
14. Animal Cell and Tissue Culture : Shivangi Mathur
15. Chordate Zoology : R. L. Kotpal & P. S. Verma
16. Modern Text Book of Zoology – Vertebrate : R. L. Kotpal
17. A Text Book of Chordates : A. Thangamani, N. Arumugam, Saras Puplication
18. Biology of Animals, Volume – II. Sinha, Adhikari, Ganguly
19. Comparative Anatomy of vertebrates, 2[nd] edition : R. K. Saxena, Sunita Saxena
20. Comparative Anatomy and Developmental Biology : Kotpal, Shastry and Shukla
21. Chordata and Comparative Anatomy : R. L. Kotpal
22. Chordate Zoology : Jordan E. L. and Verma P. S.
23. Anatomy of Chordates, 4[th] edition : Weichert C. K.
24. Comparative vertebrate Anatomy : L. H. Hymen

E-Resources –

1. SWAYAM - https://swayam.gov.in/explorer?searchText=
2. https://academic.oup.com
3. https://medlineplus.gov
4. https://ncbi.nlm.nih.gov
5. https://zoologylearningpoint.wordpress.com
6. https://zoologyresources.com
7. National digital library – https://ndl.iitkgp.ac.in
7. e-PG Pathshala (MHRD) Portal, https://epgp.inflibnet.ac.in
8. Science Direct Open Access Content - https://www.sciencedirect.com/book/9781843342038 open – Access
9. https://egyankosh.ac.in

UNIT–I

Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison test, Cauchy's integral test, Ratio test, Raabe's test, logarithmic test, De-Morgan and Bertrand's tests (without proofs). Alternating series. Leibnitz's theorem. Absolute and conditional convergence.

UNIT–II

Continuity of functions of one variable, sequential continuity. Properties of continuous functions. Uniform continuity. Chain rule of differentiability. Mean value theorems and their geometrical interpretations. Darboux's intermediate value theorem for derivatives.

UNIT–III

Limit and continuity of functions of two variables. Partial differentiation. Change of variables. Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. Jacobians.

UNIT–IV

Envelopes, Evolutes, Maxima, Minima and Saddle points of functions of two variables. Lagrange's multiplier method. Intermediate forms.

UNIT–V

Beta and Gamma functions. Double and triple integrals. Dirichlet's integrals, Change of order of integration in double integrals.

पाठ्यक्रम

यांत्रिकी

(MECHANICS)

बी. एस-सी. द्वितीय वर्ष (तृतीय प्रश्न-पत्र)

M.M. : 50

STATICS

Unit 1. Analytical conditions of equilibrium, Stable and unstable equilibrium, Virtual work, Catenary.

Unit 2. Forces in three dimensions, Poinsot's central axis, Null lines and planes.

DYNAMICS

Unit 3. Simple harmonic motion, Elastic strings, Velocities and accelerations along radial and transverse directions, Projectile, Central orbits.

Unit 4. Kepler's laws of motion, Velocities and acceleration in tangential and normal directions, Motion on smooth and rough plane curves.

Unit 5. Motion in a resisting medium, Motion of particles of varying mass, Motion of a particle in three dimensions, Acceleration in terms of different coordinate systems.

	(quarternian group), $GL(n, \mathbb{R})$ (general linear groups) and $SL(n, \mathbb{R})$ (special linear groups); Subgroups and examples, Cosets and their properties, Lagrange's theorem and its applications. Normal subgroups and their properties, Simple groups, Factors groups; Group homomorphisms and isomorphisms with properties; First, second and third isomorphism theorems for groups.	
III	**Cyclic and Permutation Groups:** Cyclic groups and properties; Classifications of subgroup of cyclic groups, Cauchy theorem for finite abelian groups; Centralizer, Normalizer, Center of a group, Product of two subgroups, Permutation group and properties, Even and odd permutations, Cayley's theorem	12
IV	**Row Echelon Form of Matrices and Applications:** Systems of linear equations, Row reduction and echelon forms, The rank of a matrix and its applications in solving system of linear equations; Matrix operations, Symmetric, skew- symmetric, self-adjoint, orthogonal, Hermition, skew-Hermition and unitary matrices; Determinant of a square matrix, The inverse of a square matrix, Eigen vectors and eigen values, The characteristic equation and the Cayley Hamilton theorem, Applications of matrices to computer graphics and search engines.	12
V	**Vector Spaces and Linear Transformations:** Definitions of field and vector space with examples, Subspaces, Linear span, Quotient space and direct sum, Linearly independent and dependent sets, Bases and dimension, Linear transformation and matrix of a linear transformation, Change of coordinates, Rank and nullity of linear transformation, Rank-nullity theorem.	12

Part C - Learning Resource

Text Books and Reference Books

1. Michael Artin *Algebra* (2nd edition). Pearson 2014.
2. John B. Fraleigh, *A First Course in Abstract Algebra* (7th edition). Pearson 2007.
3. Stephen H. Friedberg, Arnold J.Insel& Lawrence E. Spence. *Linear Algebra* (4th edition). Prentice-Hall of India Pvt. Ltd. 2003
4. Joseph A. Gallian. *Contemporary Abstract Algebra* (9th edition). Cengage 2017
5. Kenneth Hoffman & Ray Kunze. *Linear Algebra* (2nd edition). Prentice-Hall 2015

समाजशास्त्र

बी.ए. भाग – II

प्रश्न–पत्र– I

Maxi. Marks- 75

जनजाति का समाजशास्त्र

(Paper Code SO-107)

इकाई–1 **जनजाति** : अवधारणा, विशेषताएँ, जनजाति और अनुसूचित जनजातियां, जनजाति और जाति में अन्तर।

इकाई–2 **जनजातीय समुदाय का वर्गीकरण** : खाद्य संग्रहण एवं शिकारी, स्थानान्तरित कृषि, खानाबदोश स्थाई कृषक और कारीगर।

इकाई–3 **सामाजिक–सांस्कृतिक पृष्ठभूमि** : नातेदारी, विवाह, परिवार, धर्म, सांस्कृतिक आस्था और परम्परा।

इकाई–4 **सामाजिक संवेदीकरण**: जनजाति गतिशीलता, जनजाति विकास के योजना, विभिन्न जनजाति आन्दोलन।

इकाई–5 **छत्तीसगढ की विशेष पिछड़ी जनजातियॉं** : आबुझमाड़िया, पहाड़ी कोरवा, बिरहोर, कमार, बैगा, पण्डो और भुंजिया।

Recommended Books:

1 Vidyarthi, L.P. 1965. Cultural of Counters of Tribal Bihar, Punthi Pustak, Culcutta.
2 Bose, N.K. 1971. Tribal Life in India, National Book Trust, New Delhi.
3 Das, R.K. 1988. The Tribal Social Structure, Inter India Publications, New Delhi.
4 Dubey, S.C. 1977. Tribal Heritage of India, Ethnicity, Identity and Interation, Vol. 1, Vikash Publishing House, Delhi.
5 Elwin, Verrier. 1989. The Tribal World of Verrier Elwin: An Autobiography, Oxford, New Delhi.
6 Russell, R.V. and Hira Lal. 1916. The Tribes and Castes of Central Provience of India, Vol. 4, Cosmo Publications, New Delhi.

समाजशास्त्र

बी.ए. भाग – II

प्रश्न–पत्र– II

अपराध और समाज

Maxi. Marks- 75

(Paper Code SO-108)

इकाई–1 **अपराध की अवधारणा:** अर्थ, विशेषताएँ और प्रकार, अपराध के समप्रदाय –शास्त्रीय, समाजशास्त्रीय और मनोवैज्ञानिक।

इकाई–2 **अपराध की संरचना:** नियमहीन अपराधिता–आत्महत्या, संगठित अपराध, सफेदपोश अपराध और साइबर अपराध।

इकाई–3 **सामाजिक बुराईयाँ: अपराध** :मद्यपान, मादक द्रव्यव्यसन, दहेजप्रथा और भिक्षावृत्ति।

इकाई–4 **दण्ड** : अर्थ, विशेषताएँ, उद्देश्य, प्रकार और दण्ड के प्रमुख सिद्धान्त।

इकाई–5 **सुधारात्मक प्रकिया** : भारत में पुलिस और न्यायपालिका की भूमिका, भारत में जेल सुधार का विकास, आधुनिक सुधारात्मक अवधारणाएँ– प्रोबेशन, पैरोल और उत्तर–संरक्षण कार्यक्रम।

Recommended Books:

1 Mike & Maguire. (2007). The Oxford Hand Book of Criminology. London: Oxford University Press.

2 Haster, S. & Eglin, P. (1992). A Sociology of Crime. London: Routledge Publishers.

3 Mead, G.H. (1934). Mind Self and Society. Chicago University Press.

4 Gottfredson, Michael, R., Hirschi & Travis. (1990). A General Theory of Crime. London: Stanford University Press.

5 Sutherland & Edwin, H. (1924). Principles of Criminology. Chicago: Chicago University Press.

6 Sutherland, Edward, H. & White, C. (1949). Crime. New York, Holt, Rinehart: Winston Press, New York.

समाजशास्त्र
बी.ए. भाग– III

Maxi. Marks- 75

प्रश्न पत्र– I
समाजशास्त्रीय विचार
(Paper Code SO-109)

इकाई–I **अगस्ट कॉम्टे:** त्रिस्तरीय सिद्धांत, प्रत्यक्षीकरण, विज्ञान का स्तरिकरण,
दुर्खीम: सामाजिक एकता और आत्महत्या

इकाई–II **कार्ल मार्क्स:** द्वंद्वात्मक भौतिकवाद, वर्ग संघर्ष, अतिरिक्त मूल्य,
मैक्स वेबर: नौकरशाही, सत्ता तथा प्रोटेस्टेंट आचार, पूंजीवाद की आत्मा

इकाई–III **विश्लेषणात्मक परम्परा**–(अ) इरविन गोफमैन, (ब) क्लिफ्रेड गिट्ज

इकाई –IV**उत्तरआधुनिकता**–(अ) मिशेल फुको, (ब) यूगेन हेबर मास

इकाई – V **भारत में समाजशास्त्रीय चिंतन का विकास:**
महात्मा गांधी: अहिंसा, सत्याग्रह और संरक्षकता।
राधाकमल मुखर्जी: मूल्य की अवधारणा।

Recommended Books:

1 Barres, H.E. : Introduction to the sociology, Chicago the university of Chicago press 1959.
2 Coser,Levis a.,: Master of sociological thought, New York Harcourt Brace Jovanovich 1979.
3 Singh, Yogendra- Indian sociology:social conditioning and emerging trends. New Delhi vistaar 1986.
4 Zeitlin,Irving-(Indian edition) Rethinking sociology: A critigue of contemporary theory . Jorpur Rawl 1999.

समाजशास्त्र

बी.ए. भाग – III

प्रश्न–पत्र– II

सामाजिक अनुसंधान की विधियाँ

Maxi. Marks- 75

(Paper Code SO-110)

इकाई–1 **सामाजिक अनुसंधान** : अर्थ, विशेषताएँ और महत्व, वैज्ञानिक पद्धति, उपकल्पना।

इकाई–2 **गुणात्मक अनुसंधानः** नृजातीय विज्ञान, अवलोकन, वैयक्तिक अध्ययन, अन्तर्वस्तु विश्लेषण।

इकाई–3 **अनुसंधान प्ररचना** : गणवेषनात्मक, व्याख्यात्मक, विवरणात्मक, प्रयोगात्मक एव निदानात्मक।

इकाई–4 **सामाजिक अनुसंधान की तकनीक और उपकरण** : सामाजिक सर्वेक्षण, निदर्शन, प्रश्नावली, साक्षात्कार–अनुसूची, साक्षात्कार निर्देशिका।

इकाई–5 **सामाजिक सांख्यिकी** : अर्थ, महत्व एवं सीमाये, ग्राफ, चित्र और केन्द्रीय प्रवृत्तियों की माप, माध्य, माध्यिका, बहुलक, सह–संबंध, सामाजिक अनुसंधान में कम्प्यूटर का प्रयोग।

Recommended Books:

1. Young, P.V. (1977). Scientific Social Surveys and Research. Prentice Hall of India New Delhi.
2. Bruce, C., & Margaret, M. (1993) Approaches to Social Research. New York: Oxford University press.
3. Cohen, M.,& Nagel, E. (1994). An Introduction to Logi and Scientific Methods. New York: Harcourt, Brace & Company.
4. Forcese, D. & Richer, S.(1973). Social Research Methods. Cliffs: Englewood. Cliffs. NJ. Prentice Hall.
5. Moser, C.A. (1962). Survey Methods in Social Research Investigation. London: Heinemann Prentice Hall.
6. Goode, & Hatt. (1952). Methods in Social Research. New York: MC'graw hill Publishers.

इकाई - चार (क) योग की शक्ति : **हरिवंश राय बच्चन**

(ख) **अनुवाद** : स्वरूप एवं परिभाषा, उद्देश्य
स्त्रोत भाषा और लक्ष्य भाषा
अच्छे अनुवाद की विशेषताएँ
अनुवाद प्रक्रिया, अनुवादक

इकाई - पाँच (क) संस्कृति और राष्ट्रीय एकीकरण : **योगेश अटल**

(ख) घटनाओं समारोहों आदि का प्रतिवेदन,
विभिन्न प्रकार के निमंत्रण पत्र

मूल्यांकन योजना : प्रत्येक इकाई से एक-एक प्रश्न पूछा जाएगा। प्रत्येक प्रश्न में आंतरिक विकल्प होगा। प्रत्येक प्रश्न के 15 अंक होगे। इसलिए प्रत्येक प्रश्न के दो भाग 'क' और 'ख' होंगे एवं अंक क्रमशः 8 एवं 7 अंक होंगे। प्रश्नपत्र का पूर्णांक 75 निर्धारित है।

पाठ्यक्रम

आधार पाठ्यक्रम (भाग - 2)

हिन्दी भाषा (प्रथम प्रश्न-पत्र)

पूर्णांक - 75

पाठ्य विषय -

खण्ड (क) निम्नलिखित 5 लेखकों के पाठ शामिल होंगे - अंक-35

1. महात्मा गांधी - चोरी और प्रायश्चित्त
2. आचार्य नरेन्द्र देव - युवकों का समाज में स्थान
3. वासुदेव शरण अग्रवाल - मातृभूमि
4. हरि ठाकुर - डॉ. खूबचंद बघेल
5. पं. माधवराव सप्रे - सम्भाषण-कुशलता

खण्ड (ख) हिन्दी भाषा और उसके विविध रूप अंक-16

1. कार्यालयीन भाषा
2. मीडिया की भाषा
3. वित्त एवं वाणिज्य की भाषा
4. मशीनी भाषा

खण्ड (ग) हिन्दी की व्याकरणिक कोटियाँ अंक-24

संज्ञा, सर्वनाम, विश्लेषण, क्रिया विशेषण

समास, संधि एवं संक्षिप्तियाँ

अनुवाद व्यवहार : अंग्रेजी से हिन्दी में अनुवाद

इकाई विभाजन:

इकाई -1 चोरी और प्रायश्चित : महात्मा गांधी/कार्यालयीन भाषा, मीडिया की भाषा

इकाई -2 युवकों का समाज में स्थान : आचार्य नरेन्द्र देव/वित्त एवं वाणिज्य की भाषा, मशीनी भाषा

इकाई -3 मातृभूमि : वासुदेवशरण अग्रवाल/संज्ञा सर्वनाम, विशेषण, क्रियाविशेषण

इकाई -4 डॉ. खूबचंद बघेल : हरि ठाकुर/समास, संधि

इकाई -5 सम्भाषण कुशलता : पं. माधवराव सप्रे/अनुवाद-अंग्रेजी से हिन्दी में अनुवाद, संक्षिप्तियाँ

पाठ्यक्रम

आधार पाठ्यक्रम (भाग - 3)

हिन्दी भाषा (प्रथम प्रश्न-पत्र)

पूर्णांक - 75

पाठ्य विषय -

इकाई - एक (क) भारत माता : सुमित्रानंदन पंत

(ख) कथन की शैलियाँ

1. विवरणात्मक शैली
2. मूल्यांकन शैली
3. व्याख्यात्मक शैली
4. विचारात्मक शैली

इकाई - दो (क) सूखी डाली : उपेन्द्रनाथ अश्क

(ख) विभिन्न संरचनाएँ

1. विनम्रता सूचक संरचना
2. विधि सूचक संरचना
3. निषेध परम संरचना
4. काल-बोधक संरचना
5. स्थान-बोधक संरचना
6. दिशा बोधक संरचना
7. कार्य-कारण सम्बन्ध संरचना
8. अनुक्रम संरचना

इकाई - तीन (क) वसीयत : मालती जोशी

(ख) कार्यालयीन पत्र और आरेख

1. परिपत्र
2. आदेश
3. अधिसूचना
4. ज्ञापन
5. अनुस्मारक
6. पृष्ठांकन

इकाई 1

राजनीति विज्ञान का अर्थ परिभाषाएं - परम्परिक एवं आधुनिक अध्ययन का महत्व । संप्रभुता अर्थ विशेषताएं प्रकार विधाता- अवधारणा शक्ति सत्ता एवं वैधता का सम्बन्ध । राजनीति विज्ञान की अध्ययन पद्धतियां परम्परागत एवं आधुनिक । व्यवहारवाद एवं उत्तर व्यवहारवाद ।

Unit 1

Meaning definitions of political science - traditional and modern importance of the study of political science Power, Authority - meaning, characteristics types Legitimacy - concept, relationship of power, authority and legitimacy Study methods of political science Traditional and modern, Behaviouralism and post-behaviouralism

इकाई 2

राज्य अवधारणा, राज्य का विकास, आवश्यक तत्व । राज्योत्पति के विभिन्न सिद्धान्त, राज्य के सिद्धान्त मार्क्सवादी सिद्धान्त उदारवादी, नव उदारवादी बहुलवादी, नारीवादी,। राज्य की भूमिका - लोक कल्याणकारी राज्य ।

Unit 2

State Concept, Development of State Essential Elements Various theories of state origin, Theories of state, Marxist, liberal, neo-liberal, pluralist, feminist. Role of the state - Public welfare state.

इकाई 3

सम्प्रभुता अर्थ,परिभाषा,विशेषताएं , सम्प्रभुता के सिद्धान्त एकतवादी एव बहुतवादी । बहुलवाद - अर्थ विशेषताएं । अधिकार अर्थ,प्रकार, सिद्धान्त । कर्तव्य । स्वतन्त्रता : अर्थ प्रकार, स्वतत्रता का सकारात्मक एवं नकारात्मक सिद्धान्त । समानता अर्थ,प्रकार एवं स्वतन्त्रता से सम्बंध । प्रजातन्त्र अर्थ परिभाषाएं प्रजातंत्र के सिद्धान्त ,सफलता के लिए आवश्यक दशाएं,। प्रजातंत्र के समक्ष प्रमुख चुनौतियां । गुण-दोष । प्रत्यक्ष प्रजातन्त्र ।

Unit 3

Sovereignty: Meaning, Definition, Characteristics, Principles of Sovereignty: Legal or Monistic and Pluralist. Pluralism : Meaning ,Features Rights : Meaning, types major Theories, Duties Freedom: Meaning Types, Positive and Negative Theory of Freedom. Equality Meaning type and relation to freedom. Democracy : Meaning definitions Principles of democracy Necessary conditions for the success of Democracy Major challenges before democracy. Merits and demerits Direct democracy.

इकाई 4

शासन के प्रकार: लोकतन्त्रात्मक व सर्वाधिकारवादी संसदीय व अध्यक्षात्मक, तानाशाही। शासन के अंग कार्यपालिका, व्यवस्थापिका न्यायपालिका शक्ति पृथक्करण का सिद्धान्त व नियंत्रण संतुलन का सिद्धान्त। संविधान अर्थ एवं प्रकार संविधानिकता के सिद्धान्त एवं निर्वाचन प्रणालियां। फासीवाद, सर्वसत्तावाद।

Unit 4

Forms of Government: Unitary and Federal, Parliamentary and Presidential, Dictatorship. Organs of Government: Legislature, Executive and Judiciary. Theory of Separation of Powers and Checks and Balances. Constitution: meaning and kinds. Theories of representation and Electoral Process. Fascism, Totalitarianism.

इकाई 5

लोककल्याणकारी राज्य। दल पद्धति अर्थ प्रकार, प्रमुख सिद्धान्त, गुण दोष। दबाव समूह अर्थ प्रकार तकनीक। सामाजिक परिवर्तन अर्थ, विशेषताएं प्रमुख सिद्धान्त। नारीवाद - अवधारणा, प्रमुख दृष्टिकोण। राष्ट्रवाद : अवधारणा, प्रमुख आयाम।

Unit 5

Public Welfare State. Party System: meaning, kinds, major theories, merits and demerits. Pressure Groups: meaning, kinds and technique. Social Change: meaning, characteristics, theories. Feminis. Concept, main approaches to feminism. Nationalism: concept, major dimensions.

Suggested readings

1. M.P. Jain (1985) Political Theory, Liberal and Marxian. Authors Guild Publications, Delhi.

2. S.P. Verma (1992) Modern Political Theory. Vikas Publishing House, Pvt. Ltd., New Delhi.

3. R.C. Vermani (1997) An Introduction to Political Theory. Gitanjali Publishing House, New Delhi.

4. Rajeev Bhargava and Ashok Acharya (eds) (2017) Political Theory: An Introduction. Peerson, New Delhi.

5. C. McKinnon (ed.) (2008) Issues in Political Theory Oxford University Press, New York.

6. A. Swift (2001) Political Philosophy: A Beginners Guide for Students and Politicians. Cambridge Press.

7. R. Dahl, I. Shapiro and A.J.Cheibub (eds.) (2003) The Democracy SourceBook. MassaChusetts. MIT Press, Cambridge.

8. O.P. Gauba (2014) An Introduction to Political Theory. MacMillan Publishers, Delhi.

9. Andrew Heywood (2015) Political Theory: An Introduction. Palgrave Macmillan, London.

(j) Andrew Vincent (2016) Contemporary Political Theory, Palgrave Macmillan, London

(k) David Held (ed.) (1991) Political Theory Today, Stanford University Press

(l) Sushila Ramaswamy (2018) Political Theory, Ideas & Concepts, PHI Learning Private Limited, Delhi

(m) Adi H. Doctor (1985) Issues in Political Theory, Sterling Publishers Pvt. Ltd. New Delhi

(n) A. C. Kapoor (2009) Principles of Political Science, S. Chand Publishing, Delhi.

(o) Eddy Asirvatham & K.K. Mishra (2010) Political Theory, S. Chand Publishing Delhi

(p) Vidya Dhar Mahajan (2013) Political Theory (Principles of Political Science), S. Chand Publishing, Delhi.

आशीर्वादम (1985) : राजनीतिक सिद्धांत - एस चन्द एण्ड कम्पनी । नई दिल्ली ।

अवधेश पंत हरिमोहन जैन मदन गोपाल (1985) : राजनीतिक सिद्धांत - । सेन्ट्रल पब्लिशिंग हाउस। इलाहाबाद । उ.प्र.

शकील हुसैन (2018) : राजनीतिक सिद्धांत : अवधारणात्मक परिचय । छ.ग. राज्य हिन्दी ग्रन्थ अकादमी , रायपुर, छ. ग

https://youtu.be/c05qcwF3_Mk

Note: Students may consult online Research Articles from JSTOR, swayam, mooc google scholar, google website and other related online websites.

बी. ए. प्रथम प्रश्न पत्र द्वितीय B. A. FIRST PAPER 2nd पूर्णांक 75

भारतीय शासन एवं राजनीति
Indian Government and Politics

COURSE OUTCOMES

Proposed course acquaints the students with values and the struggle of national movement . Explains constitutional development as backdrop of Indian constitution . This course makes students familiar with knowledge and execution of the Indian constitution and political system .

COURSE SPECIFIC OUTCOMES	
After completion of the course, the student shall have a fair idea about	
CSO 1	The values and importance of freedom struggle and constitutional development in the making of Indian constitution and evolution of our democratic system and substantive democracy

केंद्र राज्य संबंध: विधायी, वित्तीय एवं प्रशासकीय। संघ एवं राज्य लोक सेवा आयोग। भारतीय राजनीति के प्रमुख मुद्दे जाति, धर्म, धर्मनिरपेक्षता। पंचायती राज व्यवस्था।

Unit 5:

Center State Relations: Legislative, Financial, Administrative Comptroller and Auditor General. Union and State Public Service Commission. Major issues of Indian politics: Caste, religion, Panchayati Raj system, secularism.

Suggested Readings

1. Rajni Kothari (2011) Politics in India, Orient Black Swan, New Delhi.
2. Raja Kothari (2013) Caste in Indian Politics (Revised Edition) Orient Black Swan, New Delhi.
3. Bipan Chandra (2000) India after Independence, Penguin Books, New Delhi
4. Bipan Chandra, Mridula Mukherjee and Aditya Mukherjee (2007) India Since Independence, Penguin Books New Delhi
5. J.C. Johari (1981) Indian Politics, Vishal Publication, New Delhi
6. Prakash Chander (1985) Indian Government and Politics: A Study of Indian Political System, Book hive Publications, New Delhi
7. A.S. Narang (2013) Indian Government & Politics, Gitanjali Publishing House, New Delhi
8. Bidyut Chakrabarty and Rajendra Kumar Pandey (2008) Indian Government and Politics, Sage Publications, New Delhi.
9. Durga Das Basu (2015) Introduction to the Constitution of India, Lexis Nexus, Gurgaon
10. M. Lakshmi Kant (2017) Indian Polity, McGraw Hill Education (India) Private Limited, Chennai
11. B.L. Fadia, (2013) Indian Government and Politics, Sahitya Bhawan, Agra
12. Subhash C. Kashyap, (1989) Our Parliament, National Book Trust India, New Delhi
13. Subhash C. Kashyap, (1994) Our Constitution–An Introduction to India's Constitution and Constitutional Law, National Bouk Trust India, New Delhi
14. W.H. Morris-Jones, (1989) The Government and Politics of India, Universal Book Stall New Delhi.
15. Granville Austin (1999) Indian Constitution: CornerStone of a Nation, Oxford University Press, New Delhi.
16. Granville Austin (2004) Working a Democratic Constitution: A History of the Indian Experience, Oxford University Press, New Delhi
17. M.V. Pylee (1995) An Introduction to the Constitution of India, Vikas Publishing House, New Delhi.
18. Robert L. Hardgrave (2008) India: Government and Politics in a Developing Nation, Thomson Higher Education, USA.
19. Andre Beteille (1968) Caste, Class and Power, Oxford University Press, New Delhi

CSO 2	The basic features , fundamental rights , directive principles of state and amendments process of the constitution
CSO 3	The constitutional provisions and functioning of the union executive and legislature
CSO 4	The constitutional plan of the Judicial system of the country and state executive
CSO 5	State legislature to the election commission of India, electoral democratic processes like caste-politics interaction , communalism etc

इकाई 1

असहयोग आन्दोलन, सविनय अवज्ञा आन्दोलन, भारत छोड़ो आन्दोलन। भारत का संविधानिक विकास , 1909 1919 और 1935 का अधिनियम ।

Unit 1

Non-cooperation Movement, Civil Disobedience Movement, Quit India Movement. Constitutional Development of India Acts of 1909, 1919 and 1935.

इकाई 2

भारतीय संविधान , प्रस्तावना, विशेषताएं, स्रोत, । मौलिक अधिकार, मूल कर्तव्य, नीति निर्देशक तत्व । संविधान संशोधन प्रक्रिया ।

Unit 2:

Constitution of India 'Preamble, features, Sources, Schedules,citizenship Fundamental Rights and Duties, Directive Principles of State Policy, Constitution Amendment Process.

इकाई 3

राष्ट्रपति, उपराष्ट्रपति , मन्त्रिपरिषद् और प्रधानमन्त्री । संसद - लोकसभा और राज्यसभा । सर्वोच्च न्यायालय संगठन कार्य अधिकार , न्यायिक पुरावलोकन । नियंत्रक एवं महालेखा परीक्षक । निर्वाचन आयोग ।

Unit 3:

President, Vice President, Council of Ministers and Prime Minister. Federal Parliament Lok Sabha and Rajya Sabha. Supreme court - Organization Functions, Powers, Judicial Review, Judicial Activism. Election, comptroller and auditor general

इकाई 4

राज्य विधायिका, राज्यपाल मन्त्रिपरिषद् और मुख्यमन्त्री । राज्य उच्च न्यायालय - संगठन , कार्य अधिकार ।

Unit 4:

Legislature, Executive: Governor, Council of Ministers and Chief Minister. State High Court - Organization , Functions, Rights

इकाई 5:

3- **second year students** shall have

- Paper 1st :- Political thought राजनीतिक चिन्तन
- Papet 2nd - Comparative government and politics भारतीय शासन एवं राजनीति तुलनात्मक

4- **Third year** students shall have

- Paper 1st :- International Politics and foreign policy of India अन्तर्राष्ट्रीय राजनीति एवं भारत की विदेश नीति
- Papet 2nd - Public Administration लोक प्रशासन

बी. ए. प्रथम, प्रश्न पत्र प्रथम B. A. First Paper 1st पूर्णांक-75

राजनीतिक सिद्धान्त Political Theory

COURSE OUTCOMES

Theory is the starting point of any social sciences that is why political theory is almost universal in BA part one syllabus of political science Therefore it is pertinent to make students acquainted with proposed course to the students with fundamental theories of political science Basic Knowledge of important concepts such as Liberty, Justice, Citizenship, Representation, rule of law Role of political theory to understand political science and political life as well

	COURSE SPECIFIC OUTCOMES After completion of the course, the student shall have a fair idea about
CSO 1	The meaning of nature and scope and scientific instinct of political science
CSO 2	The state as a core concept of political science Its evolution theories and relation with individuals
CSO 3	The role of liberty and the question of equality in democracy Evolution of democracy and its theories
CSO 4	The concept of constitution, separation of powers and theory of representation
CSO 5	The functional machinery of electoral democracy like political party system and pressure groups. Role of State as welfare agency , and as an agency of social change

Political philosophy is the base of political science. All concepts, discourse and ideologies come from the classics of political masters from Socrates to Marx and recent times. Therefore the purpose of this course is to acquaint the students with the political philosophers and their political thoughts.

COURSE SPECIFIC OUTCOMES After completion of the course, the student shall have a fair idea about	
CSO 1	The ancient political philosophy given by founding fathers of political thought the great Plato and Aristotle
CSO 2	The Emergence of nation state and sovereignty in the philosophy of machiavelli and hobbes . Emergence of individualism and liberalism in Hobbes and John Lock's philosophy. General will and Social contract theory of Rousseau
CSO 3	The emergence of utilitarianism , Idealism and Individualism Through their respective philosophers. Negative and positive liberty of Mill and Green ,idealism of Green.
CSO 4	The different ideologies of political philosuphy in detail
CSO 5	The political philosophy of ancient India and modern Indian thinkers.

इकाई 1

सुकरात - सद्गुण ही ज्ञान है । प्लेटो आदर्श राज्य न्याय, शिक्षा, साम्यवाद, दार्शनिक शासक।
अरस्तू परिवार एवं संपत्ति राज्य, दासप्रथा नागरिकता क्रान्ति ।

Unit 1:

Socrates - virtue is knowledge. Plato: Ideal State : Justice, Education, Communism, and Philosopher King.

Aristotle: State, Family , property, Slavery, Citizenship, and Revolution.

इकाई 2

मैकियावेली युग शिशु के रूप में । धर्म व नैतिकता, राजा के कर्तव्य और आचरण ।
थामस हॉब्स :सामाजिक समझौता सिद्धान्त , सम्प्रभुता तथा हॉब्स का व्यक्तिवाद ।
जान लॉक : लॉक उदारवाद के जनक के रूप में, सामाजिक समझौता सिद्धान्त ।
जीन जैक्स रुसो : सामाजिक समझौता सिद्धान्त, सामान्य इच्छा ।
जीन बोदां : सम्प्रभुता सिद्धान्त ।

Unit 2:

Machiavelli : as Child of his times , religion and morality , the duties and conduct of the King
Thomas Hobbes :Sovereignty, Theory of Social Contract sovereignty, and Hobbes's Individualism John Locke : Locke as the father of liberalism, theory of social contract
Jean-Jacques Rousseau: Theory of Social Contract and General Will
Jean Bodin: The Theory of Sovereignty

इकाई 3

जेरेमी बेंथम : उपयोगितावाद । जान स्टुअर्ट मिल उपयोगितावाद में संशोधन, स्वतन्त्रता और प्रतिनिधि शासन ।
टी एच ग्रीन : राज्य सम्बन्धी विचार ।
कार्ल मार्क्स : राजनीतिक चिन्तन । एण्टोनियो ग्राम्शी, - प्रभुत्व , बुद्धिजीवियों की भूमिका ।
हन्नाह अरेण्ट - सर्वाधिकारवाद , बहुलवाद एवं नागरिक असहयोग ।

Unit 3:

Jeremy Bentham : Utilitarianism, J.S.Mill: Amendment in Utilitarianism, Liberty and Representative Government.
T H.Green: Idea of State.
Karl Marx: Political thought
Antonio Gramsci:- Hegemony, role of intellectuals.
Hannah arendt- Totalitarianism, Plurality and civil disobedience .

इकाई 4:

आदर्शवाद, व्यक्तिवाद, उदारवाद, समाजवाद, फासीवाद विशेषताएं और आलोचना ।

Unit 4:

Idealism, Individualism, Liberalism, Socialism, Fascism: Features and Criticism.

इकाई 5:

मनु और कौटिल्य : सप्तांग सिद्धान्त, राजा और राजपद, प्रशासकीय व्यवस्था, राज्यमण्डल ।

गांधी सत्य, अहिंसा, सत्याग्रह एवं राजनीतिक विचार । अम्बेडकर राजनीतिक एवं सामाजिक विचार । दीनदयाल उपाध्याय एकात्ममानववाद ।
श्री अरविन्दो- राजनीतिक एवं आध्यात्मिक स्वतन्त्रता ।
मानवेन्द्र नाथ राय - नव मानववाद एवं अंतर्राष्ट्रीयतावाद ।

Unit 5:

Manu and Kautilya: Saptanga Theory, King and Kingship, Administrative System, Rajyamandal.

02/06/2023

Gandhi- Truth, Non violence, Satyagrah and Political thoughts
Ambedkar- Political and Social thoughts
Deen Dayal Upadhyay- Ekatmd Manav Vad
Shri Aurobindo- Political and spiritual freedom
M.N. Roy- New humanism and internationalism

Suggested readings

1. Shefali Jha, Western Political Thought: from Plato to Marx, Pearson, Delhi, 2010
2. M.P. Singh and Himanshu Roy (eds), Indian Political Thought: Themes and Thinkers,Pearson, Delhi, 2011
3. J. W. Allen, A History of Political Thought in the Sixteenth Century, London, Methuen, 1957
4. Ashcraft,Allen and Unwin, 1986. Revolutionary Politics and Locke's Two Treatises of Government, London.
5. Avineri, The Social and Political Thought of K. Marx, S. Chand and Co. New Delhi, 1979
6. Sir E. Barker, The Political Thought of Plato and Aristotle, Dover Publications, New York,1959.
7. R. N. Berki, The History of Political Thought: A Short Introduction, Dent, London, 1977.
8. Sir I. Berlin, The Hedgehog and the Fox, Weidenfeld and Nicolson, London, 1953
9. W. H. Bluhm, Theories of Political System: Classics of Political Thought and Modern Political Analysis, Englewood Cliffs NJ, Prentice Hall, 1965.
10. J. Bowle, Western Political Thought: A Historical Introduction from the Origins to Rousseau, Jonathan Cape, London, 1947.
11. Brinton, English Political Thought in the Nineteenth Century, Allen Lane, London, 1933.
12. J. Bronowski and B. Mazlish, Western Intellectual Tradition, Hammondsport, Penguins, 1960.
13. G. H. Sabine, History of Political Theory, 4th edition, revised by T.L. Thorson, New Delhi, Oxford and IBH,1973.
14. Saxon House, Women in the History of Political Thought: Ancient Greece to Machiavelli,Praegar, New York, 1985.
15. M. L. Shanley, and C. Pateman, Feminist Interpretation and Political Theory, Polity, Cambridge, 1991.
16. M. Q. Sibley, Political Ideas and Ideologies, Surjeet Publications, New Delhi, 1981.
17. T. A. Sinclair, A History of Greek Political Thought, Routledge, London, 1951
18. Q. Skinner, The Foundations of Modern Political Thought, 2 Volumes, Cambridge University Press, Cambridge, 1990.
19. S. B. Smith, Hegel's Critique of Liberalism, University of Chicago Press, Chicago, 1989
20. Sir L. Stephen, History of English Thought in the 18th Century, 2 Vols., London School of Economics and Political Science, London, 1902.
21. L. Strauss, The Political Philosophy of Hobbes: Its Basis and Genesis, The Clarendon Press, Oxford, 1936.
22. J. L. Talmon, The Origins of Totalitarian Democracy and Political Messianism: The Romantic Phase, Secker and Warburg, London, 1960.
23. T. L. Thorson, Plato: Totalitarian or Democrat, Prentice Hall, Englewood Cliffs NJ, 1963.

24. J. Tully. A Discourse on Property: John Locke and his Adversaries. Cambridge University Press, Cambridge. 1980
25. E. Vaughan. Studies in the History of Political Philosophy before and after Rousseau. University of Manchester Press, Manchester UK. 1925.
26. H. Warrender. The Political Philosophy of Hobbes: His Theory of Obligation. The Clarendon Press, Oxford. 1957
27. J. G. A Pocock. The Machiavellian Moment: Florentine Republican Thought and the Atlantic Republican Tradition. Princeton University Press, Princeton NJ. 1971
जार्ज एच सैबाइन (1987) राजनीतिक दर्शन का इतिहास एस चन्द एड कंपनी नई दिल्ली
हरिदत्त विद्यालंकार (1986) आधुनिक राजनीतिक चिंतन रज़न प्रकाशन गृह नई दिल्ली ।
जैपी मुद (1987) आधुनिक राजनीतिक विचारों का इतिहास खड 1,2,3,4 के. नाथ एड कंपनी मेरठ।
डी ए डनिंग (1978) : राजनीतिक सिद्धांत का इतिहास, सेंट्रल बुक डिपो इलाहाबाद उत्तर प्रदेश ।
4- डी. पी. वर्मा (1978) आधुनिक भारतीय राजनीतिक चिन्तन - लक्ष्मीनारायण अग्रवाल एड कंपनी आगरा उत्तर प्रदेश ।

B.A द्वितीय वर्ष

B.A. SECOND PAPER 2nd बी. ए. द्वितीय प्रश्न पत्र द्वितीय

तुलनात्मक शासन एवं राजनीति Comparative Government and Politics पूर्णांक-75

COURSE OUTCOMES

This course make focus on

1- Emergence of scientific and empirical study in the late 19th and early 20th century in political science .
2- Contribution of David Easton and Almond for developing new approaches and theories like system approach .
3- Different types of governance and their comparative study . USA as the presidential form of government,the UK as the parliamentary form, Switzerland as the plural form and China as the totalitarian form of government.

COURSE SPECIFIC OUTCOMES	
After completion of the course, the student shall have a fair idea about	
CSO 1	The basic knowledge of scientific and interdisciplinary study advocated by David Easton and his colleagues. Behavioural revolution and system approach.

CSO 2	The basic features and evolution of Comparative politics
CSO 3	The comparative study of Legislature of USA Britain Switzerland and China
CSO 4	The comparative study of Executive of the USA Britain Switzerland and China
CSO 5	The comparative study of judiciary of USA Britain Switzerland and China

इकाई 1

तुलनात्मक राजनीति: अर्थ, परिभाषा प्रमुख अध्ययन पद्धतिया , राजनीतिक अर्थशास्त्रीय एव राजनीतिक समाज शास्त्रीय एप्रोचेस । । व्यवस्था सिद्धान्त और डेविड ईस्टन का आगत- निर्गत सिद्धान्त . आमण्ड का संरचनात्मक-कार्यात्मक सिद्धान्त । राजनीतिक विकास, राजनीतिक समाजीकरण, राजनीतिक आधुनिकीकरण राजनीतिक संस्कृति की अवधारणा ।

Unit 1

Comparative Politics: Meaning, Definition Major Study Methods, Political Economics and Political Sociological Approaches. System theory and David Easton's input-output theory. Almond's structural-functional theory. Political development, political socialization, political modernization Concept of political culture.

इकाई 2 :

संविधानवाद -अवधारणा, तत्व, विशेषताए ,
संविधानवाद का पश्चिमी या उदारवादी, मार्क्सवादी सिद्धान्त, समस्याएं और सीमाएं। राजनीतिक अभिजन , राजनीतिक संचार, राजनीतिक सहभागिता, सह अस्तित्व और बहुसंस्कृतिवाद ।

Unit 2

Constitutionalism – Concept, Elements, Characteristics; Western or liberal Marxist theory of constitutionalism, problems and limitations. Political elite, political communication, political participation, coexistence and multiculturalism.

इकाई 3

तुलनात्मक अध्ययन व्यवस्थापिका - ब्रिटेन, संयुक्त राज्य अमेरिका स्विट्जरलैंड एवं चीन की व्यवस्थापिका एवं दल प्रणाली का तुलनात्मक अध्ययन ।

Unit 3

Comparative Study: Legislature - Comparative study of the legislature and party system of Britain, USA, Switzerland and China.

इकाई 4

तुलनात्मक अध्ययन : कार्यपालिका- ब्रिटेन, संयुक्त राज्य अमेरिका स्विट्जरलैंड एवं चीन की कार्यपालिका एवं नौकरशाही का तुलनात्मक अध्ययन ।

Unit 4

Comparative study: Executive - Comparative study of executive and bureaucracy of Britain, USA, Switzerland and China.

इकाई 5

तुलनात्मक अध्ययन : न्यायपालिका - ब्रिटेन, संयुक्त राज्य अमेरिका स्विट्जरलैंड एवं चीन की न्यायपालिका ।
संयुक्त राज्य अमेरिका में शक्ति पृथक्करण एवं शक्ति संतुलन का सिद्धान्त ।
ब्रिटेन के संविधान में अभिसमयों की भूमिका ।
स्विट्जरलैंड में प्रत्यक्ष प्रजातंत्र और केंटन प्रणाली । चीन की राजनीति में सेना और साम्यवादी दल की भूमिका ।

Unit 5

Comparative Study: Judiciary – Judiciary of Britain, USA, Switzerland and China.
Theory of Separation of Power and Balance of Power in the United States of America.
The role of conventions in the British Constitution.
Direct democracy and canton system in Switzerland. Role of the military and communist party in Chinese politics.

Suggested readings :

1. S.N. Ray, Modern Comparative Politics, PHI Learning Pvt. Ltd., Delhi, 2009
2. G.A. Almond and J.S. Coleman, The Politics of the Developing Areas, Princeton NJ, Princeton University Press, 1960.
3. G.A. Almond, and S. Verba, The Civic Culture: Political Attitudes and Democracy in Five Nations, Princeton NJ, Princeton University Press, 1963.
4. G.A. Almond, Comparative Politics Today: A World View, 7th edn., New York, London, Harper/Collins, 2000.

20. Paul R. Brass (1990) Politics of India Since Independence, Cambridge University Press, Cambridge
21. Atul Kohli (1990) Democracy and Discontent: India's Growing Crisis of Governability, Cambridge
University Press, Cambridge
22. Achin Vinayak (1990) Painful Transition: Bourgeois Democracy in India, Verso Books, London, New York
23. Christophe Jaffrelot (2010) Religion, Caste and Politics in India, Primus Books, Delhi
24. Pratima Asthana (1974) Women's Movement in India, Vikas Publishing House, Delhi
25. Neera Desai (ed.), (1977) Women in India, Vora Publishers, Bombay.
26. Ghanshyam Shah (1990) Social Movements in India: A Review of Literature, Sage Publications, New
Delhi.
27. D N Dhanagare (1983) Peasant Movement in India 1920-50, Oxford University Press, New Delhi.
28. Vipan Chandra (1992) Communalism in Modern India, Vikas Publishing House, New Delhi
29. Lloyd I. Rudolph and Susanne Hoeber Rudolph (1987) In Pursuit of Lakshmi: Political Economy of the
Indian States, Orient Longman, Bombay
30. Zoya Hassan (2004) Parties and Party Politics in India: Themes in Politics, Oxford University Press,
New Delhi.
31. Rekha Diwakar (2018) Party System in India (Oxford India Short Introduction Series), Oxford
University Press, New Delhi
32. Madhav Khosla (1981) The Indian Constitution, Oxford University Press, New Delhi.
Note: Student may consult online Research Articles from JS
33-आर.सी अग्रवाल (1985) : राष्ट्रीय आंदोलन एव संवैधानिक विकास , एस चन्द एण्ड कम्पनी , नई दिल्ली
।
34- डॉडी बसु भारत (1986) भारतीय संविधान एक परिचय, प्रेन्टिस हाल, नई दिल्ली ।
35- एम सत्य राय (1983) भारत मे राष्ट्रवाद, हिंदी माध्यम कार्यान्वयन निदेशालय दिल्ली विश्वविद्यालय।
36- सुभाष कश्यप (1996) : हमारा संविधान, नेशनल बुक ट्रस्ट नई दिल्ली
37- शकील हुसैन (2021) भारतीय संविधान एक परिचय, शिक्षादूत प्रकाशन नई दिल्ली ।
38- राकेश डेंगवे (2018) : भारतीयशासन और राजनीति - छ ग. राज्य हिन्दी ग्रन्थ अकादमी , रायपुर ।

B.A द्वितीय वर्ष

B.A. SECOND PAPER 1st बी. ए. द्वितीय प्रश्न पत्र प्रथम

Political Thought राजनीतिक चिन्तन पूर्णांक-75

COURSE OUTCOMES

After completion of the course, the student shall have a fair idea about	
CSO 1	The concept and approaches of international politics.
CSO 2	The theories of international politics
CSO 3	Theoretical aspects of foreign policy.
CSO 4	The execution of international politics like concepts of power, balance of power , diplomacy , disarmament etc
CSO 5	The political aspects of environmentalism, globalisation, and human rights and Indian Foreign Policy .

इकाई 1

अन्तर्राष्ट्रीय राजनीति अर्थ, परिभाषा,प्रकृति, क्षेत्र ।
अन्तर्राष्ट्रीय राजनीति अध्ययन उपागम यथार्थवाद, आदर्शवाद, नवयथार्थवाद, विश्व व्यवस्था सिद्धान्त एवं केन्द्र – परिधि सिद्धान्त या माडल । राष्ट्रीय हित एवं राष्ट्रीय शक्ति अर्थ, परिभाषा एवं तत्व।
राज्येतर अभिकर्ता : अवधारणा प्रकार एवं प्रभाव ।

International Politics, meaning, definitions,Nature, Scope. International Politics: Approaches to the study: Realism, Idealism, Neo realism, World System theory and Centre - Periphery theory. National interest and National power: Meaning Definition and Elements. Non-State actors : Concept types influence .

इकाई 2 :

अन्तर्राष्ट्रीय राजनीति के विभिन्न सिद्धान्त :- व्यवस्था सिद्धान्त, खेलसिद्धान्त, निर्णय निर्माण सिद्धान्त, सौदेबाजी का सिद्धान्त ।
शीतयुद्ध राजनय, शक्ति सतुलन, सामूहिक सुरक्षा , शस्त्र प्रतिस्पर्धा एवं निशस्त्रीकरण, आणविक निःशस्त्रीकरण एवं अप्रसार ।

Unit 2:

Various theories of international politics:- system theory, game theory, decision making theory, bargaining theory.
Cold War, Diplomacy, Balance of Power, Collective Security, Arms race and Disarmament, Nuclear Disarmament and Non-Proliferation.

इकाई 3:

अन्तर्राष्ट्रीय राजनीति के प्रमुख मुद्दे : अन्तर्राष्ट्रीय आतंकवाद, फिलिस्तीन-इसराइल संघर्ष, पर्यावरणवाद ,वैश्वीकरण, मानव अधिकार,
अन्तर्राष्ट्रीय राजनीतिक अर्थशास्त्र : अवधारणा, प्रकृति, प्रमुख विषय : वैश्वीकरण, विश्व व्यापार संगठन, शस्त्र उद्योग, तेल एवं ऊर्जा राजनीति ।
प्रमुख महत्वपूर्ण संगठन : संयुक्त राष्ट्र संघ, यूरोपीय यूनियन, आसियान, नाटो ।
Major issues of international politics: International terrorism, Palestine-Israel conflict, environmentalism, globalization, human rights,
International Political Economics: Concept, Nature, Major Topics: Globalization, WTO, Arms Industry, Oil and Energy Politics
Major important organizations: U.N.O European Union, ASEAN, NATO.

इकाई 4

15. डॉक्टर बड़ौच अंतरराष्ट्रीय राजनीति (1998) सिद्धांत एवं समकालीन अंतर्राष्ट्रीय मुद्दे शारदा बालाजी प्रकाशन आगरा तथा पटेरिया

16. पुष्पा दई (1997) अंतरराष्ट्रीय राजनीति के सिद्धांत एवं व्यवहार, न्यू एकेडमी पब्लिशर्स अजमेर रोड

17. political economy
https://oxfordre.com/internationalstudies/view/10.1093/
Global political economy
http://www.jstor.org/stable/j.ctvcmd.52
17 M.S. Agwani, Détente: Perspectives and Repercussions, Vikas, 1975 • John Gray, False Dawn: The Delusions of Global Capitalism, Grant Book, U.K., 199

18- Hans J. Morgenthau Politics Among Nations: The Struggle for Power and Peace, Scientific Book Agency, Calcutta, 1974

19- K.J. Holsti, International Politics: A Framework for Analysis, Prentice Hall of India, New Delhi,1995.

20- Paul Kennedy, Preparing for the Twenty-First Century, New York, 1993

21- Hutchings, Kimbley, International Political Theory, Sage, New Delhi

22- John Baylis and Steve Smith, The Globalization of World Politics, Oxford University Press, 2008

23- Karen Mingst, Essentials of International Relations, New York: W.W. Norton & Company.

24- Kate Kelly S. Pease, International Organizations, New Jersey: Prentice Hall, 2000

B.A. तृतीय वर्ष द्वितीय प्रश्नपत्र

B.A. THIRD PAPER 2nd

बी. ए. तृतीय प्रश्न पत्र द्वितीय

लोक प्रशासन पूर्णांक-75

Public Administration

COURSE OUTCOMES

Public Administration is a new subject , only a century and a few decades old . It is related to the welfare role of the state . That is why it deals with the problems and expertise related to policy formation and execution . The course

Management: Concepts Principles of Management Scientific Management Leadership, Decision making, Policy Formulation Tools of Administrative Management Coordination Delegation Communication Motivation Supervision.
Development Administration: Nature, issues and features. Prismatic model of W.F. Riggs. Public participation in administration.
Good Governance and E-Governance - Role of Computer in Administration

इकाई 4:

वित्तीय प्रशासन बजट के सिद्धान्त भारत में बजट प्रक्रिया भारत में प्रशासनिक सुधार । प्रशासन पर कार्यपालिका, विधायी न्यायिक और जन नियन्त्रण ।लोकनीति : अवधारणा प्रकृति क्षेत्र और महत्व । छत्तीसगढ़ शासन की महत्वपूर्ण कल्याणकारी योजनाएं । छत्तीसगढ़ की प्रशासकीय संरचना ।

Unit 4:

Financial Administration Principles of Budget Budgeting Process in India Administrative Reforms in India. Executive, legislative, judicial and public control over administration Public Policy: Concept, Nature, Scope and Importance. Important welfare schemes of Chhattisgarh government Administrative structure of Chhattisgarh.

इकाई 5:

प्रशासन में भ्रष्टाचार आम्बुड्समैन, लोकपाल और लोक आयुक्त । केंद्रीय सतर्कता आयोग सूचना का अधिकार कानून, राज्य सूचना आयोग , छत्तीसगढ़ में लोक सेवा गारंटी । वैश्वीकरण के युग में लोक प्रशासन ।
उदारीकरण , नौकरशाही, लोक सम्पर्क

Unit 5

Corruption in Administration: Ombudsman, Lokpal and LokAyukta Central vigilance commissioner, Right to information Act, Lok seva Guarantee in Chhattisgarh.
Public Administration in the age of Globalisation, Liberalisation, Bureaucracy, public relation.

Suggested readings

1 - P. H. Appleby, Policy and Administration, University of Alabama Press, Alabama, 1957.
2. A. Avasthi and S. R. Maheswari, Public Administration, Agra, Lakshmi Narain Agrawal, 1996.
3. D. D. Basu, Administrative Law, New Delhi, Prentice Hall, 1986.
4. C. P. Bhambri, Administration in a Changing Society: Bureaucracy and Politics in India, Delhi,
Vikas, 1991.
5. M. Bhattacharya, Public Administration: Structure, Process and Behaviour, Calcutta, The

has the main objective to give the students basic concepts of theoretical and practical aspects of public administration .

COURSE SPECIFIC OUTCOMES After completion of the course, the student shall have a fair idea about	
CSO 1	The knowledge about basic concepts approaches and evolution of public administration .
CSO 2	The knowledge of theoretical aspects of public administration
CSO 3	The theories of organisation and management .
CSO 4	The knowledge of practical parts of public administration like bureaucracy.
CSO 5	The Finance administration. Budget administration and control over administration .

इकाई 1:

लोक प्रशासन अर्थ, परिभाषा प्रकृति, क्षेत्र ,अध्ययन पद्धतियां । विषय के रूप में लोक प्रशासन का विकास । उदारीकरण के अधीन लोक प्रशासन और निजी प्रशासन । नवीन लोक प्रशासन तुलनात्मक लोक प्रशासन

Unit 1:

Public Administration : development of public administration as discipline, meaning definition, nature and scope. Approaches of study. Public Administration and Private Administration under liberalisation.New Public Administration. Comparative Public Administration.

इकाई 2

संगठन के सिद्धान्त पोस्डकार्ब, पदसोपान, नियंत्रण का क्षेत्र आदेश की एकता ।
मुख्य कार्यपालिका, सूत्र एवं स्टाफ अभिकरण विभागीय विभागीय संगठन, लोक निगम । कार्मिक प्रशासन भर्ती , प्रशिक्षण पदोन्नति। स्वतंत्र नियामकीय आयोग, भारत के प्रमुख नियामक आयोग ।

Unit 2:

Principles of Organisation : POSDCORB, Hierarchy, Span of Control, Unity of Command, Delegation. Chief Executive. Line and Staff Agencies. Departmental Organisation. Public Corporation. Personnel Administration: Recruitment, Training Promotion.Independent Regulatory Commission, major regulatory commissions of India.

इकाई 3:

प्रबंध : अवधारणा प्रबंध के सिद्धांत वैज्ञानिक प्रबंध नेतृत्व नीति निर्धारण नीति निर्माण प्रशासनिक प्रबंध के उपकरण समन्वय प्रत्यायोजन संचार अभिप्रेरणा पर्यवेक्षण
विकास प्रशासन : प्रकृति , मुद्दे और विशेषताएं। रिग्स का समपार्वीय माडल, प्रशासन में नागरिक सहभागिता,
सुशासन और ई शासन - प्रशासन में कम्प्यूटर की भूमिका

Unit 3:

भारत की विदेश नीति : निर्धारक तत्व, विशेषताएं । गुटनिरपेक्षता अर्थ, विशेषताएं प्रासंगिकता ।
भारत एवं दक्षिण एशिया : बांग्लादेश , अफगानिस्तान , भूटान , म्यनमार, पाकिस्तान, नेपाल, श्रीलंका के साथ भारत के सम्बन्ध । सार्क

Unit 4

Foreign Policy of India: Determining Factors, Features. Meaning, features and relevance of non-alignment.
India and South Asia: India's relations with Bangladesh, Afghanistan, Bhutan, Myanmar, Pakistan, Nepal, Sri Lanka. SAARC

इकाई 5
भारत और विश्व : भारत का संयुक्त राज्य अमेरिका, चीन , रूस, से सम्बंध । एशिया प्रशांत क्षेत्र और क्वाड, चीन का प्रसारवाद और भारतीय हित ।

Unit 5:

India and the world: India's relation with the United States of America, China, Russia, The Asia Pacific region and the Quad, China's expansionism and Indian interests.

Suggested readings

1. D. A. Baldwin (ed.), Neo-realism and Neo-liberalism, Columbia University Press, New York, 1993.

2. J. C. Bennett (ed.), Nuclear Weapons and the Conflict of Conscience, Charles Scribner's Sons, New York, 1962.

3. C. Brown, International Relations Theory, Harvester Wheat sheaf, London, 1975.

4. I. Claude, Power and International Relations, Random House, New York, 1962.

5. W. D. Coplin, Introduction to International Politics, Markham, Chicago, 1971.

6. K. Deutsch, The Analysis of International Relations, Prentice Hall, Englewood Cliffs NJ, 1967.

7. J. E. Dougherty, How to think about Arms Control and Disarmament, Alfred A. Knopf, New York, 1962.

8. J. Frankel, Contemporary International Theory and the Behaviour of States, Oxford University Press, New York, 1973.

9. F. I. Greenstein and N. W. Polsby, Theory of International Relations, Reading Massachusetts, Addison-Wesley, 1979.

10. S. H. Hoffman (ed.), Contemporary Theory in International Relations, Prentice Hall, Englewood Cliffs NJ, 1960.

11. R. O. Keohane, (ed.), Neo-realism and its Critics, Columbia University Press, New York, 1986.

12. R. O. Keohane, International Institutions and State Power, West view Press, Boulder Colorado, 1989.

13. K. N. Waltz, Theory of International Politics, Reading Massachusetts, Addison-Wesley, 1979.

14 - महेंद्र कुमार (1990) : अंतरराष्ट्रीय राजनीति के सैद्धांतिक पक्ष शिवलाल अग्रवाल एंड कंपनी आगरा उत्तर प्रदेश.

5. D.E. Apter, The Politics of Modernization, Chicago, University of Chicago Press, 1965
6. L.J Cantori and A.H. Zeigler (ed.), Comparative Politics in the Post-Behavioral Era, London, Lynne Rienner Publisher, 1988
7. P. Dunleavy and B.O' Leary, Theories of Liberal Democratic State, London, Macmillan, 1987
8. R. Haque and M. Harrop, Comparative Government and Politics: An Introduction, 5th edn., New York, Palgrave, 2001
9. H. Finer, Theory and Practice of Modern Government, Methuen, London, 1969
10. J.C. Johari, Comparative Political Theory: New Dimensions, Basic Concepts and Major Trends, Sterling, New Delhi, 1987
11. R.C. Macridis, The Study of Comparative Government, Doubleday, New York, 1955
12. R.C. Macridis and R.E. Ward, Modern Political Systems: Europe, and Asia, 2nd edn. Englewood Cliffs NJ, Prentice Hall, 1968 13. J. Manor (ed.), Rethinking Third World Politics, Longman, London, 1991
14. R.C. Macridis, Modern European Governments: Cases in Comparative Policy - Making,Englewood Cliffs NJ, Prentice Hall, 1968.
15. L.W. Pye (ed.), Communication and Political Development, Princeton University Press, Princeton NJ, 1963
16. R.I. Rotberg (ed.), Politics and Political Change: A Journal of Interdisciplinary History A Reader, MIT Press, Massachusetts, 2001
17. H.J. Wiarda (ed.), New Developments in Comparative Politics, West view Press, Boulder Colorado, 1986
18. Daniel Caramani, Comparative Politics, Oxford University Press, Oxford, 2008
19- जैसी जोहरी (1986) तुलनात्मक राजनीति, स्टर्लिंग प्रकाशन नई दिल्ली
20 - सी बी गेना (1996) तुलनात्मक राजनीति, विकास प्रकाशन नई दिल्ली।

B.A तृतीय वर्ष I

B.A. Third Paper 1st

बी. ए. तृतीय प्रश्न पत्र प्रथम पूर्णांक: 75

अन्तर्राष्ट्रीय राजनीति एवं भारत की विदेश नीति
International Politics and Foreign Policy of India
COURSE OUTCOMES

The objectives of the course are

1- To acquaint the students with the basics of international politics .
2- To provide students the knowledge of theories of international politics
3- To provide students the knowledge of foreign policy and issues related to its execution .

COURSE SPECIFIC OUTCOMES

पाठ्यक्रम

DIFFERENTIAL EQUATIONS

UNIT I :

Series solutions of differential equations : Power series method, Bessel and Legendre Functions and their properties-convergence, recurrence and generating relations. Orthogonality of functions. Sturm-Liouville problem. Orthogonality of eigen-functions. Reality of eigenvalues. Orthogonality of Bessel functions and Legendre polynomials.

UNIT II :

Laplace Transformation : Linearity of the Laplace transformation, Existence theorem for Laplace transforms. Laplace transforms of derivatives and integrals, Shifting theorems. Differentiation and integration of transforms. Convolution theorem. Solution of integral equations and systems of differential equations using the Laplace transformation.

UNIT III :

Partial differential equations of the first order. Lagrange's solution. Some special types of equations which can be solved easily by methods other than the general method. Charpit's general method of solution.

UNIT IV :

Partial differential equations of second and higher orders. Classification of linear partial differential equations of second order. Homogeneous and non-homogeneous equations with constant coefficients. Partial differential equations reducible to equations with constant coefficient. Monge's methods.

UNIT V :

Calculus of Variations . Variational problems with fixed boundaries-Euler's equation for functionals containing first order derivative and one independent variable. Extremals. Functionals dependent on higher order derivatives. Functional dependent on more than one independent variable. Variational problems in parametric form. Invariance of Euler's equation under co-ordinates transformation.

Variational Problems with Moving Boundaries : Functionals dependent on one and two functions. One sided variation

Part A: Introduction				
Program: Certificate Course		Class: B. A. / B.Sc. Part I	Year: 2022	Session:2022-2023
1	Course Code	Paper – MATH- IT		
2	Course Title	Calculus		
3	Course Type	Theory		
4	Pre-requisite (if any)	No		
5	Course Learning Outcome (CLO)	**This Course will enable the students to:** • Calculate the limit and examine the continuity and understand the geometrical interpretation of differentiability. • Understand the consequences of various mean value theorems. • Draw curves in cartesian and polar coordinate systems. • Understand conceptual variations while advancing from one variable to severalvariables in calculus. • Inter-relationship amongst the line integral, double and triple integral formulations. • Realize importance of Green, Gauss and Stokes' theorems in other branches ofmathematics.		
6	Credit Value	4		
7	Total Marks	Maximum Marks : 50	Minimum Passing Marks : ...	

Part B: Content of the Course Total Periods: 60		
Unit	Topics	No. of Periods
I	**Sequences, Continuity and Differentiability:** Notion of convergence of sequences and series of real numbers, ε-δ definition of limit and continuity of a real valued function; Differentiability and its geometrical interpretation; Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem and their geometrical interpretations, Darboux's theorem.	12
II	**Expansion of Functions:** Successive differentiation and Leibnitz theorem. Maclaurin's and Taylor's theorems for expansion of a function, Taylor's theorem in finite form with Lagrange, Cauchy and Roche–Schlömilch forms of remainder.	12
III	**Curvature, Asymptotes and Curve Tracing:** Curvature; Asymptotes of general algebraic curves, parallel asymptotes, Asymptotes parallel to axes; symmetry, concavity and convexity, points of inflexion, Tangents at origin, Multiple points, Position and nature of double points; Tracing of	12

	cartesian, polar and parametric curves; Envelopes and Evolutes.	
IV	**Functions of Several Variables:** Limit, continuity and first order partial derivatives, Higher order partial derivatives, Change of variables, Euler's theorem for homogeneous functions, Taylor's theorem, Total differentiation and Jacobians.	12
V	**Double and Triple Integrals:** Double integration over rectangular and non-rectangular regions, Double integrals in polar co-ordinates, Triple integral over a parallelepiped and solid regions, Volume by triple integrals, Line integrals, Green's theorem, Area as a line integral, Surface integrals, Stokes' theorem, The Gauss divergence theorem	12

Part C - Learning Resource

Text Books and Reference Books;

1. Howard Anton, I. Bivens & Stephan Davis. Calculus (10th edition). Wiley India. 2016
2. Gabriel Klambauer. Aspects of Calculus. Springer-Verlag. 1986
3. Wieslaw Krawcewicz & Bindhyachal Rai. Calculus with Maple Labs. Narosa. 2003
4. Gorakh Prasad Differential Calculus (19th edition). Pothishala Pvt. Ltd. 2016
5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir. Thomas' Calculus (14th edition). Pearson Education 2018
6. Jerrold Marsden, Anthony J. Tromba & Alan Weinstein. Basic Multivariable Calculus, Springer India Pvt. Limited.2009
7. James Stewart. Multivariable Calculus (7th edition). Brooks/Cole. Cengage 2012.
8. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith. Calculus (3rd edition). Pearson Education. Dorling Kindersley (India) Pvt. Ltd. 2011.

E- Resources ;

1. Suggested Equivalent **online courses:** Web link NPTEL/ SWAYAM/ MOOCs
2. https://www.youtube.com/watch?v=tIfirtzUhmw&list=PL7oBzLzHZ1wXBSiJEgqz_iwYoLiY8qhbv
3. https://www.youtube.com/watch?v=XzaeYn7dK5o&list=PLtKWB-wrvn4nA2h8TFxzWL2zy8O9th_fy
4. https://www.youtube.com/watch?v=zxbHsPB8m-M&list=PLBCEh9jawVM75FaeqS-z7olBKTSLCAC4A

Part A: Introduction				
Program: Certificate Course		Class: B. A. / B.Sc. Part I	Year: 2022	Session: 2022-2023
		Paper : MATH-2T		
1	Course Code			
2	Course Title	Algebra		
3	Course Type	Theory		
4	Pre-requisite (if any)	No		
5	Course Learning Outcome (CLO)	**This Course will enable the students to:** • Employ De Moivre's theorem in a number of applications to solve numerical problems. • Learn about the fundamental concepts of groups, subgroups, normal subgroups, isomorphism theorems, cyclic and permutation groups. • Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix, using rank. • Find eigen values and corresponding eigen vectors for a square matrix. • Understand real vector spaces, subspaces, basis, dimension and their properties.		
6	Credit Value	4		
7	Total Marks	Maximum Marks : 50	Minimum Passing Marks :	

Part B: Content of the Course Total Periods: 60		
Unit	Topics	No. of Periods
I	**Set Theory and Theory of Equations:** Sets, Relations, Equivalence relations, Equivalence classes; Finite, countable and uncountable sets; The division algorithm, Divisibility and the Euclidean algorithm, Modular arithmetic and basic properties of congruence's; Elementary theorems on the roots of polynomial equations, Imaginary roots, The fundamental theorem of algebra (statement only); The n^{th} roots of unity, De Moivre's theorem for integer and rational indices and its applications.	12
II	**Groups, Subgroups, Normal Subgroups and Isomorphism Theorems :** Definition and properties of a group, Abelian groups, Examples of groups including D_n (dihedral groups), Q_8	12

Zoology
B.Sc. Part III 2018-19
Paper-I
ECOLOGY, ENVIRONMENTAL BIOLOGY: TOXICOLOGY, MICROBIOLOGY AND MEDICAL ZOOLOGY

Unit: I (Ecology)

- Aims and scopes of ecology
- Major ecosystems of the world-Brief introduction
- Population- Characteristics and regulation of densities
- Communities and ecosystem
- Bio-geo chemical cycles
- Air & water pollution
- Ecological succession

Unit: II (Environmental Biology)

- Laws of limiting factor
- Food chain in fresh water ecosystem
- Energy flow in ecosystem- Trophic levels
- Conservation of natural resources
- Environmental impact assessment

Unit: III (Toxicology)

- Definition and classification of Toxicants
- Basic Concept of toxicology
- Principal of systematic toxicology
- Heavy metal Toxicity (Arsenic, Mercury, Lead, Cadmium)
- Animal poisons- snake venom, scorpion & bee poisoning
- Food poisoning

Unit: IV (Microbiology)

- General and applied microbiology
- Microbiology of domestic water and sewage
- Microbiology of milk & milk products
- Industrial microbiology: fermentation process, production of penicillin, alcoholic beverages, bioleaching.

Unit: V (Medical Zoology)

- Brief introduction to pathogenic microorganisms, Rickettsia, Spirochaetes, AIDS and Typhoid
- Brief account of life history & pathogenicity of the following pathogens with reference to man: prophylaxis & treatment
- Pathogenic protozoan's- Entamoeba, Trypanosome & Plasmodium
- Pathogenic helminthes- Schistosoma
- Nematode pathogenic parasites of man
- Vector insects

Zoology
B.Sc. Part III 2018-19
Paper II

GENETICS, CELL PHYSIOLOGY, BIOCHEMISTRY, BIOTECHNOLOGY AND BIOTECHNIQUES

Unit: I (Genetics)

- Linkage & linkage maps. Sex Determination and Sex Linkage
- Gene interaction- Incomplete dominance & Codominance. Supplementary gene, Complementary gene, Epistasis Lethal gene, Pleiotropic gene and multiple alleles.
- Mutation: Gene and chromosomal mutation
- Human genetics: chromosomal alteration: Down, Edward, Patau, Turner and Klinefelter Syndrome Single gene disorders: Alkaptonuria, Phenylketonuria, Sickle cell anemia, albinism and colour blindness

6/16

Unit: II (Cell Physiology)

- General idea about pH & buffer
- Transport across membrane: Diffusion and Osmosis
- Active transport in mitochondria & endoplasmic reticulum
- Enzymes-classification and Action

Unit: III (Biochemistry)

- Amino acids & peptides- Basic structure & biological function
- Carbohydrates & its metabolism- Glycogenesis; Gluconeogenesis; Glycolysis; Glycogenolysis; Cori-cycle
- Lipid metabolism- Oxidation of glycerol; Oxidation of fatty acids
- Protein Catabolism- Deamination, transamination, transmethylation

Unit: IV (Biotechnology)

- Application of Biotechnology
- Recombinant DNA & Gene cloning
- Cloned genes & other tools of biotechnology (Tissue culture, Hybridoma, Trasgenic Animals and Gene library)

Unit: V (Biotechniques)

1. Principles & techniques about the faollowing:
   (i) pH meter
   (ii) Colorimeter
   (iii) Microscopy- Light microscopes: Compound, Phase contrast & Electron microscopes
   (iv) Centrifuge
   (v) Separation of biomolecules by chromatography & electrophoresis

B. Sc. Part III 2018-19
Zoology
Practical

The practical work in general shall be based on syllabus prescribed in theory.
The candidates will be required to show knowledge of the following:

- Estimation of population density, percentage frequency, relative density.
- Analysis of producers and consumers in grassland.
- Detection of gram-negative and gram-positive bacteria.
- Blood group detection (A,B,AB,O)
- R. B. C. and W.B.C count
- Blood coagulation time
- Preparation of hematin crystals from blood of rat
- Observation of Drosopbila, wild and mutant.
- Chromatograpby-Paper or gel.
- Colorimetric estimation of Protein.
- Mitosis in onion root tip.
- Biochemical detection of Carbobydrate, Protein and Lipid.
- Study of permanent slides of parasites, based on theory paper.
- Working principles of pH meter, colorimeter, centrifuge and microscope.

Scheme of marks distribution **Time: 3:30hrs**

- Hematological Experiment 08
- Ecological Experiment: Grassland Ecosystem/ Population Density/Frequency/relative density 06
- Bacterial staining 05
- Biochemical experiment 06
- Practical based on Instrumentation (Chromatography/ pH meter/microscope/centrifuge. 05
- Spotting (5 spots) 10
7 Viva 05
8. Sessional 05

पाठ्यक्रम

बी. ए. भाग-एक

इतिहास

प्रथम प्रश्न-पत्र

भारत का इतिहास (प्रारम्भ से 1206 ई. तक)

[HISTORY OF INDIA (FROM BEGINNING TO 1206 A.D.)]

इकाई-1

(1) भारत की भौगोलिक विशेषताएं, (2) प्राचीन भारतीय इतिहास के स्रोतों का सर्वेक्षण, (3) पाषाण कालीन संस्कृति, (4) हड़प्पा सभ्यता नवीन पुरातात्विक स्रोतों के आलोक में (लोथल, कालीबंगा, बनावली, सूरकोटड़ा, धौलावीरा और राखीगढ़ी।

इकाई-2

(5) वैदिक सभ्यता और संस्कृति, (6) महाजनपद काल, (7) धार्मिक क्रांति–जैन धर्म और बौद्ध धर्म की भारतीय संस्कृति को देन, (8) सिकन्दर का आक्रमण और उसका प्रभाव।

इकाई-3

(9) मगध का उत्कर्ष, (10) मौर्य साम्राज्य एवं अशोक, (11) मौर्योत्तरकाल–शुंग, कुषाण, सातवाहन, (12) संगमयुग–साहित्य, संस्कृति, चोल एवं पाण्ड्य राज्य।

इकाई-4

(13) गुप्त साम्राज्य–प्रशासन, आर्थिक एवं सांस्कृतिक दशा, (14) राजपूतों की उत्पत्ति–प्रशासनिक एवं सामाजिक व्यवस्था, (15) वृहत्तर भारत की अवधारणा तथा भारतीय संस्कृति का विस्तारीकरण (दक्षिण पूर्व एशिया और लंका सम्बन्ध), (16) पूर्व मध्यकाल में अरबी और तुर्की आक्रमण।

इकाई-5

(17) छत्तीसगढ़ का परिचय एवं नामकरण, (18) छत्तीसगढ़ का इतिहास प्रागैतिहासिक काल से गुप्त काल तक, (19) छत्तीसगढ़ के प्रमुख राजवंश–राजर्षितुल्य, नल, शरभपुरीय, सोमवंश, पाण्डु वंश, छिन्दक नाग वंश, (20) छत्तीसगढ़ के प्रमुख शैलाश्रय केन्द्र–रामगढ़, कबरा पहाड़, सिंघनपुर, करमागढ़, सीतेमढ़।

द्वितीय प्रश्न-पत्र

विश्व का इतिहास (1453 ई. से 1871 ई. तक)

[HISTORY OF THE WORLD (1453 A.D. TO 1871 A.D.)]

इकाई-1

(1) यूरोप में सामंतवाद का पतन एवं आधुनिक युग का प्रारम्भ, (2) पुनर्जागरण, (3) धर्म सुधार आन्दोलन एवं प्रतिधर्म सुधार आन्दोलन, (4) राष्ट्रीय राज्यों का उदय : कारण एवं परिणाम।

इकाई-2

(5) वाणिज्यवाद, (6) औद्योगिक क्रान्ति, (7) उपनिवेशवाद, (8) गौरवपूर्ण क्रान्ति (1688)।

इकाई-3

(9) अमेरिका का स्वतन्त्रता संग्राम, (10) फ्रांस की क्रान्ति के कारण एवं परिणाम, (11) नेपोलियन बोनापार्ट, (12) विएना कांग्रेस।

इकाई-4

(13) मेटरनिख युग–विदेश नीति, (14) यूरोप में 1830 की क्रांति, (15) यूरोप में 1848 की क्रान्ति, (16) इंग्लैण्ड में उदारवाद–1832 एवं 1867 ई. का सुधार अधिनियम।

इकाई-5

(17) पूर्वी समस्या–क्रीमिया युद्ध तक, (18) अफ्रीका का विभाजन, (19) इटली का एकीकरण, (20) जर्मनी का एकीकरण।

संशोधित पाठ्यक्रम

बी. ए. (द्वितीय वर्ष) इतिहास

प्रश्न-पत्र : प्रथम—भारत का इतिहास

1206 ई. से 1761 ई. तक

इकाई—1

1. सल्तनतकालीन एवं मुगलकालीन इतिहास के स्रोत।
2. दास वंश—ऐबक, इल्तुतमिश, बलबन
3. खिलजी वंश—अलाउद्दीन खिलजी—सैनिक उपलब्धियाँ, राजस्व व्यवस्था एवं बाजार नियन्त्रण।
4. तुगलक वंश—मोहमद बिन तुगलक।

इकाई—2

5. मुगल साम्राज्य की स्थापना—बाबर एवं हुमायूँ।
6. शेरशाह सूरी का प्रशासन।
7. अकबर की राजपूत नीति।
8. मुगल शासकों की धार्मिक नीति—अकबर से औरंगजेब तक।

इकाई—3

9. मुगल प्रशासन
10. मुगलकालीन सामाजिक एवं आर्थिक दशा
11. भक्ति आन्दोलन
12. सूफीवाद

इकाई—4

13. मुगलकालीन साहित्य, कला एवं स्थापत्य
14. विजयनगर राज्य
15. बहमनी राज्य
16. शिवाजी का प्रशासन

इकाई—5

17. पेशवा—बालाजी विश्वनाथ, बालाजी बाजीराव
18. पानीपत का तृतीय युद्ध—कारण एवं परिणाम
19. मराठों के अधीन छत्तीसगढ़—बिम्बाजी भोसले
20. छत्तीसगढ़ में मराठा प्रशासन

बी. ए. (द्वितीय वर्ष) इतिहास

प्रश्न-पत्र : द्वितीय—विश्व का इतिहास

1890 ई. से 1964 ई. तक

इकाई—1

1. विलियम द्वितीय की विश्व राजनीतिक
2. अफ्रीका का विभाजन
3. जापान का आधुनिकीकरण—मेईजी पुनर्स्थापना एवं जापान का आधुनिकीकरण
4. रूस-जापान युद्ध : कारण एवं परिणाम

इकाई—2

5. चीन अफीम युद्ध एवं चीन की क्रान्ति, साम्यवाद
6. पूर्वी समस्या—बर्लिन कांग्रेस, युवा तुर्क आन्दोलन
7. बाल्कन युद्ध : कारण एवं परिणाम
8. प्रथम विश्व युद्ध : कारण एवं विभाजन

इकाई—3

9. वर्साय सन्धि
10. रूस की क्रान्ति 1917 ई.
11. फासीवादी—मुसोलिनी
12. नाजीवाद—हिटलर

इकाई—4

13. जापान का सैन्यवाद
14. राष्ट्रसंघ : स्थापना एवं विल्सम के 14 सूत्र
15. द्वितीय विश्वयुद्ध : कारण एवं परिणाम
16. संयुक्त राष्ट्र संघ—स्थापना एवं संगठन, उपलब्धियाँ

इकाई—5

17. शीत युद्ध
18. गुट निरपेक्ष आन्दोलन एवं पंचशील सिद्धान्त
19. विश्व शान्ति की चुनौती—कोरिया एवं फिलीस्तीन समस्या
20. एक ध्रुवीय विश्व

संशोधित पाठ्यक्रम

प्रथम प्रश्न-पत्र

भारत का इतिहास 1761 ई. से 1947 ई. तक

इकाई-1.

1. भारत में यूरोपीयनों का आगमन
2. आंग्ल-फ्रांसीसी प्रतिस्पर्धा—कर्नाटक युद्ध
3. ब्रिटिश साम्राज्य का विस्तार—प्लासी एवं बक्सर युद्ध
4. ब्रिटिश साम्राज्य का विस्तार—वेलेजली की सहायक संधि, डलहौजी की हड़प नीति

इकाई-2.

5. ब्रिटिश प्रशासनिक सुधार—लॉर्ड विलियम बैंटिक
6. लार्ड कर्जन का प्रशासन
7. यूरोपीय वाणिज्यवाद का भारत में प्रभाव—उद्योगों व व्यापार का पतन
8. विभिन्न सामाजिक वर्ग—कृषक, मजदूर, महिलाएँ

इकाई-3.

9. कृषि का पतन एवं कृषक आंदोलन
10. भूराजस्व व्यवस्थाएँ—स्थायी बंदोबस्त, रैयतवाड़ी, महालवाड़ी
11. भारतीय पुनर्जागरण—ब्रह्म समाज, आर्य समाज
12. मुस्लिम समाज सुधार आंदोलन—अलीगढ़ आंदोलन

इकाई-4.

13. रेल यातायात का उद्भव एवं विकास
14. हस्तशिल्प उद्योगों का पतन
15. ईस्ट इंडिया कम्पनी का रियासतों का संबंध
16. पाश्चात्य शिक्षा का विकास एवं प्रेस

इकाई-5.

17. ब्रिटिश नियंत्रण काल में छत्तीसगढ़ की प्रशासनिक व्यवस्था
18. ब्रिटिश कालीन प्रशासनिक व्यवस्था
19. छत्तीसगढ़ में सामाजिक सुधार—कबीर पंथ एवं सतनाम पंथ
20. छत्तीसगढ़ की जनजातीय संस्कृति

द्वितीय प्रश्न-पत्र
भारत का इतिहास 1857 ई. से 1947 ई. तक

इकाई-1.

1. राष्ट्रवाद का उदय
2. 1857 ई. की क्रांति : कारण एवं परिणाम
3. भारतीय राष्ट्रीय कांग्रेस की स्थापना—उद्देश्य, उदारवाद, उग्रवाद
4. बंगाल का विभाजन एवं स्वदेशी आंदोलन

इकाई-2.

5. क्रांतिकारी आंदोलन—प्रथम एवं द्वितीय चरण
6. भारतीय राजनीति में साम्प्रदायिकता का उदय—मुस्लिम लीग की स्थापना
7. होमरूल आंदोलन
8. लखनऊ समझौता

इकाई-3.

9. गांधीवादी आंदोलन—असहयोग आंदोलन
10. सविनय अवज्ञा आंदोलन
11. आदिवासी मजदूर एवं कृषक, आंदोलन
12. भारत छोड़ो आन्दोलन

इकाई-4.

13. आजाद हिन्द फौज
14. भारत का विभाजन एवं स्वतंत्रता
15. रियासतों का विलीनीकरण
16. भारतीय संविधान की प्रमुख विशेषताएँ

इकाई-5.

17. छत्तीसगढ़ में 1857 ई. की क्रांति—नारायण सिंह एवं हनुमान सिंह
18. बस्तर का मुरिया विद्रोह एवं भूमकाल आंदोलन
19. छत्तीसगढ़ में गांधीवादी आंदोलन
20. छत्तीसगढ़ में रियासतों का विलीकरण

Brief Summary
3 Year Integrated UG Courses (B.A./B. Sc.) in Geography

B.A. /B.Sc. Part I

The B.A. /B.Sc. Part-I Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows:

Paper - I	Physical Geography
Paper - II	Human Geography
Paper - III	Practical Geography

B.A. /B.Sc. Part-II

The B.A./B.Sc. Part-II Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows:

Paper-I	Economic and Resources Geography
Paper-II	Regional Geography of India
Paper-III	Practical Geography

B.A. /B.Sc. Part III

The B.A. /B.Sc. Part III Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows

Paper – I	Remote Sensing and GIS
Paper - II	Geography of Chhattisgarh
Paper - III	Practical Geography

Sophia (Dr. S Ambede)

(Dr C.P. Nand) (Dr A. Beck)

(Dr Sheela Shirke)

Program: B.A./B.Sc.	Class: I Year.	Session : 2023-24

Paper I: Physical Geography (UGeo-0101)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Understand the internal structure of the earth, rocks that compose it and forces within the earth that act to deform it. 2. Analyze how the natural and anthropogenic operating factors affect the development of land forms. 3. Understand about the denudation processes that unceasingly act at the earth's surface to shape land forms and reduce relief. 4. Assess the role of structure, stage and time in shaping the land forms. 5. Identify the Atmospheric pressure, winds humidity, concept of precipitation, its types and understand the Air Masses and Fronts and the Weather Forecasting. 6. Identify the relief of the ocean bottom, temperature, salinity of ocean water, tide, currents coral reef and oceanic resources.

Content of the Course

Unit	Topic
1.	Origin of the Earth, Geological Time Scale, Earth's Interior, Continental Drift Theory (Wegner), Plate Tectonics, Isostasy.
2.	Earth movements: Earthquakes and Volcanoes, Rocks, Weathering, Erosion and Normal cycle of erosion, Evolution of landscapes: Fluvial, Aeolian (Arid and Semi Arid), Glacial, Karst.
3.	Elements of Weather and Climate, Composition and Structure of the Atmosphere. World patterns of Atmospheric Temperature, Pressure, and Winds.
4.	Atmospheric Humidity and Disturbances, Climatic Classification of Koppen, Geographical account of world climate patterns: Equatorial, Monsoon, Desert and Tundra.
5.	Bottom relief of Ocean, Distribution of Temperature and Salinity of Oceans and Seas, Currents and Tides, Ocean Deposition. Law of the Sea.

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Ahmed, E.: Coastal Geomorphology of India.
2. Chorley, R., J.: Spatial Analysis in Geomorphology, Methuen, London, 1972.
3. Dayal, P. : A Text book of Geomorphology, R.K. Books, New Delhi.
4. Gautam, Alka : Geomorphology, Sharda Pustak Bhawan, Allahabad.
5. Holms, A.: Principles of Physical Geology, Thomas Nelson, London.
6. Jha, V.C. : Geomorphology, Vasundhara Publication, Gorakhpur.
7. Sparks, B.W. Geomorphology, Longman, London, 1960.
8. Sharma, H.S. (ed.): Perspective in Geomorphology, Concept, New Delhi, 1980.
9. Singh, S : Geomorphology, Prayag Publication, Allahabad, 1998.
10. Steers, J.A. : The Unstable Earth Methuen, London.
11. Thornbury, W.I.). Principles of Geomorphology, John Wiley, New York, 1960.
12. Strahler, A.N.: Physical Geography, Willey, New York.
13. सिंह,एम.बी.(2001) : भौतिक भूगोल, तारा बुक ऐजेन्सी, वाराणसी।
14. सिंह, सविन्द्र (2016) : भौतिक भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद।
15. दयाल, परमे वर (2012) : भौतिक भूगोल, पंच शील प्रका न, जयपुर।
16. हुसैन, माजिद (2008) : भौतिक भूगोल, रावत पब्लिकेशन, जयपुर।

Suggested equivalent online course: 1. epgp.inflibnet.ac.in 2. virtual lectures available on youtube

Program: B.A./B.Sc.	Class: I Year.	Session : 2023-24

Paper II: Human Geography (UGeo-0102)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Discuss and describe the major concepts and key principles of Human Geography including place, space, scale and landscape. 2. Appreciate the diversity of the cultural backgrounds and places. 3. Problem solving from a geographic perspective by understanding the role location plays.

Content of the Course

Unit	Topic
1.	Meaning, Definition, Nature and Scope of Human Geography, Man - environment relationship: Determinism, Possibilism, Determinism, Neo-Determinism and Probabilism; Human Development Index (HDI).
2.	Human Races: Formation and Evolution, Characteristics, Classification and Distribution. Human adaptation to environment: Eskimos, Bushman, Pigmy and Masai.
3.	Growth, Density and Distribution of World Population and factors influencing spatial distribution. Over, Under, and Optimum Population; Migration of Population.
4.	Rural Settlements: Characteristics, Types and Regional Pattern, Rural Houses in India, Urban Settlement- Types and Pattern.
5.	Environmental Issues: Global Warming, Climate Change, Acid rain, Deforestation, Desertification, Air, Water and Soil Pollution.

Learning Resources :Text Books, Reference Books, Other Resources

Suggested Readings:

1. Chisholm, M. (1985): Human Geography, 2nd edition, Penguin Books, London.
2. De Blij, H.J.(1996): Human Geography: Culture, Society and Space,. 2nd edition. John Wiley and Sons, New York,
3. Fellman, J. D., Arthur, G., Judith, G., Hopkins, J. and Dan, S. (2007): Human Geography: Landscapes of Human Activities. McGraw-Hill, New York. 10th edition.
4. Haggett, P. (2004): Geography: A Modern Synthesis. 8th edition, Harper and Row, New York.
5. Huggett, R. J. (1998): Fundamentals of Biogeography, Routledge, London.
6. Hussain, M. (1994): Human Geography, Rawat Publications, Jaipur.
7. Johnston, R. J., Gregory, D., Pratt, G. and Watts, M. (2009): The Dictionary of Human Geography. 5th edition, Basil Blackwell Publishers, Oxford.
8. Norton, W. (2008): Human Geography, Oxford University Press, New York. 5th ed.
9. Singh, K. N. and Singh, J. (2001): *Manav Bhugol*. Gyanodaya Prakashan, Gorakhpur. 2nd edition.
10. Singh, L.R. (2005): Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad
11. Smith, D. M.(1977): Human Geography- A Welfare Approach, Edward Arnold (Publishers) Ltd., London

Suggested equivalent online course:
epgp.inflibnet.ac.in 2. virtual lectures available on YouTube

Head Sophia (Dr. Chandra Shekhar)

Program: B.A./B.Sc.	Class: I Year	Session : 2023-24

Paper III :Practical Geography (UGeo 0103)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Develop hands on skills in diagrammatic representation of data. 2. Comprehend thematic mapping techniques, its cartographic representation and interpretation. 3. Take up Cartography as a profession.

Content of the Course

Unit	Topic
Section A: Cartography And Statistical Methods	**MM- 25**
1.	Basic concept of Latitude and Longitude. Identification of tropic of Cancer, Capricorn and equator on map, name of country and state. Northern hemisphere and southern hemisphere. Practice on world and India map.
2.	Scale: Statement Scale, Representative Fraction (R.F.), Linear scale – Simple, Diagonal, Comparative, and Time Scales.
3.	Methods of showing relief; Meaning of contour, basic features of Contours line, Hachures; Representation of different landforms by Contours; Conical hill, Plateau, V and U shape valley, Waterfall.
4.	Graphs and Diagram: Triangular graph, Bar Diagram (Simple and Composite and multiple), Circle Diagram, Pie Diagram.
5.	Statistical Technique: Mean Median, Mode
Section B: Surveying	**MM-15**
6.	Chain and Tape Survey. Triangulation method, Open Traverse and Closed Traverse
Section C: Practical Record And Viva Voce	**MM-10**

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York.
2. Jones, P.A.(1968): Fieldwork in Geography, Longmans, Green and Company Ltd., First Publication, London
3. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
4. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai
5. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
6. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
7. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
8. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
9. Venkatramaiah, C. (1997): A Text Book of Surveying, Universities Press, Hyderabad.
10. वर्मा जे.पी. (2001) : प्रायोगिक भूगोल, रस्तोगी पब्लिकेषन, मेटूरं
11. मिश्रा, आर.एन.एवं पी.के.वर्मा (2019) : प्रायोगिक भूगोल, रावत पब्लिकेषन्स, जयपुरं
12. तिवारी,आर.सी.एवं सुधाकर त्रिपाठी (2009) : अभिनव प्रायोगात्मक भूगोल, प्रयाग पुस्तक भवनं
13. मॉक हाऊस तथा विल्किन्सन (अनुवाद प्रो. प्रेमचन्द्र अग्रवाल) : मानचित्र तथा आरेख, मध्यप्रदेष हिंदी इलाहबाद ग्रंथ अकादमी भोपालं

Suggested equivalent online course:
1. epgp.inflibnet.ac.in 2. virtual lectures available on you tube

(Dr. Shelesh Jain)

Program: B.A./B.Sc.	Class: II Year.	Session : 2023-24

Paper I :Economic And Resources Geography (UGeo-0201)

Content of the Course

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Understand about the Nature and Scope of Economic Geography. 2. Understand the concept and classification of resource as well as major mineral resources. 3. Identify the major crops and their production and distribution. 4. Understand the fundamental theories in economic geography. 5. Understand the types, characteristics different modes of transportation at national and international level. 6. Understand various international block and role of international trade in economic development. 7. Understand the conservation and management of resources as well as sustainable development.

Content of the Course

Unit	Topic
1.	Meaning, scope and concept of economic geography; Resource: Meaning and classification
2.	Mineral resources: iron ore and bauxite, Power resources: coal, petroleum and hydro electricity; Resource conservation. **Principal Crops**: Wheat, Rice, Sugarcane, Tea, Coffee, Cotton.
3.	Agricultural regions of the world (D. Whittlesey); Theory of agricultural location (Von Thunen); Theory of industrial location (Weber).
4.	International trade: patterns and trends; Major trade blocks: SAARC, BRICKS, OPEC, LAFTA, EEC, ASEAN; Effect of globalization on developing countries
5.	Meaning, scope and concept of economic geography; Resource: Meaning and classification

Learning Resources: Text Books, Reference Books, Other Resources

Suggested readings

1. Alexander, J. W. (1988): Economic Geography. Prentice-Hall, New Delhi,.
2. Bryson, J., Henry, N., Keeble, D. and Martin, R. (eds.) (1999): The Economic Geography Reader: Producing and Consuming Global Capitalism. John Wiley and Sons, Inc, New York.
3. Clark,G. L., Gertler, M. S. and Feldman, M. P. (eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, USA.
4. Coe, N. (2007): Economic Geography: A Contemporary Introduction. Blackwell Publishers, Inc., Massachusetts.
5. Gautam, A. (2006): *Aarthik Bhugol Ke Mool Tattava*, Sharda Pustak Bhawan, Allahabad.
6. Guha, J. S. and Chattoraj, P.R. (2002): A New Approach to Economic Geography: A Study of Resources. The World Press Private Limited, Kolkata.
7. Hanink, D. M. (1997): Principles and Applications of Economic Geography: Economy, Policy, Environment. John Wiley and Sons, Inc, New York.
8. Hartshorne, T. A. and Alexander, J. W. (1988): Economic Geography (3rd revised edition) Englewood Cliff , New Jersey, Prentice Hall

Hudson, R. (2005): Economic Geographies: Circuits, Flows and Spaces. Sage Publications,

Suggested equivalent online course: 1. epgp.inflibnet.ac.in
2. virtual lectures available on YouTube

Program: B.A./B.Sc.	Class: II Year.	Session : 2023-24

Paper II : Regional Geography of India (UGeo-0202)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Understand the about the physiographic division of India and Drainage system of India. 2. Understand the seasonal variation of climate and monsoon of India. 3. Understand the various biotic, conventional and non conventional resources and their distribution in India. 4. Understand the growth, density and distribution of Indian population. 5. Identify the major crops, production and distribution, agriculture region of India 6. Understand the impact of green revolution on Indian agriculture. 7. Understand the industrial production and development in India.

Content of the Course

Unit	Topic
1.	Physical Features: Structure, Relief, Drainage, Climate and Monsoon.
2.	Natural Resources: Soils - types, their distribution and characteristics. Water Resources (major irrigation and hydro- power projects); Forests: types and distribution.
3.	Mineral and Power resources: Iron-ore, Bauxite, Coal, Petroleum and Natural gas, Atomic energy and Non conventional sources of energy.
4.	Cultural Features: Population - Growth, Density and Distribution. Agriculture - Major Cereals: Paddy, Wheat. Major Cash crops: Tea, Coffee, Sugarcane. Impact of Green Revolution, Agro-climatic region.
5.	Industries Localization, Development & Production - Iron and steel, Cotton Textile, Cement, Sugar. Transport, Industrial Region.

Learning Resources: Text Books, Reference Books, Other Resources

Books Recommended:

1. Chauhan, P.R. and Prasad, M. (2003): *Bharat Ka Vrihad Bhugol*, Vasundhara Prakashan, Gorakhpur.
2. Farmer, B.H. (1983): An Introduction to South Asia. Methuen, London
3. Gautam, A. (2006): Advanced Geography of India, Sharda Pustak Bhawan, Allahabad
4. Johnson, B.L.C. (1963): Development in South Asia. Penguin Books, Harmondsworth
5. Krishnan, M.S. (1982): Geology of India and Burma, CAS Publishers and Distributors, Delhi.
6. Khullar, D.R. (2007): India: A Comprehensive Geography, Kalyani Publishers, New Delhi
7. Nag, P. and Gupta, S. S. (1992): Geography of India, Concept Publishing Company, New Delhi.
8. Rao, B.P. (2007): *Bharat kee Bhaugolik Sameeksha*, Vasundhara Prakashan, Gorakhpur.
9. Singh , J. (2003): India: A Comprehensive Systematic Geography. Gyanodaya Prakashan, Gorakhpur
10. Singh, J. (2001): *Bharat: Bhougolik Aadhar Avam Ayam*, Gyanodaya Prakashan, Gorakhpur.
11. Singh, R.L. (ed.) (1971): India: A Regional Geography. National Geographical Society of India, Varanasi.
12. Spate, O.H. K., Learmonth A. T. A. and Farmer, B. H. (1996): India, Pakistan and Sri Lanka. Methuen, London, 7th edition.
13. Sukhwal, B.L. (1987): India: Economic Resource Base and Contemporary Political Patterns. Sterling Publication, New Delhi
14. Tiwari, R.C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad.

Suggested equivalent online course: 1. epgp.inflibnet.ac.in
2. virtual lectures available on YouTube

Program: B.A./B.Sc.	Class: II Year.	Session : 2023-24

Paper-III Practical Geography (UGeo-0203)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Understand the map design and map layout through various Cartographic symbols and techniques. 2. Understand the Meaning, concept, classification and importance of map projections. 3. To get a knowledge of Weather Maps and the use of Meteorological instrument. 4. To get knowledge about Prismatic Compass Survey and Whole Circle Bearing and Reduced Bearing. 5. Students are understood about how to represent of geographical data with different types of cartographic technique and Statistical Methods through practical workbook.

Content of the Course

Unit	Topic
Section A: Map Interpretation, Projections And Statistical Methods	**MM- 25**
1.	Principle of map design, elements of maps layout, Types of cartographic symbol: point, line, area and their application. Maps: definition and their application- Dot Map, Sphere map, Choropleth Map, chorochromatic and Isopleth Map.
2.	Map Projections: Meaning, Definition, classification and importance; Cylindrical: Equidistance, Equal area and Mercator projection.
3.	Conical: One standard and two standard parallel, Polar Zenithal: Orthographic, Stereographic, Gnomonic Projection.
4.	Statistical Methods: Quartile: Mean Deviation, Standard Deviation and Quartile, Deviation; Relative Variability and Co-efficient of Variation.
Section B: Surveying	**MM- 15**
5.	Surveying: Prismatic Compass Survey, Whole Circle Bearing and Reduced Bearing, correction of bearing. Open traverse and close traverse.
Section C Practical Record And Viva Voce	**M.M- 10**

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
2. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
3. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai
4. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
5. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
6. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
7. Venkatramaiah, C. (1997): A Text Book of Surveying, Universities Press, Hyderabad.
8. वर्मा,जे.पी. (2001) : प्रायोगिक भूगोल, रस्तोगी पब्लिकेषन, मेटूरं
9. मिश्रा, आर.एन.एवं पी.के.वर्मा (2019) : प्रायोगिक भूगोल, रावत पब्लिकेषन्स, जयपुरं
10. तिवारी,आर.सी.एवं सुधाकर त्रिपाठी (2009) : अभिनव प्रायोगात्मक भूगोल, प्रयाग पुस्तक भवनं
11. मॉक हाऊस तथा विल्किन्सन (अनुवाद प्रो. प्रेमचन्द्र अग्रवाल) : मानचित्र तथा आरेख, मध्यप्रदेष हिंदी इलाहबाद ग्रंथ अकादमी भोपालं

Suggested equivalent online course:1. epgp.inflibnet.ac.in 2. virtual lectures available on you tube

(Dr. Sheela Shirbhate)

Program: B.A./B.Sc.	Class: III Year.	Session : 2023-24
Paper I: Remote Sensing And GIS (UGeo-0301)		
Course Learning Outcome (CLO)	After the completion of course, the students will have ability to: 1. Understand and get the knowledge about fundamental concept of Remote sensing. 2. To understand the types of remote sensing, and types of platforms in remote sensing. 3. To get a knowledge about satellite sensor and types of sensors, and their functions and Characteristics. 4. Understand the data product, types of data product and its applications and uses in remote Sensing.	

Unit	Content of the Course Topic
1.	Basics of Remote Sensing: definition, history, and Scope; Electro-magnetic Radiation: Characteristics, Spectral regions and Bands; Interaction with earth surface features and atmosphere; Spectral Signature
2.	Types of Remote Sensing: Air borne and Space borne; Aerial photos: Types and Characteristics; Remote Sensing satellites: Platforms and sensors: active and passive, Sensor characteristics: spatial resolution, spectral resolution, radiometric resolution, temporal resolution.
3.	Visual and Digital image processing techniques; Remote Sensing application in resource mapping and environmental monitoring, remote sensing in India: development and Growth. Indian Satellites, Space Organizations and data products.
4.	Introduction of GIS: Definition of Geoinformatics, Scope and Importance of Geoinformatics, History of GIS, Components of GIS, Functions of GIS,GIS tasks-Input, Manipulation, Management, Query analysis, Visualization, Topographical sheets, Surveying, Aerial photographs ,Satellite data and images, Data types-Spatial and Non spatial.
5.	Data model and data analysis: Raster data and their characteristics, Vector data and their characteristics, Raster data analysis- grid cells or Pixels. Vector data analysis- Spatial data, Generation in Vector Format, Spatial and Non Spatial data Management. Spatial information Technology.

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Bhatta, B. (2010): Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell, J.B. (2002): Introduction to Remote Sensing. 5th edition, Taylor and Francis, London
3. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London
4. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York
5. Nag Prithvish and Kudrat M. (1998): Digital Remote Sensing, Concept Publishing Company, New Delhi
6. Star J. and J. Estes, (1994), Geographic Information Systems: An Introduction, Prentice Hall, New Jersy.
7. Williams J. (1995): Geographic information from space, John Wiley and Sons, England,
8. पौनियाल, देवी दत्त (2004). सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली, शारदा पुस्तक भवन, इलाहाबाद–2
9. खत्री, हरीश कुमार (2019) : सुदूर संवेदन तकनीक, कैलाश पुस्तकसदन भोपाल, मध्यप्रदेश

Suggested equivalent online course:1. epgp.inflibnet.ac.in 2. virtual lectures available on you tube

Program: B.A./B.Sc	Class: III Year.	Session : 2023-24

Paper II: Geography of Chhattisgarh (UGeo-0302)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability i. Understand the about the physiographic division of Chhattisgarh State. ii. Understand the India Drainage system of Chhattisgarh Rivers. iii. Understand the climatic variation in Chhattisgarh State. iv. Examine and understand the types of vegetation of Chhattisgarh. v. Understand the variation in industrial development in Chhattisgarh State. vi. Examine and understand the developed and underdeveloped States in Chhattisgarh.

Content of the Course (Credit- 6)

Unit	Topic
1.	**Physical Features :** Geological Structure, Relief and Physiographic Regions, Drainage system, Climate
2.	**Natural Resources:** Soils – Types, characteristics and their Distribution. Water Resources (Major Irrigation and Hydel Power Projects), Forests-types, Distribution, and Conservation of Forest. Mineral Resources: Iron-ore, Coal, Lime stone, Bauxite, Tin.
3.	**Agriculture and Populations** – Agriculture: Cereals, Pulses and Millets. **Population**: Growth, Distribution, and Density; Tribal Populations; and Urban and Rural Population.
4.	**Industries** - Iron and Steel, Cement, Sugar, Aluminum; Industrial Regions of Chhattisgarh
5.	**Trade and Transport**, Tourism, Socio-Economic Development of Chhattisgarh.

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Jha, Vibhash Kumar and Saumya Naiyyar (2013) Chhattisgarh Samagra, Chhattisgarh Rajya Hindi Granth Akadmi, Raipur
2. Kumar, Pramila (2003): Chhattisgarh Ek Bhugolik Addhyayan. Madhya Pradesh Hindi Granth Akadmi, Bhopal
3. Nagesh Jitendra and at all (2014): Chhattisgarh Sandarbh 2014 Jansanmpark Vibhag, C.G. Govt., Raipur
4. Tiwari, Vijay Kumar (2004): Geography of Chhattisgarh, Himalya Publishing House, Pvt. Ltd
5. Tripathi, Kaushlendra and Pursottam Chandrakar (2001): Geography of Chhattisgarh, Shardaprakashan, Aazad Nagar , Bilaspur.
6. Verma ,L.N. (2017): Geography of Chhattisgarh, Madhya Pradesh Hindi Granth Akadmi, Bhopal.

Suggested equivalent online course: 1. epgp.inflibnet.ac.in
2. virtual lectures available on YouTube

Head Dean Sophia Dr. Sheela Shinde

rogram: B.A./B.Sc	Class: III Year.	Session : 2023-24

Paper II: Geography of Chhattisgarh (UGeo-0303)

Course Learning Outcome (CLO)	After the completion of course, the students will have ability i. Understand the about the physiographic division of Chhattisgarh State. ii. Understand the India Drainage system of Chhattisgarh Rivers. iii. Understand the climatic variation in Chhattisgarh State. iv. Examine and understand the types of vegetation of Chhattisgarh. v. Understand the variation in industrial development in Chhattisgarh State. vi. Examine and understand the developed and underdeveloped States in Chhattisgarh.

Content of the Course

Unit	Topic
Section A: Map Readings And Interpretation	**MM-20**
1.	Graphical Representation: Band graph
2.	Topographical Sheets: Classification and numbering system (National and International)
3.	Satellite Imageries: Describing the Marginal Information
Section B: Surveying And Field Report	**MM-20**
4.	Surveying: Plane Table Survey, Basic Principles of plane table surveying, Plane table survey including intersection and resection.
5.	Field work and field report: physical, social and economic survey of a micro - region.
Section C: Practical Record And Viva Voce	**MM-10**

Learning Resources: Text Books, Reference Books, Other Resources

Suggested Readings:

1. Archer, J.E. and Dalton, T.H. (1968): *Field Work in Geography*. William Clowes and Sons Ltd. London and Beccles.
2. Bolton, T. and Newbury, P.A. (1968): *Geography through Fieldwork*. Blandford Press, London.
3. Monkhouse, F. J. (1985): Maps and Diagrams. Methuen, London.
4. Nag, P. (ed.) (1992): Thematic Cartography and Remote Sensing. Concept Publishing Company, New Delhi.
5. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai.
6. Raisz, E. (1962): Principles of Cartography, McGraw Hill, New York.
7. Robinson, A. H., Sale. R. D., Morrison, J. L. and Muehrcke, P. C. (1984): Elements of Cartography. 5th edition, John Wiley and Sons, Inc. New York.
8. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata
9. Sharma, J. P. (2001): *Prayogik Bhugol.*, Rastogi Publication, Meerut 3rd, edition.
10. Singh, R.L. and Singh Rana P.B. (1993): *Elements of Practical Geography*. (Hindi and English editions). Kalyani Publishers, New Delhi.
11. Stoddard, Robert H. (1982): *Field Techniques and Research Methods in Geography*. Kendall/Hunt Pub. Dubuque IO.

Suggested equivalent online course: 1. epgp.inflibnet.ac.in 2. virtual lectures available on YouTube

Dr. Sheela Shinde

FOUR YEAR UNDERGRADUATE PROGRAM- 2024-28

FACULTY OF COMMERCE
COURSE CURRICULUM

PART-A : Introduction				
Program : Bachelor in Commerce (Certificate/Diploma/Degree /Honors)		**Semester- I**		**Session : 2024-25**
1	**Course Code**	COGE-01		
2	**Course Title**	Fundamental of Accounting		
3	**Course Type**	Generic Elective Course (COGE)		
4	**Pre-requisite (if any)**	As per program		
5	**Course Learning Outcomes (CLO)**	• Explain the process and methods of financial decision making. • Identify appropriate financial theory and techniques to solve various corporate financial problems. • Identify fundamental concepts of generally accepted accounting principles and can also identify challenges of accounting • Classify capital and revenue concept, understand basic principles, concepts and conventions of financial accounting • Construct final accounts of firm and apply various aspects of computerized accounting system.		
6	**Credit Value**	**4 Credits**	Credit= 15 Hours-learning & Observation	
7	**Total Marks**	**Max. Marks :100**		**Minimum Passing Marks :40**

PART - B: Content of the Course

Total No. of Teaching-learning Periods (01 Hr. per period)-60 periods (60 Hours)

Unit	Topics (Course Contents)	No. of Period
I	**Accounting: An introduction:** Development, Definition, Needs, Objectives, Branches of Accounting, Basic Accounting Principles Concept and Conventions. Accounting standard: National & International. Brief History & Contribution of Father of the accountancy profession in India : Shree K.S. Aiyear (1859-1940)	15
II	**Accounting Transaction:** Concept of Single and Double entry system, Books of original Records, Journal, ledger, Sub division of Journal cash book (including GST Transaction) and Trial balance. Depreciation accounting: methods of recording depreciation. Depreciation of different assets.	15
III	**Final Accounts:** Manufacturing Accounts, Trading Accounts, Profit Loss Account, Balance Sheet, Adjustment Entries with various provision and reserves. Rectifications of Errors: Classification of errors, location of errors, Suspense account, Effect on profit.	15
IV	**Computerized Accounting System**-Theoretical application, Practical Application (using any popular accounting software); Creation of Vouchers; recording transactions; preparing reports, cash book, bank book, ledger accounts, Trial balance, Profit and loss account, Balance Sheet. Selecting and shutting a Company, Backup and Restore data of a Company.	15
Key Words	Accounting, National, International, Contribution, Double Entry System, Journal, Depreciation, Final Accounts, Rectification, Suspense Account, Computerized Accounting.	

Signature of Convener & Members (CBoS):

PART-C:Learning Resource

Text Books, Reference Books and Others

Text Books Recommended:-

1. Shukla S.M.: Financial Accounting ; Sahitya Bhawan Publication : Agra. .(Hindi & English Medium)
2. Karim & Khanuja; Financial Accounting: SBPD Publishing House; Agra.(Hindi & English Medium)
3. Agrawal & Mangal; Financial Accounting Universal Publication (Hindi Medium)

Note: Learners are advised to use latest edition of text books.

Reference Books:

1. Gupta, R.L. and Radhaswamy. M; Financial Accounting Sultan Chand and Sons , New Delhi.
2. Monga J.R. Ahuja Girish and Sehgal Ashok: Financial Accounting ; Mayur Paper Back, Noida.
3. Shukla M.C. Grewal T.S. and Gupta , S.C. : Advanced Accounts; S. Chand & Co. New Delhi.
4. Singh B.K. Financial Accounting ; Wisdom Publishing House, Varanasi.

On line Resources : * e-Resources/e-books and e-learning portals:

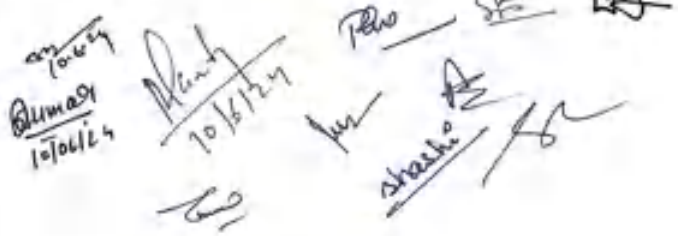
https://indianaccounting.org/econtent_book_finance
https://onlinecourses.swayam2.ac.in/nou24_cm02/
https://youtu.be/v-dJL7SPw4c?si=qRK_dBVZ2lob99EV
https://onlinecourses.swayam2.ac.in/aic20_sp60/preview
https://youtu.be/v-dJL7SPw4c?si=qRK_dBVZ2lob99

PART -D : Assessment and Evaluation

Suggested Continuous Evaluation Methods: Maximum Marks: 100 Marks
Continuous Internal Assessment (CIA) : 30 Marks
End Semester Exam. (ESE) : 70 Marks

Continuous Internal Assessment(CIA) : (By Course Teacher)	Internal Test/Quiz-(2) : 20 & 20 (Assignment/Seminar): 10 Total Marks - 30	Highest Marks out of the Two Test/Quiz + obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam.(ESE):	Two Section :- A & B **Section A:** Q.1-Objective-**10x1=10Marks**;Q.2-ShortAnswertype-**5x4= 20 Marks** **Section B :** Descriptive answer type qts. 1 out of 2 from each unit-**4x10=40 Marks**	

Name and Signature of Convener & Members of (CBoS) :



FOUR YEAR UNDERGRADUATE PROGRAM-2024-28

FACULTY OF COMMERCE
COURSE CURRICULUM

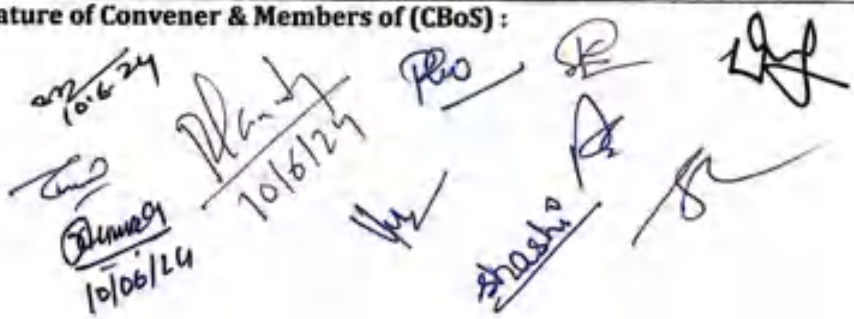
PART-A : Introduction				
Program : Bachelor in Commerce (Certificate/Diploma/Degree /Honors		**Semester- I**	**Session : 2024-25**	
1	**Course Code**	COGE-02		
2	**Course Title**	Business Law		
3	**Course Type**	Generic Elective Course (COGE)		
4	**Pre-requisite (if any)**	As per program		
5	**Course Learning Outcomes (CLO)**	• Demonstrate the basic concepts terms & provisions of business law. • Classify various types of contract and illustrate the related case studies. • Interpret the regulation governing the Contract of Sale of Goods. • Discuss the laws governing partnership and legal consequences of the transactions and other actions in relation with the partnership, and examine contractual obligations and provisions governing limited liability partnership. • Explain the significant provisions of the Negotiable Instrument Act and provisions of the Consumer Protection Act to protect the interest of the consumers.		
6	**Credit Value**	**4 Credits**	Credit= 15 Hours-learning & Observation	
7	**Total Marks**	**Max. Marks : 100**		**Minimum Passing Marks : 40**

PART- B: Content of the Course		
Total No. of Teaching-learning Periods (01 Hr. per period)-60 Periods(60 Hours)		
Unit	Topics (Course Contents)	No. of Period
I	**Law of contract (1872):** Nature of contract classification; offer and acceptance, Capacity of parties to contract, free consent, considerations, Agreement declared void, Performance of Contract, and Discharge of Contract, Remedy for Breach of Contract.	15
II	**Special contracts:** Indemnity &; Guarantee, Bailment and pledge; Law of Agency- Meaning, Modes of creating Agency, Types of Agents, Personal Liability of an Agent and Termination of Agency.	15
III	**Sale of Goods Act (1930):** Definition, Sale &; Agreement to sale, Types of Goods, Conditions & Warranties, Sale by Non-owners, Unpaid Seller, CIF, FOB and Ex-Ship Contracts. **The Consumer Protection Act 2019**	15
IV	**Negotiable Instrument Act 1881:**Negotiable Instrument Act (1881) Definition of Negotiable instrument; Feature; promissory note; Bill of exchange cheque; Holder and holder in the due course; crossing of a cheque, types of crossing; Negotiation; dishonor and discharge of negotiable instrument, **Limited Liabilities Partnership Act 2008.**	15
Key Words	Law of Contract, Special Contract, Sale of Goods Act, Consumer Protection Act, Negotiable Instrument Act, Limited Liabilities Partnership Act.	

Signature of Convener & Members (CBoS):

PART-C:Learning Resources		
Text Books,Reference Books and Others		
Text Books Recommended:- 1.Shukla & Sahaya, Sahitya Bhawan Publication, Agra(Hindi Medium) 2.Prof.R.C.Agrawal,SBPD Publication, Agra (HindiMedium) 3.Dr.O.P.Gupta,SBPD Publication,Agra (English Medium) 4. Dr. G.K. Varshney: Business Law; Sahitya Bhawan Publication Agra (English Medium) 5.Dr.B.K.Singh & Dr.A.Tiwari, Business Regulatory Framework, SBPD Publications (Hindi Medium) 6.R.L.Naulakha,Business Law, Ramesh Book Depo,Jaipur (Hindi Medium) 7.Dr.Arun Kumar Gangele, Business Regulartory Framework, Ramprasad & Sons,(Hindi Medium) **Note: Learners are advised to use latest edition of text books.**		
Reference Books: 1.Kuchal M.C. Business Law: Vikas publishing house, Delhi. (Hindi & English Medium) 2. Kapoor N.D.: Business Law; Sultanchand & Sons, New Delhi. (English Medium) 3. Chandha P.R.: Business Law; Galgotia New Delhi. (English Medium)		
On line Resources : * e-Resources/e-books and e-learning portals: https://onlinecourses.swayam2.ac.in/nou24_cm11/preview https://www.toppr.com/guides/business-law/ https://www.youtube.com/watch?v=BZshaldOlUo https://www.youtube.com/watch?v=HrF9D2V8Ixk https://www.youtube.com/watch?v=ol2BXgF-P48		
PART-D:Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks		**100 Marks**
Continuous Internal Assessment (CIA) :		**30 Marks**
End Semester Exam. (ESE) :		**70 Marks**
Continuous Internal Assessment(CIA) : (By Course Teacher)	Internal Test/Quiz-(2) : 20 & 20 (Assignment/Seminar)- 10 Total Marks - 30	Better Marks out of the Two Test/Quiz + obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam.(ESE):	Two Section :- A & B **Section A:** Q.1.Objective**10x1=10 Marks**;Q.2.Short Answer type-**5x4=20 Marks** **Section B :** Descriptive answer type qts., 1 out of 2 from each unit-**4x10=40 Marks**	

Name and Signature of Convener & Members of (CBoS) :



FOUR YEAR UNDERGRADUATE PROGRAM-2024-28

FACULTY OF COMMERCE
COURSE CURRICULUM

PART-A : Introduction			
Program : Bachelor in Commerce (Certificate/Diploma/Degree /Honors)		Semester- I	Session : 2024-25
1	Course Code	COGE-03	
2	Course Title	Business Economics	
3	Course Type	Generic Elective Course (COGE)	
4	Pre-requisite (if any)	As per program	
5	Course Learning Outcomes (CLO)	• Demonstrate how different economic systems function and evaluate implications of various economic decisions. • Understand how consumers try to maximize their satisfaction by spending on different goods. • Analyze the relationship between inputs used in production and the resulting outputs and costs. • Analyze and interpret market mechanism and behaviour of firms and response of firms to different market situations. • Discover various facets of pricing under different market situations.	
6	Credit Value	4 Credits	Credit= 15 Hours-learning & Observation
7	Total Marks	Max. Marks :100	Minimum Passing Marks : 40

PART –B: Content of the Course

Total No. of Teaching-learning Periods (01 Hr. per period)-60 Periods (60 Hours)

Unit	Topics (Course Contents)	No. of Period
I	**Brief history and Contribution of Indian Economists:** Kautilya, Dada Bhai Naurogi, Gopal Krishna Gokhle, Dr. Gadgil, V K R V Rao, Amartya Sen. **Business Economics:** Meaning, Definition, objective and nature &Scope, Role and Responsibilities of a business Economist. **Market Demand Analysis:** Meaning of Demand and Determinants of Demand, Changes in Demand, Demand Function Law of Demand, Types of Demand and Exceptions of Law of Demand	15
II	**Consumer Behaviour and Elasticity of Demand:** Utility Analysis of Demand, Law of Diminishing marginal utility & Consumer Surplus, Indifference Curve technique, Price Line or Budget Line , Concept of Elasticity of Demand, Importance, Types, Calculations of different concepts of Elasticity, Methods of measurement of Price Elasticity of demand	15
III	**Production Analysis:** Meaning of Supply and Supply function, Concepts of Stock and Flow, Determinants of Supply, Law of Supply, Changes in Supply, Production Function: a) Law of Variable Proportions b) Law of Returns to Scale, Economies and Diseconomies of Scale	15
IV	**Market Morphology and Equilibrium of the Firm and Industry:** Meaning, Classification and Types of Market, Market structure formed on the basis of perfect and imperfect competition, Price and output determination under Perfect Competition, monopoly, Discrimination Monopoly, Monopolistic Competition, Oligopoly	15
Key Words	Business Economics, Demand, Elasticity, Consumer Behaviour, Production Analysis, Market Structure, Equilibrium of Firm & Industry.	

Signature of Convener & Members (CBoS):

PART- C: Learning Resources		
Text Books, Reference Books and Others		
Text Books Recommended:- 1. Dr. V.C. Sinha; SBPD Publishing House, Agra. (Hindi English and Hindi Medium) 2.Dr. Jai Prakash Mishra, Sahitya Bhawan Publication, Agra. (Hindi and English Medium) 3. M. L. Jhingan, Vrinda publication, Delhi. (English and Hindi medium) 4.Dr. J. K. Jain, Madhya Pradesh Hindi Granth Academy: Bhopal. (Hindi medium) **Note: Learners are advised to use latest edition of text books.**		
Reference Books: 1.Ahuja, H. L New Delhi: Sultan Chand Publishing House,Delhi 2. Koutsoyannis, A. London: Palgrave Macmillan. 3. Chaturvedi, D. D., & Gupta, S. LInternational Book House Pvt. Ltd. . New Delhi: 4. Kennedy, M. J., Himalaya Publishing House. Mumbai:		
On line Resources : * e-Resources/e-books and e-learning portals: https://onlinecourses.swayam2.ac.in/imb24_mg06/preview https://www.businesseconomics.in/ https://www.wallstreetmojo.com/business-economics/ https://www.youtube.com/playlist?list=PLgC10_Xy-BGirAqOr-hU8e-N_Nz0Upgl- https://www.youtube.com/watch?v=9kal9P-KeNo study material of ICAI: www.icai.org. https://www.icsi.edu/media/website/Business%20Economic https://www.businesseconomics.com/		
PART-D:Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks- 100 Marks **Continuous Internal Assessment (CIA) : 30 Marks** **End Semester Exam. (ESE) : 70 Marks**		
Continuous Internal Assessment(CIA) : (By Course Teacher)	Internal Test/Quiz-(2) : 20 & 20 Assignment/Seminar: 10 Total Marks- 30	Better Marks out of the Two Test/Quiz + obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam.(ESE):	Two Section :- A & B **Section A:**Q.1-Objective **10x1=10Marks**;Q.2.Short answer type-**5x4=20Marks** **Section B:** Descriptive answer type qts., 1 out of 2 from each unit-**4x10=40 Marks**	

Name and Signature of Convener & Members of (CBoS) :

10/06/24 10/6/24 10/6/24

SYLLABUS
B.COM. PART-III

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
Foundation Course			
I. Hindi Language		75	26
II. English Language		75	26
Compulsory Groups			
Group-I			
I. Income Tax	75	150	50
II. Auditing	75		
Group-II			
I. Indirect Taxes	75	150	50
II. Management Accounting	75		
Group-III Optional			
Option Group A (Finance Area)			
I. Financial Management	75	150	50
II. Financial Market Operations	75		
Option Group B (Marketing Area)			
I. Principles of Marketing	75	150	50
II. International Marketing	75		
Option Group C (Commercial Area)			
I. Information Technology and its Applications in Business	75	150	50
II. Essential of e-Commerce	75		
Option Group D (Money Banking & Insurance Area)			
I. Fundamental of Insurance	75	150	50
II. Money & Banking System	75		

B.COM PART III

COMPULSORY CORE COURSE
TITLE OF PAPER - Group-I - PAPER – I - INCOME TAX
OBJECTIVE
It enables the students to know the basics of Income Tax Act and its implications.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Basic Concepts : Income, agricultural Income, casual income, assessment year, previous year, gross total income, total income, person. Basis of charge : Scope of total income, residence and tax liability, income which does not form part of total income.	UNIT-I Basic Concepts : Income, agricultural Income, casual income, assessment year, previous year, gross total income, total income, person. Basis of charge : Scope of total income, residence and tax liability, income which does not form part of total income.	No change
UNIT-II Heads of Income : Salaries; Income from house property.	UNIT-II Heads of Income : Salaries; Income from house property.	No change
UNIT-III Profit and gains of business or profession, including provisions relating to specific business; Capital gains, Income from other sources.	UNIT-III Profit and gains of business or profession, including provisions relating to specific business; Capital gains, Income from other sources.	No change
UNIT-IV Computation of Tax Liabilty : Set-off and carry forward of losses; Deduction from gross total income.Aggregation of income; Computation of total income and tax liability of and individual, H.U.F., and firm.	UNIT-IV Computation of Tax Liability : Set-off and carry forward of losses; Deduction from gross total income. Aggregation of income; Computation of total income and tax liability of individual and & HUF,	Omitted firm.
UNIT-V Tax Management : Tax deduction at source; Advance payment of tax; Assessment procedures; Tax planning for individuals. Tax evasion, Tax Avoidance and Tax planning.Tax	UNIT-V Tax Management : Tax deduction at source; Advance payment of tax; Assessment procedures; Tax planning for individuals. Tax evasion, Tax Avoidance and Tax planning.Tax	Addition o pratical w relating importan

Administration : Authorities, appeals, penalties.	Administration : Authorities, appeals, penalties. Preparation of return of income -Manually and on line	forms.

Suggested Reading :

1. Singhania V.K. : Students Guide to Income Tax; Taxmann, Delhi.
2. Prasad, Bhagwati : Income Tax Law & Prectice; Wily Publication, New Delhi.
3. Mehrotra H.C. : Income Tax Law & Accounts : Sahitya Bhawan, Agra.
4. Girish Ahuja and Ravi Gupta : Systematic approach to income tax : Sahitya Bhawan Publications, New Delhi.
5. Chandra Mahesh and Shukla D.C. : Income Tax Law and Practice; Pragati Publications, New Delhi.
6. R.K. Jain : Income Tax & Law (Hindi & English) Shahitya Bhavan, Publication, Agra

B.COM PART III

COMPULSORY CORE COURSE

Group-II - PAPER – I - **INDIRECT TAXES WITH GST** PAPER – II

OBJECTIVE

This course aims at imparting basic knowlege about GST and apply the provisions of GST law to various situations.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Central Excise : Nature and scope of Central Excise; Important terms and definitions under the Central Excise Act; General procedures of central excise; Clearance and excisable goods; Concession to small scale industry under Central Excise Act.	UNIT-I Customs : Role of customs in international trade; Important terms and definitions goods; Duty; Exporter; Foreign going vessel; Aircraft goods; Import; Import Manifest; Importer; Prohibited goods; Shipping bill; Store; Bill of lading; Export manifest; Letter of credit; Kinds of duties - basic, auxillary, additional or coutervailing; Basics of levyadvalorem,specific duties; Prohibition of export and import of goods, and provisions regarding notified & specified goods; Import of goods - Free import and restricted import; Type of import - import of cargo, import of personal baggage, import ofstores.Clearance Procedure - For home consumption, for warehousing for re-export; Clearance procedure for import by post; Prohibited exports; Canalised exports; Export against licensing; Type of exports export of cargo, export of baggage; Export of cargo by land, sea, and air routes.	Due to – Constitutional amendment (change in tax structure)
UNIT-II State Excise, CENVAT. Detail study of State Excise during calculation of Tax.	UNIT-II State Excise, CENVAT. Detail study of State Excise during calculation of Tax.	
UNIT-III Customs : Role of customs in international	UNIT-III INTRODUCTION TO GOODS AND	

trade; Important terms and definitions goods; Duty; Exporter; Foreign going vessel; Aircraft goods; Import; Import Manifest; Importer; Prohibited goods; Shipping bill; Store; Bill of lading; Export manifest; Letter of credit; Kinds of duties - basic, auxillary, additional or coutervailing; Basics of levyadvalorem,specific duties; Prohibition of export and import of goods, and provisions regarding notified & specified goods; Import of goods - Free import and restricted import; Type of import - import of cargo, import of personal baggage, import ofstores.Clearance Procedure - For home consumption, for warehousing for re-export; Clearance procedure for import by post; Prohibited exports; Canalised exports; Export against licensing; Type of exports export of cargo, export of baggage; Export of cargo by land, sea, and air routes.	SERVICES TAX (GST) -Objectives and basic scheme of GST, Meaning – Salient features of GST – Subsuming of taxes –Benefits of implementing GST , Structure of GST (Dual Model) – Central GST – State / Union Territory GST – Integrated GST GST Council: Structures Power and Functions. Provisions fro amendments.	
UNIT-IV Central Sales Tax : Important terms and difinitions under the Central Sales Tax Act 1956 - Dealer, declared good, place of business, sale, sale price, turnover, year, appropriate authority ; Nature and scope of Central Sales Tax Act; Provisions relating to inter-state sales; Sales in side a state; Sales/purchase in the course of imports and exports out of India. Registration of dealers and procedure thereof; Rate of tax; Exemption of subsequent sales; Determination of	UNIT-IV Registration under GST: Procedure for registration, Persons liable for registration, Persons not liable for registration, Compulsory registration. Exempted goods and services - Rates of GST. Procedure relating to Levy: (CGST & SGST): Scope of supply, Tax liability on Mixed and Composite supply, Time of supply of goods and services, Value of taxable supply. Eway-Billing	

turnover.		
UNIT-V State Commercial Tax (Chhattisgarh) Definition, Registration, Tax liability, Procedure of Computation & Collection of Tax, Penalties & Prosicution calculation of Tax. VAT Preliminary Knowledge.	UNIT-V ASSESSMENT AND RETURNS - Input text Credit: Eligibility, Apportionment, Inputs on capital goods, Distribution of credit by Input Service Distributor (ISD) Furnishing details of outward supplies and inward supplies, First return, Annual return and Final return.	

Suggested Reading :

1. Deloitte: GST Era Beckons, Wolters Kluwer.
2. Madhukar N Hiregange: Goods and Services Tax, Wolters Kluwer.
3. All About GST: V.S Datey - Taxman's.
4. Guide to GST: CA. Rajat Mohan,
5. Goods & Services Tax – Indian Journey: N.K. Gupta & Sunnania Batia, Barat's Publication
6. Goods & Services Tax – CA. Rajat Mohan,
7. Goods & Services Tax: Dr. Sanjiv Agrawal & CA. Sanjeev Malhotra.
8. GST - Law & Practice: Dr. B.G. Bhaskara, Manjunath. N & Naveen Kumar IM,
9. Understanding GST : Kamal Garg, Barat's Publication

B.COM PART III

COMPULSORY CORE COURSE
TITLE OF PAPER - Group-II - PAPER – II -MANAGEMENT ACCOUNTING
OBJECTIVE
This course provides the students an understanding of the application of accounting techniques for management.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Management Accounting : Meaning, nature, scope, and functions of management Accounting ; Role of managment accounting in decision making; Management accounting vs financial accounting; Tools and techniques of management accounting ;Financial statement; Objectives and methods of financial statements analysis; Ratio analysis; Classification of ratios - Profitability ratios, turnover ratios, liquidity ratios,turnover ratios; Advantages of ratio analysis; Limitations of accounting ratios.	UNIT-I Management Accounting : Meaning, nature, scope, and functions of management Accounting ; Role of managment accounting in decision making; Management accounting vs financial accounting; Tools and techniques of management accounting ;Financial statement; Objectives and methods of financial statements analysis; Ratio analysis; Classification of ratios - Profitability ratios, turnover ratios, liquidity ratios,turnover ratios; Advantages of ratio analysis; Limitations of accounting ratios.	No change
UNIT-II Funds Flow Statement as per Indian Accounting Standard 3, cash flow statement.	UNIT-II Funds Flow Statement as per Indian Accounting Standard 3, cash flow statement.	
UNIT-III Absorption and Marginal Costing : Marginal and differential costing as a tool for decision making - make or buy; Change of product mix; Pricing, Break-even analysis; Exploring new markets; Shutdown decisions.	UNIT-III Absorption and Marginal Costing : Marginal and differential costing as a tool for decision making - make or buy; Change of product mix; Pricing, Break-even analysis; Exploring new markets; Shutdown decisions.	
UNIT-IV Budgeting for profit Planning and control : Meaning of budget and budgetary control;Objectives; Merits and limitations; Types of budgets; Fixed and	UNIT-IV Budgeting for profit Planning and control : Meaning of budget and budgetary control;Objectives; Merits and limitations; Types of budgets; Fixed and	

flexible budgeting; Control ratios; Zero base budgeting; Responsibility accounting; Performance budgeting.	flexible budgeting; Control ratios; Zero base budgeting; Responsibility accounting; Performance budgeting.	
UNIT-V Standard Costing and Variance Analysis : Meaning of standard cost and standard costing; Advantages and application; Variance analysis - material; Labour and overhead (Two-way analysis); Variances.	UNIT-V Standard Costing and Variance Analysis : Meaning of standard cost and standard costing; Advantages and application; Variance analysis - material; Labour and overhead (Two-way analysis); Variances.	

Suggested Reading :

1. Arora M.N. : Cost Accounting - Principles and Practice, Vikas, New Delhi.
2. Jain S.P. & Narang K.L. : Cost Accounting; Kalyani, New Delhi.
3. Anthony, Rogert & Reece, at al : Principles of Management Accounting; Richard Irwin Inc.
4. Horngren, Charles, Foster and Datar et al : Cost Accounting - A Managerial Emphasis;Prentice Hall, New Delhi.
5. Khan M.Y. and Jain P.K. : Management Accounting : Tata McGraw Hill, New Delhi.
6. Kaplan R.S. and Atkonson A.A. : Advanced Management Accounting; Printice Hall India,New Delhi.
7. J.K. Agrawal & R.K. Agrawal : Jaipur (English & Hindi).
8. Dr. M.R. Agrawal : Minakshi Prakashan Meruth.
9. Dr. S.P. Gupta - Agra (Hindi & English).

B.COM PART III

COMPULSORY CORE COURSE
TITLE OF PAPER - Group-I - PAPER – II - AUDITING
OBJECTIVE
This course aims at imparting knowlege about the principles and methods of auditing and their applications.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Introduction : Meaning and objectives of auditing; Types of audit; Internal audit.Audit Process : Audit programme; Audit note books; Working papers and evidences.	UNIT-I Introduction : Meaning and objectives of auditing; Types of audit; Internal audit.Audit Process : Audit programme; Audit note books; Working papers and evidences.	No change
UNIT-II Internal Check System : Internal control. Audit Procedure : Vouching : Verification of assets and liabilities.	UNIT-II Internal Check System : Internal control. Audit Procedure : Vouching : Verification of assets and liabilities.	No change
UNIT-III Audit of Limited Companies : a. Company auditor - Appointment, powers, duties, and liabilities. b. Divisible profits and dividend. c. Auditor's report - standard report and qualified report. d. Special audit of banking companies. e. Audit of educational institutions. f. Audit of Insurance companies.	UNIT-III Audit of Limited Companies : a. Company auditor –Qualification, Appointment, powers, duties, Resignation and liabilities. b. Divisible profits and dividend. c. Auditor's report - standard report and qualified report. d. Special audit of banking companies. e. Audit of educational institutions. f. Audit of Insurance companies.	Added Qualification and Resignation of company auditor
UNIT-IV Investigation : Investigation; Audit of non profit companies, a. Where fraud is suspected, and b. When a running a business is proposed. c. Varifications & Valuation of assets.	UNIT-IV Investigation : Investigation; Audit of non profit companies, a. Where fraud is suspected, and b. When a running a business is proposed. c. Varifications & Valuation of assets.	No change

UNIT-V Recent Trends in Auditing : Nature and significance of cost audit; Tax audit; Management audit. Company auditing - Qualification, Appointment, Resignation and liabilities.	UNIT-V Recent Trends in Auditing : Nature and significance of cost audit; Tax audit; Management audit .	Omitted company auditing - Qualification , Appointment , Resignation and Liabilities and merge it in II unit

Suggested Reading :

1. Gupta KaPal : Contemporary Auditing : Tata Mcgraw Hill, New Delhi.
2. Tandon B.N. : Principles of Auditing : S. Chand & Co., New Delhi.
3. Pagare Dinkar : Principles and Practice of Auditing : Sultan Chand, New Delhi.
4. Sharma T.R. : Auditing Principles and Problems, Sahitya Bhawan, Agra.
5. Shukla S.M. : Auditing - Shahitya Bhavan, Agra, (Hindi)
6. Batliboy : Auditing.

- -

B.COM PART III

OPTIONAL GROUP B (Marketing Area)

TITLE OF PAPER - PRINCIPLES OF MARKETING PAPER – I

OBJECTIVE

The Objective of this course is to help students to understand the concept of marketingand its applications.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Introduction : Nature and scope of marketing; Importnace of marketing as a business function, and in the economy; Marketing concepts - traditional and modern; Selling vs. marketing; Marketing mix; Marketing environment.	UNIT-I Introduction : Nature and scope of marketing; Importnace of marketing as a business function, and in the economy; Marketing concepts - traditional and modern; Selling vs. marketing; Marketing mix; Marketing environment.	No change
UNIT-II Consumer Behaviour and Market Segmentation : Nature, scope, and significance of consumer behaviour; Market segmentation - concept and importance; Bases for market segmentation.	UNIT-II Consumer Behaviour and Market Segmentation : Nature, scope, and significance of consumer behaviour; Market segmentation - concept and importance; Bases for market segmentation.	No change
UNIT-III Product : Concept of product, consumer, and industrial goods; Product planning and development; Packaging role and functions; Brand name and trade mark; after sales service; Product life cycle concept. Price : Importance of price in the marketing mix; Factors affecting price of a product/ Service ; Discounts and rebates.	UNIT-III Product : Concept of product, consumer, and industrial goods; Product planning and development; Packaging role and functions; Brand name and trade mark; after sales service; Product life cycle concept. Price : Importance of price in the marketing mix; Factors affecting price of a product/service; Discounts and rebates.	No change
UNIT-IV Distributions Channels and Physical Distribution; Distribution channels - Concept and role; Types of distribution channels. Factors affecting	UNIT-IV Distributions Channels and Physical Distribution; Distribution channels - Concept and role; Types of distribution channels. Factors affecting choice of a	No cha

choice of a distribution channel;Retailer and holesaler; Physical distribution of goods; Transportation, Warehousing, Inverntory control; Order processing.	distribution channel; Retailer and holesaler; Physical distribution of goods; Transportation, Warehousing, Inverntory control; Order processing.	
UNIT-V Promotion : Methods of promotion; Optimum promotion mix; Advertising media – their ralative merits and limitations; Characteristics of an effective advertisement; Personal selling; Selling as a career; Classification of successful sales person; Functions of salesman.	UNIT-V Promotion : Methods of promotion; Optimum promotion mix; Advertising media – their ralative merits and limitations; Characteristics of an effective advertisement; Personal selling; Selling as a career; Classification of successful sales person; Functions of salesman. Recent development in marketing –social marketing, online marketing, Direct marketing , Services marketing, Green marketing.	Added Recent trends in marketing

Suggested Reading :

1. Philip Kotler : Marketing Management Englewood Cliffs; Prentice Hall, N.J.
2. William M. Pride and O.C. Ferrell : Marketing : Houghton - Mifflin Boston.
3. Stanton W.J. Etzel Michael J., and Walker Bruce J. Fundamentals of Marketing; McGraw Hill, New York.
4. Lamb Charies W., Hair Joseph F. and McDaniel Carl : Principles of Marketing; South- Western-Publishing, Cincinnati, Ohio.
5. Cravens David W. Hills Gerald E., Woodruff Robert B : Marketing management : Richard D. Inwin, Homewood Illinois.
6. Kotler Philip and Armstrong Gary : Principles of Marketing; Prentice Hall of India, New Delhi.
7. Dr. R.C. Agrawal, Agra.
8. Dr. S.C. Saxena Agra.
9. Dr. S.K. Jain, Hindi Granth Academi. M.P.
10. Dr. N.C. jain

B.COM PART III

OPTIONAL GROUP B (Marketing Area)
TITLE OF PAPER - INTERNATIONAL MARKETING PAPER – II
OBJECTIVE
This course aims at acquainting student with the operations of marketing in international environment.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I International Marketing : Nature, definiton, and scope of international marketing; Domestic marketing vs. International marketing; International environment external and internal.	UNIT-I International Marketing : Nature, definiton, and scope of international marketing; Domestic marketing vs. International marketing; International environment external and internal.	No change
UNIT-II Identifying and Selecting Foreign Market : Foreign market entry mode decisions. Product Planning for international Market : Product designing; Standardization vs. adaptation ; Branding and packaging; Labeling and quality issues; After sales service. International Pricing : Factors Influenceing International price; Pricing process-process and methods; International price quotation and payment terms.	UNIT-II Identifying and Selecting Foreign Market : Foreign market entry mode decisions. Product Planning for international Market : Product designing; Standardization vs. adaptation ; Branding and packaging; Labeling and quality issues; After sales service. International Pricing : Factors Influenceing International price; Pricing process-process and methods; International price quotation and payment terms.	No change
UNIT-III Promotion of Product/Services Abroad : Methods of international promotion; Direct mail and sales literature; Advertising; Personal selling; Trade fairs and exhibitions.	UNIT-III Promotion of Product/Services Abroad : Methods of international promotion; Direct mail and sales literature; Advertising; Personal selling; Trade fairs and exhibitions.	No change
UNIT-IV International Distribution : Distribution channels and logistics decisions; Selection and appointment of foreign sales agents.	UNIT-IV International Distribution : Distribution channels and logistics decisions; Selection and appointment of foreign sales agents.	No change
UNIT-V Export Policy and Practices in India : Exim policy - an overview; Trends in India's foreign trade; Steps in	UNIT-V Export Policy and Practices in India : Exim policy - an overview; Trends in India's foreign trade;	Added Marketing

starting an export business; Product selection; Market selection; Export pricing; Export finance; Documentation; Export procedures; Export assistance and incentives.	Steps in starting an export business; Product selection; Market selection; Export pricing; Export finance; Documentation; Export procedures; Export assistance and incentives. Marketing Control Process	Control Process

Suggested Reading :

1. Bhattacharya R.L. and Varshney B. : International Mrketing Management; Sultan Chand, New Delhi.
2. Bhattacharya B. : Export Marketing Strategles for Success; Global Press, New Delhi.
3. Keegan W.J. : Multinational Marketing Management; Prentice Hall, New Delhi.
4. Kriplani V. : International marketing; Prentice Hall New Delhi.
5. Taggart J.H. and Moder Mott. M.C. : The Essence of International Business; Prentice Hall New Delhi.
6. Kotler Phillip : Principles of Marketing; Prentice Hall New Delhi.
7. Fayer Weather John : International Marketing; Prentice Hall N.J.
8. Caterora P.M. and Keavenay S.M. : Marketing an international Perspective; Erwin Homewood, Illinois.
9. Paliwala, Stanely J. The Essence of International marketing; Prentice Hall, New Delhi.

SYLLABUS
B.COM. PART-II

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
A. Foundation Course			
I. Hindi Language		75	26
II. English Language		75	26
B. Three Compulsory Groups			
Group-I			
I. Corporate Accounting	75	150	50
II. Company Law	75		
Group-II			
I. Cost Accounting	75	150	50
II. Principles of Bus. Management	75		
Group-III			
I. Business Statistics	75	150	50
II. Fundamental of Entrepreneurship	75		

B.Com.II year

C O M P U L S O R Y

Group - I PAPER - I (CORPORATE ACCOUNTING)

OBJECTIVE

This course enable the students to develop awareness about corporate accounting in conformity with the provisions of companies Act.

(As per company act 2013)

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Issue, Forfeiture, and Re-issue of Shares : Redemption of preference shares; Issue and redemption of debentures.	**UNIT-I** Issue, Forfeiture, and Re-issue of Shares : Redemption of preference shares; Issue and redemption of debentures.	
UNIT-II Final Accounts; Excluding computation of managerial remuneration, and disposal of profit, Liquidation of Company.	**UNIT-II** Final Accounts (as per company act 2013) Liquidation of Company.	**Ommission of** managerial remuneration, and disposal of profit
UNIT-III Valuation of Goodwill and Shares.	**UNIT-III** Valuation of Goodwill and Shares.	
UNIT-IV Accounting for Amalgamation of Companies as per Indian Accounting Standard 14; Accounting for internal reconstruction - excluding intercompany holdings and re-construction schemes.	**UNIT-IV** Accounting for Amalgamation of Companies as per Indian Accounting Standard 14; Accounting for internal reconstruction - excluding intercompany holdings and re-construction schemes.	
UNIT-V Consolidated Balance Sheet of holding companies with one subsidiary only. Final Account of Banking Companies.	**UNIT-V** Consolidated Balance Sheet of holding companies with one subsidiary only.	Ommission Final Account of Banking Companies.

SUGGESTED READINGS :

1. Dr. S.M. Shukla, Sahitya Bhawan Agra.
2. Dr. Mangal Menta & Agrawal Published - Indore.
3. Dr. Karim Khanuja - Published - Agra.
4. Gupta R.L., Radhaswamy M; Company Accounts; Sultan Chand & Sons, New Delhi.

Group - II PAPER - I (COST ACCOU)

OBJECTIVE

This course exposes the students to the basic concepts and the tools used in cost accounting.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : Nature and scope of cost accounting ; Cost concepts and classfication; Methods and techniques; Installation of costing system; Concept of cost audit. Accounting for Material : Material Control; Concept and techniques; Pricing of material issues; Treatment of material losses.	**UNIT-I** Introduction : Nature and scope of cost accounting ; Cost concepts and classfication; Methods and techniques; Installation of costing system; Concept of cost audit. Accounting for Material : Material Control; Concept and techniques; Pricing of material issues; Treatment of material losses.	
UNIT-II Accounting for Labour : Labour cost control procedure; Labour turnover; Idle time and overtime; Methods of wage payment - time and piece rates; Incentive schemes. Accounting for overheads; Classification and departmentalization; Absorption of overheads; Determination of overhead rates; Under and over absorption, and its treatment.	**UNIT-II** Accounting for Labour : Labour cost control procedure; Labour turnover; Idle time and overtime; Methods of wage payment - time and piece rates; Incentive schemes. Accounting for overheads; Classification and departmentalization; Absorption of overheads; Determination of overhead rates; Under and over absorption, and its treatment.	
UNIT-III Cost Ascertainment : Unit costing; Job, batch and contract costing.	**UNIT-III** Cost Ascertainment : Unit costing; Job, batch and contract costing.	
UNIT-IV Operating costing; Process Costing - excluding inter - process profits, and joint and by - products.	**UNIT-IV** Operating costing; Process Costing - excluding inter - process profits, and joint and by - products.	
UNIT-V Cost Records : Intergal and non - integral system; Reconciliation of cost and financial accounts; Break Even Point.	**UNIT-V** Cost Records : Intergal and non - integral system; Reconciliation of cost and financial accounts; Break Even Point.	

SUGGESTED READINGS :

1. M.L. Agrawal : Sahitya Bhawan Agra.
2. Maheshwari S.N. : Advanced Problems and Solutions in Cost Accounting; Sultan Chand, New Delhi.
3. Arora M.N. : Cost Accounting - Principles and Practice; Vikas, New Delhi.
4. Jain S.P. and Narang K.L. : Cost Accounting; Kalyani New Delhi.

Group - II - PAPER - II
PRINCIPLES OF BUSINESS MANAGEMENT

OBJECTIVE

This Course familiarizes the students with the basics of principles of management.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : Concept, nature, process, and significance of management; manage-ment roles (Mintzberg); An overview of functional areas of management; Development management thought; Classical and neo-classical systems; Concept approaches.	**UNIT-I** Introduction : Concept, nature, process, and significance of management; manage-ment roles (Mintzberg); An overview of functional areas of management; Development management thought; Classical and neo-classical systems; Concept approaches.	
UNIT-II Planning : Concept, process and types. Decision making - concept and Bounded rationality; Management by objectives; Corporate planning; Environment analysis and diagnosis; Strategy formulation.	**UNIT-II** Planning : Concept, process and types. Decision making - concept and Bounded rationality; Management by objectives; Corporate planning; Environment analysis and diagnosis; Strategy formulation.	
UNIT-III Organizing : Concept, nature, process and significance; Authority and resident relationships; Centralization and decentralization; Departmentation; Organization structure - forms and contingency factors.	**UNIT-III** Organizing : Concept, nature, process and significance; Authority and resident relationships; Centralization and decentralization; Departmentation; Organization structure - forms and contingency factors.	
UNIT-IV Motivating and Leading People at work : Motivation - concept; Theories Herzberg, McGregor, and Ouchi; Financial and non-financial incentives. Leadership - concept and leadrship styles; Leadership theories (Tannenb Schmidt.); Likert's System Management; Communication - nature, process, networks, and barriers, Effective Communication.	**UNIT-IV** Motivating and Leading People at work : Motivation - concept; Theories Herzberg, McGregor, and Ouchi; Financial and non-financial incentives. Leadership - concept and leadrship styles; Leadership theories (Tannenb Schmidt.); Likert's System Management; Communication - nature, process, networks, and barriers, Effective Communication.	
UNIT-V Managerial Control : Concept and process; Effective control system; Technical control - traditional and modern. Management of Change : Concept, nature, and process of planned Resistance to change; Emerging horizons of management in a environment.	**UNIT-V** Managerial Control : Concept and process; Effective control system; Technical control - traditional and modern. Management of Change : Concept, nature, and process of planned Resistance to change; Emerging horizons of management in a environment.	

SUGGESTED READINGS :

1. Dr. R.C. Agrawal, Agra.
2. Dr. S.C. Saxena, Agra.
3. Weihrich and Koontz, et al : Essentials of Management; Tata McGraw Hill, New Delhi.

Group - I - PAPER - II
COMPANY LAW

OBJECTIVE
This objective of this course is to provide basic knowledge of the provisions Companies Act. 2013, along with relevant case law.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Corporate personalities; Kinds of Companies, Nature & Scope, promotion on and incorporation of companies.	**UNIT-I** Corporate personalities; Kinds of Companies, Nature & Scope, promotion on and incorporation of companies.	
UNIT-II Memorandum of Association; Articles of Association; Prospectus, Shares; share capital - transfer and transmission.	**UNIT-II** Memorandum of Association; Articles of Association; Prospectus, Shares; share capital - transfer and transmission.	
UNIT-III Capital management - borrowing powers, mortgages and charges, debentures. Directors - Managing Director, whole time director, Appointment, Remuneration, and duties.	**UNIT-III** Capital management - borrowing powers, mortgages and charges, debentures. Directors - Managing Director, whole time director, Appointment, Remuneration, and duties.	
UNIT-IV Company meetings - kinds, Notice, quorum, voting, proxy, resolutions, minutes.	**UNIT-IV** Company meetings - kinds, Notice, quorum, voting, proxy, resolutions, minutes.	
UNIT-V majority powers and minority rights; Prevention of oppression and mismanagement. Winding up - kinds and conduct.	**UNIT-V** majority powers and minority rights; Prevention of oppression and mismanagement. Winding up - kinds and conduct.	

SUGGESTED READINGS :

1. Singh Avtar : Company Law; Eastern Book Co., Lucknow.
2. Dr. S.M. Shukla, Shahitya Bhawan Agra.
3. Dr. R.C. Agrawal, Shahitya Bhawan Agra.
4. Kapoor N.D. : Company Law - Incorporating the Provisions of the comanies Amendment Act, 2013 Chand & Sons, New Delhi.

BUSINESS STATISTICS

-e the students to gain understanding of statistical techniques as are applicable
usiness.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : Statistics as a subject; Descriptive Statistics - compared to Inferential Statistics; Types of data; Summation operation; Rules of Sigma E operations, Analysis of University Data; Construction of a frequency distribution; Concept of central tendency.	**UNIT-I** Introduction : Statistics as a subject; Descriptive Statistics - compared to Inferential Statistics; Types of data; Summation operation; Rules of Sigma E operations, Analysis of University Data; Construction of a frequency distribution; Concept of central tendency.	
UNIT-II Dispersion - and their measures; Partition values; Moments; Skewness and measures; Kurtosis and measures.	**UNIT-II Dispersion - and their measures; Partition values; Skewness and measures;**	Omission of mo & Kurtosis
UNIT-III Analysis of Bivariate Data : Linear regression two variables and correlation.	**UNIT-III Analysis of Bivariate Data : Linear regression two variables and correlation.**	
UNIT-IV Index Number; Meaning, types, and uses; Methods of Constructing price and quantity indices (simple and aggregate); Tests of adequacy; Chain - base index numbers; Base shifting, splicing and deflating; Problems in constructing index numbers; Consumer price index. Analysis of Time Series : Cause of Variation in time series data; Components of a time series; Decomposition - Additive and Multiplicative models; Determination of trend - Moving Averages Method and method of least squares (including linear, second degree, parabolic, and exponential trend); Computation of seasonal indices by simple averages, ratio - to - trend, ratio - to - moving average, and link relative methods.	**UNIT-IV** Index Number; Meaning, types, and uses; Methods of Constructing price and quantity indices (simple and aggregate); Tests of adequacy; Chain - base index numbers; Base shifting, splicing and deflating; Problems in constructing index numbers; Consumer price index. Analysis of Time Series : Cause of Variation in time series data; Components of a time series; Decomposition - Additive and Multiplicative models; Determination of trend - Moving Averages Method and method of least squares (including linear, second degree, parabolic, and exponential trend); Computation of seasonal indices by simple averages, ratio - to - trend, ratio - to - moving average, and link relative methods.	
UNIT-V Forecasting and Methods : Forcasting - concept, types and importance; General approach to forecasting; Methods of forecasting; demand; Industry Vs Company sales forecast; Factors affecting company sales. Theory of Probability : as a concept; The three approaches to defining probability; Addition and multiplication laws of probability; Conditional Probability; Bayes' Theorem; Expectation and Variance of a random variable.	**UNIT-V** Forecasting and Methods : Forcasting - concept, types and importance; General approach to forecasting; Methods of forecasting; demand; Industry Vs Company sales forecast; Factors affecting company sales. Theory of Probability : as a concept; The three approaches to defining probability; Addition and multiplication laws of probability; Conditional Probability; Bayes' Theorem; Expectation and Variance of a random variable.	

SUGGESTED READINGS :

1. S.M.Shukla, Shahitya Bhawan,Agara.
2. Statistical Analysis, Dr. Rajesh Shukla and J.B. Agrawal

Group - III PAPER - II

FUNDAMENTALS OF ENTREPRENEURSHIP

OBJECTIVE

It Provides exposure to the students to the entrepreneurial culture and industrial growth so as to preparing them to set up and manage their own small units.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : The entrepreneur; Definition; Emergence of entrepreneurial class; Theories of entrepreneurship; Role of socio - economic environment; Characteri-stics.	**UNIT-I** Introduction : The entrepreneur; Definition; Emergence of entrepreneurial class; Theories of entrepreneurship; Role of socio - economic environment; Characteri-stics.	
UNIT-II Promotion of a Venture; Opportunities analysis; External environmental analysis economic, social and technological; Competitive factors; Legal requirements for establishment of a new unit, and raising of funds; Venture capital sources and documentation required.	**UNIT-II** Promotion of a Venture; Opportunities analysis; External environmental analysis economic, social and technological; Competitive factors; Legal requirements for establishment of a new unit, and raising of funds; Venture capital sources and documentation required.	
UNIT-III Entrepreneurial Behavior : Innovation and entrepreneur; Entrepreneurial behavior and Psycho - Theories, Social responsibility.	**UNIT-III** Entrepreneurial Behavior : Innovation and entrepreneur; Entrepreneurial behavior and Psycho - Theories, Social responsibility.	
UNIT-IV Entrepreneurial Development Programs (EDP) : EDP, their role, relevance, and achievements; Role of Government in organizing EDPs; Critical evaluation.	**UNIT-IV** Entrepreneurial Development Programs (EDP) : EDP, their role, relevance, and achievements; Role of Government in organizing EDPs; Critical evaluation.	
UNIT-V Role of Entrepreneur : Role of an entrepreneur in economic growth as an innovator, generation of employment opportunities, complementing and supplementing economic growth, bringing about social stability and balanced regional development of industries; Role in export promotion and import substitution, forex earnings, and augmenting and meeting local demand.	**UNIT-V** Role of Entrepreneur : Role of an entrepreneur in economic growth as an innovator, generation of employment opportunities, complementing and supplementing economic growth, bringing about social stability and balanced regional development of industries; Role in export promotion and import substitution, forex earnings, and augmenting and meeting local demand.	

SUGGESTED READINGS :

3. Srivastava S.B. : A Practical Guide to industrial Entrepreneurs; Sultan Chand and Sons, New Delhi.
4. Tandon B.C. : Environment and Entrepreneur; Chugh Publications, Allahabad.
5. Prasanna Chandra : Project Preparation, Appraisal, Implementation; Tata McGrow Hill, New Delhi.

पाठ्यक्रम

हिन्दी साहित्य (छ.ग.)

बी. ए. तृतीय वर्ष

पूर्णांक : 75

प्रथम प्रश्न-पत्र

जनपदीय भाषा साहित्य (छत्तीसगढ़ी)

रचनाएँ–

(1) **प्राचीन कवि संत धर्मदास के 3 पद**–1. गुरु पइंया लागों नाम लखा दीजो हो। 2. नैन आगे ख्याल घनेरा। 3. भजन करौ भाई रे, अइसन तन पाय के। (सन्दर्भ–धर्मदास के शब्दावली से उद्धृत)

(2) **लखनलाल गुप्त का गद्य**– 1. सोनपान (गद्य – पुस्तक 'सोनपान' से उद्धृत)

(3) **अर्वाचीन रचनाकार**–डॉ. सत्यभामा आडिल रचित गद्य–1. सीख सीख के गोठ (गद्य पुस्तक 'गोठ' से उद्धृत)

(4) **डॉ. विनय पाठक की कविताएँ**–1. तँय उठथस सुरुज उथे, 2. एक किसिम के नियाव ('अकादसी अउ अनचिन्हार' पुस्तक से उद्धृत)

(5) **मुकुन्द कौशल–छत्तीसगढ़ी गजल**–"छै बित्ता के मनखे देखौ ... से – मछरी मन ला खा लेथे" तक (पुस्तक 'छत्तीसगढ़ी गजल' के पृष्ठ 17 से उद्धृत)

द्रुतपाठ के रचनाकार (व्यक्तित्व एवं कृतित्व)– 1. सुन्दर लाल शर्मा, 2. कपिलनाथ कश्यप, 3. रामचन्द्र देशमुख (रंगकर्मी)।

अंक विभाजन–

3 व्याख्याएँ	–	21 अंक
2 आलोचनात्मक प्रश्न	–	24 अंक
5 लघु उत्तरीय प्रश्न	–	15 अंक
15 वस्तुनिष्ठ/ अति लघु उत्तरीय प्रश्न	–	15 अंक
		कुल - 75 अंक

इकाई विभाजन–

इकाई 1. व्याख्या
इकाई 2. प्राचीन एवं अर्वाचीन रचनाकार
इकाई 3. (अ) छत्तीसगढ़ी भाषा का इतिहास
(ब) छत्तीसगढ़ी साहित्य का इतिहास
इकाई 4. द्रुत पाठ के तीन रचनाकार
इकाई 5. वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

पाठ्यक्रम

हिन्दी साहित्य (छ.ग.)

बी.ए. तृतीय वर्ष

पूर्णांक : 75

द्वितीय प्रश्न-पत्र

हिन्दी भाषा—साहित्य का इतिहास तथा काव्यांग विवेचन

पाठ्य विषय–

(क) **हिन्दी भाषा का स्वरूप व विकास**–हिन्दी की उत्पत्ति, हिन्दी की मूल आकार भाषाएँ तथा विभिन्न विभाषाओं का विकास। हिन्दी भाषा के विभिन्न रूप– 1. बोलचाल की भाषा, 2. रचनात्मक भाषा, 3. राष्ट्रभाषा, 4. राजभाषा, 5. सम्पर्क भाषा, 6. संचार भाषा।
हिन्दी का शब्द भण्डार–तत्सम, तद्भव, देशज, आगत शब्दावली।

(ख) **हिन्दी साहित्य का इतिहास**–आदिकाल, पूर्व मध्यकाल, उत्तर मध्यकाल और आधुनिक काल की सामाजिक, सांस्कृतिक पृष्ठभूमि, प्रमुख युग प्रवृत्तियाँ, विशिष्ट रचनाकार और उनकी प्रतिनिधि कृतियाँ, साहित्यिक विशेषताएँ।

(ग) **काव्यांग**–काव्य का स्वरूप एवं प्रयोजन, रस के विभिन्न भेद, विभिन्न अंग, विभावादि तथा उदाहरण। प्रमुख 5 छंद – दोहा, सोरठा, चौपाई, कुण्डलियाँ, सवैया। शब्दालंकार– अनुप्रास, यमक, श्लेष, वक्रोक्ति, पुनरुक्ति प्रकाश। अर्थालंकार –उपमा, रूपक, उत्प्रेक्षा, अतिशयोक्ति, भ्रांतिमान।

अंक विभाजन–

4 आलोचनात्मक	–	44 अंक
4 लघु उत्तरीय प्रश्न	–	16 अंक
15 वस्तुनिष्ठ प्रश्न	–	15 अंक
कुल अंक		**75 अंक**

इकाई विभाजन–

इकाई 1. हिन्दी भाषा का स्वरूप व विकास–(खण्ड–'क')
इकाई 2. हिन्दी का शब्द भण्डार– (खण्ड–'क' का अंतिम भाग)
इकाई 3. हिन्दी साहित्य का इतिहास– (खण्ड–'ख')
इकाई 4. काव्यांग–रस, छंद, अलंकार–(भाग–'ग')
इकाई 5. लघु उत्तरीय एवं वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

पाठ्यक्रम

हिन्दी साहित्य (छ.ग.)

बी. ए. प्रथम वर्ष

पूर्णांक : 75

प्रथम प्रश्न–पत्र

प्राचीन हिन्दी काव्य

उद्देश्य एवं प्रस्तावना–

प्राचीन से तात्पर्य है–आधुनिक काल से पूर्व का काल। सही अर्थ में हिन्दी भाषा और साहित्य का विकास आदिकाल से शुरू होता है। इसमें धार्मिक तथा ऐतिहासिक दो प्रकार का साहित्य मिलता है, जो प्रबंध, मुक्तक, रासो, फागु, चरित, सुभाषित आदि विविध काव्यरूपों में अभिव्यंजित है। मध्यकालीन साहित्य की पृष्ठभूमि के रूप में इसे प्रतिष्ठापित किया जाता है।

मध्यकालीन काव्य में भक्तिकाव्य, जहाँ लोक जागरण को स्वर देने वाला है, वहीं रीतिकाल अपने लौकिक–शृंगारिका, परिदृश्य में तत्कालीन सामाजिक, सांस्कृतिक, राजनीतिक स्थितियों को बेलौस अभिव्यंजित करता है। अतः भाषा, संस्कृति, विचार, मानवता, काव्यरूपता, लौकिकता–पारलौकिकता, आदि दृष्टियों से इसका अध्ययन अत्यावश्यक है।

ाठ्य विषय–

1. कबीर (कबीर–कांतिकुमार जैन, प्रारंभिक 50 साखियाँ)
2. जायसी (संक्षिप्त पद्मावत–श्यामसुंदर दास, नागमती वियोग वर्णन)
3. सूर (भ्रमर गीत सार–सं. आचार्य रामचन्द्र शुक्ल, प्रारंभिक 25 पद)
4. तुलसी–"रामचरित मानस" के सुन्दरकाण्ड से प्रारंभिक 25 दोहे, चौपाई, छंद सहित।
5. घनानन्द (घनानन्द–सं. विश्वनाथ प्रसाद मिश्र) प्रारंभिक 25 छन्द,

द्रुत पाठ हेतु निम्नांकित तीन कवियों का अध्ययन किया जावेगा–जिसमें से किन्हीं दो पर लघु उत्तरीय प्रश्न पूछे जायेंगे। 1. विद्यापति, 2. रहीम, 3. रसखान।

ंक विभाजन–

1. व्याख्याएँ (3)	21 अंक
2. आलोचनात्मक प्रश्न (2)	24 अंक
3. लघु उत्तरीय प्रश्न (5)	15 अंक
4. वस्तुनिष्ठ प्रश्न (15)	15 अंक।

पाठ्यक्रम

हिन्दी साहित्य (छ.ग.)

बी.ए. प्रथम वर्ष

द्वितीय प्रश्न–पत्र पूर्णांक : 75

हिन्दी कथा साहित्य

उद्देश्य एवं प्रस्तावना–गद्य की प्रमुख विधाओं का द्रुत विकास इनकी लोकप्रियता का प्रमाण प्रस्तुत करता है। इसमें आधुनिक जीवन, अपनी विविध कमियों के साथ यथार्थ रूप में अभिव्यंजित हुआ है। जीवन की अनुभूतियाँ, संवेदनाओं तथा विविध परिस्थितियों के साक्षात्कार के लिए इनका अध्ययन सर्वथा अपेक्षित है।

पाठ्य विषय–व्याख्या एवं आलोचनात्मक प्रश्नों के लिए एक उपन्यास एवं आठ कहानीकारों की एक–एक प्रतिनिधि कहानी का अध्ययन आवश्यक है।

उपन्यास– 1. गबन – मुंशी प्रेमचंद

कहानी–
1. पूस की रात – मुंशी प्रेमचंद
2. आकाशदीप – जयशंकर प्रसाद
3. परदा – यशपाल
4. लाल पान की बेगम – फणीश्वरनाथ रेणु
5. मलबे का मालिक – मोहन राकेश
6. चीफ की दावत – भीष्म साहनी
7. जली हुई रस्सी – गुलशेर खाँ शानी
8. नकली हीरे – मन्नू भण्डारी।

द्रुतपाठ के लिए निम्नांकित चार कथाकारों का अध्ययन अपेक्षित है, जिनमें से किन्हीं दो पर लघु उत्तरीय प्रश्न पूछे जाएँगे–1. उपेन्द्रनाथ अश्क, 2. बालशौरि रेड्डी, 3. शिवानी, 4. पदुमलाल पुन्नालाल बख्शी।

अंक विभाजन–

3 व्याख्याएँ	21 अंक
2 आलोचनात्मक प्रश्न	24 अंक
3 लघु उत्तरीय प्रश्न	15 अंक
15 वस्तुनिष्ठ प्रश्न	15 अंक
योग–	**75 अंक**

आधार पाठ्यक्रम

(प्रथम प्रश्न-पत्र)

हिन्दी-भाषा

पूर्णांक 75 क्रेडिट 05

पाठ्यक्रम

पाठ्यक्रम का उद्देश्य–

1. हिन्दी भाषा के प्रयोजनात्मक स्वरूप का सामान्य ज्ञान प्रदान करना।
2. कम्प्यूटर में हिन्दी भाषा के प्रयोग की आवश्यकता के अनुरूप कम्प्यूटर की कार्य प्रणाली की आरम्भिक जानकारी से अवगत होने के लिए प्रेरित करना।
3. हिन्दी व्याकरण की बुनियादी ज्ञान सम्प्रेषण कौशल तथा भाषायी दक्षता से अवगत कराना।
4. साहित्य और समाज को समझने की दिशा में रुझान उत्पन्न करना।

पाठ्य विषय

इकाई - 1	(क) पल्लवन, पत्राचार, अनुवाद (ख) एक टोकरी भर मिट्टी : माधवराव सप्रे बड़े भाई साहब : प्रेमचन्द	अंक 15 18 कालखण्ड
इकाई - 2	(क) संक्षेपण, हिन्दी में संक्षिप्तिकरण, हिन्दी-अपठित गद्यांश, पारिभाषिक शब्दावली, हिन्दी में पदनाम, मुहावरे एवं लोकोक्तियाँ (ख) जागो फिर एक बार : सूर्यकान्त त्रिपाठी 'निराला' जन्मदिन ('मिट्टी से कहूँगा धन्यवाद' संग्रह से) : एकान्त श्रीवास्तव	अंक 15 18 कालखण्ड
इकाई - 3	(क) शब्द-शुद्धि, वाक्य-शुद्धि, शब्द-ज्ञान-पर्यायवाची शब्द, विलोम शब्द, अनेकार्थी-शब्द, समश्रुत शब्द, अनेक शब्दों के लिए एक शब्द (ख) भोलाराम का जीव : हरिशंकर परसाई जीप पर सवार इल्लियाँ : शरद जोशी	अंक 15 18 कालखण्ड
इकाई - 4	(क) मानक भाषा का अर्थ, मानक हिन्दी भाषा का अर्थ, स्वरूप, विशेषताएँ, मानक, उपमानक, अमानक-भाषा (ख) शिकागो से स्वामी विवेकानन्द का पत्र सत्य और अहिंसा : महात्मा गाँधी	अंक 15 18 कालखण्ड
इकाई - 5	(क) देवनागरी लिपि-नामकरण, स्वरूप, विशेषताएँ, कम्प्यूटर का सामान्य परिचय, कम्प्यूटर में हिन्दी का अनुप्रयोग। (ख) कछुआ-धरम : चन्द्रधर शर्मा 'गुलेरी' छत्तीसगढ़ का वैभव : हीरालाल शुक्ल	अंक 15 18 कालखण्ड

● *मूल्यांकन योजना*

प्रत्येक इकाई से एक-एक प्रश्न पूछे जाएँगे। एक प्रश्न के 15 अंक होंगे। प्रत्येक प्रश्न में आन्तरिक विकल्प होगा। प्रत्येक प्रश्न के दो भाग 'क' और 'ख' होंगे एवं अंक क्रमशः 08 एवं 07 होंगे। प्रश्नपत्र का पूर्णांक 75 निर्धारित है।

प्रश्नपत्र के पूर्णांक का दस प्रतिशत अंक आन्तरिक मूल्यांकन के लिए निर्धारित है।

B.Sc. Part-III

Paper-I

RELATIVITY, QUANTUM MECHANICS, ATOMIC MOLECULAR AND NUCLEAR PHYSICS

Unit-1 Reference systems, inertial frames, Galilean invariance propagation of light, Michelson-Morley experiment, search for ether. Postulates for the special theory of relativity, Lorentz transformations, length contraction, time dilation, velocity addition, variation of mass with velocity, mass-energy equivalence, particle with zero rest mass.

Unit-2 Origin of the quantum theory : Failure of classical physics to explain the phenomena such as black-body spectrum, photoelectric effect, Compton effect, Wave-particle duality, uncertainty principle, de Broglie's hypothesis for matter waves, the concept of Phase and group velocities, experimental demonstration of mater waves. Davisson and Germer's experiment. Consequence of de Broglie's concepts, Bohr's complementary Principle, Bohr's correspondence principle, Bohr's atomic model, energies of a particle in a box, wave packets. Consequence of the uncertainty relation, gamma ray microscope, diffraction at a slit.

Unit-3 Quantum Mechanics: Schrodinger's equation, Statistical interpretation of wave function, Orthogonality and normalization of wave function, Probability current density, Postulatory basis of quantum mechanics, operators, expectation values, Ehrenfest's theorem, transition probabilities, applications to particle in a one and three dimensional boxes, harmonic oscillator in one dimension, reflection at a step potential, transmission across a potential barrier.

Unit-4 Spectra of hydrogen, deuteron and alkali atoms spectral terms, doublet fine structure, screening constants for alkali spectra for s, p, d and f states, selection rules. Discrete set of electronic energies of moleculers, quantisation of vibrational and rotational energies, determination of inter-nuclear distance, pure rotational and rotation vibration spectra. Dissociation limit for the ground and other electronic states, transition rules for pure vibration and electronic vibration spectra. Raman effect, Stokes and anti-Stokes lines, complimentary character of Raman and infrared spectra, experimental arrangements for Raman spectroscopy.

11/6/18 11/6/2018 11/6/18

11-6-18 11/06/18 11/06/18

Unit-5 Structure of nuclei:- Basic Properties of Nuclei: (1) Mass, (2) Radii, (3) Charge, (4) Angular Momentum, (5) Spin, (5) Magnetic Moment (μ), (6) Stability and (7) Binding Energy, Nuclear Models:- Liquid Drop Model, Mass formula, Shell Model, Types of Nuclear reactions, laws of conservation, Q-value of reactions, Interaction of Energetic particles with matter, Ionization chamber, GM Counter, Cloud Chambers, Fundamental Interactions, Classification of Elementary Particles, Particles and Antiparticles, Baryons, Hyperons, Leptons, and Mesons, Elementary Particle Quantum Numbers: Baryon Number, Lepton Number, Strangeness, Electric Charge, Hypercharge and Isospin, introductory idea of discovery of Higg's Boson.

TEXT AND REFERENCE BOOKS:

1. H.S. Mani and G.K. Metha: "Introduction to Modern Physics"" (Affiliated East-West Press, 1989).
2. A Beiser, "Prospective of Modern Physics".
3. H.E. White, Introduction to Atomic Physic".
4. Barrow, "Introduction to Molecular Physics".
5. R.P. Feynman, R.B. Leighton and M Sands, "The Feynman Lectures on Physics", Vol.III (B.I. Publications, Bombay, Delhi, Calcutta, Madras).
6. T.A. Littlefield and N Thorley, "Atomic and Nuclear Physics" (Engineering Language Book Society)
7. H.A. Enge, "Introduction to Nuclear Physics", (Addision-Wesly)
8. Eisenberg and Resnick, "Quantum Physics of Atoms, Molecules, Solids, Nuclei and Particles" (John Wiley)
9. D.P. Khandelwal, "Optics and Atomic Physics", (Himalaya Publishing House, Bombay, 1988).
10. Quarks and Leptons, F. Halzen and A.D. Martin, Wiley India, New Delhi, 1984.
11. Radiation detection and measurement, G.F. Knoll (John Wiley & Sons, 2000).
12. Theoretical Nuclear Physics, J.M. Blatt & V.F.Weisskopf (Dover Pub.Inc., 1991).

Paper-II

SOLID STATE PHYSICS, SOLID STATE DEVICES AND ELECTRONICS

Unit-1 Amorphous and crystalline solids, Elements of symmetry, seven crystal system, Cubic lattices, Crystal planes, Miller indices, Laue's equation for X-ray diffraction, Bragg's Law, Bonding in solids, classification. Cohesive energy of solid, Madelung constant, evaluation of Parameters, Specific heat of solids, classical theory (Dulong-Petit's law), Einstein and Debye theories, Vibrational modes of one dimensional monoatomic lattice, Dispersion relation, Brillouin Zone.

Unit-2 Free electron model of a metal, Solution of one dimensional Schrödinger equation in a constant potential, Density of states, Fermi Energy, Energy bands in a solid (Kronig-Penny model without mathematical details), Difference between Metals, Insulator and Semiconductors, Hall effect, Dia, Para and Ferromagnetism, Langevin's theory of dia and para-magnetism, Curie- Weiss's Law, Qualitative description of Ferromagnetism (Magnetic domains), B-H curve and Hysteresis loss.

Unit-3 Intrinsic and extrinsic semi conductors, Concept of Fermi level, Generation and recombination of electron hole pairs in semiconductors, Mobility of electrons and holes, drift and diffusion currents, p-n junction diode, depletion width and potential barrier, junction capacitance, I-V characteristics, Tunnel diode, Zener diode, Light emitting diode, solar cell, Bipolar transistors, pnp and npn transistors, characteristics of transistors, different configurations, current amplification factor, FET and MOSFET Characteristics.

Unit-4 Half and full wave rectifier, rectifier efficiency ripple factor, Bridge rectifier, Filters, Inductor filter, L and π section filters, Zener diode, regulated power supply using zener diode, Applications of transistors, Bipolar Transistor as amplifier, h-parameter, h-parameter equivalent circuit, Transistor as power amplifier, Transistor as oscillator, principle of an oscillator and Bark Hausen's condition, requirements of an oscillator, Wein-Bridge oscillator and Hartley oscillator.

Unit-5 Digital Circuits: Difference between Analog and Digital Circuits, Binary Numbers, Decimal to Binary and Binary to Decimal Conversion, AND, OR and NOT Gates (Realization using Diodes and Transistor), NAND and NOR Gates as Universal Gates, XOR and XNGR Gate, De Morgan's Theorems, Boolean Laws, Simplification of Logic Circuit using Boolean Algebra, Digital to Analog Converter, Analog to Digital Converter.

TEXT AND REFERENCE BOOKS:

1. Introduction to solid state physics: C. Kittel.
2. Solid State Physics: A.J. Dekkar.
3. Electronic Circuits: Mottershead.
4. Electronic Circuits: Millman and Halkias.
5. Semiconductor Devices: S.M. Sze.
6. Electronic devices: T.L. Floyd.
7. Device and Circuits: J. Millman and C. Halkias.
8. Electronic Fundamental and Applications: D. Chatopadhyay and P.C. Rakshit.
9. Electricity and Magnetism: K.K. Tiwari.

PRACTICALS

Minimum 16 (Eight from each group)

Experiments out of the following or similar experiments of equal standard

1. Determination of Planck's constant.
2. Determination of e/m by using Thomson tube.
3. Determination of e by Millikan's methods.
4. Study of spectra of hydrogen and deuterium (Rydberg constant and ratio of masses of electron proton).
5. Absorption spectrum of iodine vapour.
6. Study of alkali or alkaline earth spectra using a concave grating.
7. Study of Zeeman effect for determination of a Lande g-factor.
8. Analysis of a given band spectrum.
9. Study of Raman spectrum using laser as an excitation source.
10. Study of absorption of alpha and beta rays.
11. Study of statistics in radioactive measurement.
12. Coniometric study of crystal faces.
13. Determination of dielectric constant.
14. Hysteresis curve of transformer core.
15. Hall-probe method for measurement of magnetic field.
16. Specific resistance and energy gap of semiconductor.
17. Characteristics of transistor.
18. Characteristics of tunnel diode.
19. Study of voltage regulation system.
20. Study of regulated power supply.

11/6/18 11/6/2018 11/6/18

19-6-18 11/06/18 11/06/18

B.Sc. Part-II

Paper-I

THERMODYNAMICS, KINETIC THEORY AND STATISTICAL PHYSICS

Unit-1 The laws of thermodynamics : The Zeroth law, first law of thermodynamics, Internal energy as a state function, reversible and irreversible change, Carnot's cycle, carnot theorem, second law of thermodynamics. Claussius theorem inequality. Entropy, Change of entropy in simple cases (i) Isothermal expansion of an ideal gas (ii) Reversible isochoric process (iii) Free adiabatic expansion of an ideal gas. Concept of entropy, Entropy of the universe. Entropy change in reversible and irreversible processes, Entropy of Ideal gas, Entropy as a thermodynamic variable, S-T diagram, Principle of increase of entropy. The thermodynamic scale of temperature, Third law of thermodynamics, Concept of negative temperature.

Unit-2 Thermodynamic functions, Internal energy, Enthalpy, Helmholtz function and Gibb's free energy, Maxwell's thermodynamical equations and their applications, TdS equations, Energy and heat capacity equations Application of Maxwell's equation in Joule-Thomson cooling, adiabatic cooling of a system, Van der Waals gas, Clausius-Clapeyron heat equation. Blackbody spectrum, Stefan-Boltzmann law, Wien's displacement law, Rayleigh-Jean's law, Planck's quantum theory of radiation.

Unit-3 Maxwellian distribution of speeds in an ideal gas: Distribution of speeds and velocities, experimental verification, distinction between mean, rms and most probable speed values. Doppler broadening of spectral lines. Transport phenomena in gases: Molecular collisions mean free path and collision cross sections. Estimates of molecular diameter and mean free path. Transport of mass, momentum and energy and interrelationship, dependence on temperature and pressure.
Behaviour of Real Gases: Deviations from the Ideal Gas Equation. The Virial Equation. Andrew's Experiments on CO_2 Gas. Critical Constants.

Unit-4 The statistical basis of thermodynamics: Probability and thermodynamic probability, principle of equal a priori probabilities, statistical postulates. Concept of Gibb's ensemble, accessible and inaccessible states. Concept of phase space, γ phase space and μ phase space. Equilibrium before two systems in thermal contact, probability and entropy, Boltzmann entropy relation. Boltzmann canonical distribution law and its applications, law of equipartition of energy.

11/6/18 11/6/2018 11/6/18

11-6-18 11/06/18 11/06/18

Transition to quantum statistics: 'h' as a natural constant and its implications, cases of particle in a one-dimensional box and one-dimensional harmonic oscillator.

Unit-5 Indistinguishability of particles and its consequences, Bose-Einstein & Fermi-Dirac conditions, Concept of partition function, Derivation of Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac Statistics, Limits of B-E and F-D statistics to M-B statistics. Application of B-E statistics to black body radiation, Application of F-D statistics to free electrons in a metal.

TEXT AND REFERENCE BOOKS:

1. B.B. Laud, "Introduction to Statistical Mechanics" (Mcmillan 1981)
2. F. Reif : "Statistical Physics" (Mcgraw-Hill, 1998).
3. K, Haung : "Statatistical Physics" (Wiley Eastern, 1988).
4. Thermal and statistical Physics: R.K. Singh, Y.M. Gupta and S. Sivraman.
5. Statistical Physics: Berkeley Physics Course, Vol. 5
6. Physics (Part-2): Editor, Prof. B.P. Chandra, M.P. Hindi Granth Academy.
7. Heat and Thermodynamics: K.W. Zeemansky.
8. Thermal Physics: B.K. Agarwal.
9. Heat and Thermodynamics: Brij Lal and N. Subramanyam.
10. Heat and Thermodynamics: Dayal, Verma and Pandey.
11. A Treatise on Heat: M.N. Saha and B.N. Srivastava.

11/6/18 11/6/2018 11/6/18

11-6-18 11/06/18 11/06/18

प्राचार्य
शासकीय महाविद्यालय रामानुजनगर
जिला-सूरजपुर (छ.ग.)

WAVES, ACOUSTICS AND OPTICS

Unit-1 Waves in media: Speed of transverse waves on uniform string, speed of longitudinal waves in a fluid, energy density and energy transmission in waves. Waves over liquid surface: gravity waves and ripples. Group velocity and phase velocity and relationship between them. Production and detection of ultrasonic and infrasonic waves and applications.

Reflection, refraction and diffraction of sound : Acoustic impedance of a medium, percentage reflection & refraction at a boundary, impedance matching for transducers, diffraction of sound, principle of a sonar system, sound ranging.

Unit-2 Fermat's Principle of extremum path, the aplanatic points of a sphere and other applications. Cardinal points of an optical system, thick lens and lens combinations. Lagrange equation of magnification, telescopic combinations, telephoto lenses. Monochromatic aberrations and their reductions; aspherical mirrors and Schmidt corrector plates, aplanatic points, oil immersion objectives, meniscus lens.

Optical instruments: Entrance and exit pupils, need for a multiple lens eyepiece, common types of eyepieces. (Ramsdon and Hygen's eyepieces).

Unit-3 Interference of light: The principle of superpositions, two slit interference, coherence requirement for the sources, optical path retardations, Conditions for sustained interference, Theory of interference, Thin films. Newton's rings and Michelson interferometer and their applications its application for precision determinations of wavelength, wavelength difference and the width of spectral lines. Multiple beam interference in parallel film and Fabry-Perot interferometer. Rayleigh refractometer, Twyman-Green interferometer and its uses.

Unit-4 Diffraction, Types of Diffraction, Fresnel's diffraction, half-period zones, phasor diagram and integral calculus methods, the intensity distribution, Zone plates, diffraction due to straight edge, Fraunhofer diffraction due to a single slit and double slit, Diffraction at N-Parallel slit, Plane Diffraction grating, Rayleigh criterion, resolving power of grating , Prism, telescope.

11/6/18 11/6/2018 11/6/18

11-6-18 11/06/18 11/06/18

Polarized light and its mathematical representation, Production of polarized light by reflection, refraction and scattering. Polarization by double refraction and Huygen's theory, Nicol prism, Retardation plates, Production and analysis of circularly and elliptically polarized light. Optical activity and Fresnel's theory, Biquartz polarimeter.

Unit-5 Laser system: Basic properties of Lasers, coherence length and coherence time, spatial coherence of a source, Einstein's A and B coefficients, Spontaneous and induced emissions, conditions for laser action, population inversion, Types of Laser : Ruby and, He-Ne laser and. Applications of laser : Application in communication, Holography and Basics of non linear optics and Generation of Harmonic.

TEXT AND REFERENCE BOOKS:

1. A.K. Ghatak, 'Physical Optics'
2. D.P. Khandelwal, Optical and Atomic Physics' (Himalaya Publishing House, Bombay, 1988)
3. K.D. Moltev; 'Optics' (Oxford University Press)
4. Sears: 'Optics'
5. Jenkins and White: 'Fundamental of Optics' (McGraw-Hill)
6. B.B. Laud: Lasers and Non-linear Optics (Wiley Eastern 1985)
7. Smith and Thomson: 'Optics' (John Wiley and Sons)
8. Berkely Physics Courses: Vol.-III, 'Waves and Oscillations'
9. I.G. Main, 'Vibrations and Waves' (Cambridge University Press)
10. H.J. Pain: 'The Physics of Vibrations and Waves' (MacMillan 1975)
11. Text Book of Optics: B.K. Mathur
12. B.Sc. (Part III) Physics: Editor: B.P. Chandra, M.P. Hindi Granth Academy.
13. F. Smith and J.H. Thomson, Manchester Physics series: optics (John wiley, 1971)
14. Born and Wolf : 'Optics'.
15. Physical Optics: B. K. Mathur and T. P. Pandya.
16. A textbook of Optics: N. Subrahmanyam, Brijlal and M. N. Avadhanulu.
17. Geometrical and Physical Optics: Longhurst.
18. Introduction to Modern Optics: G. R. Fowels.
19. Optics: P. K. Srivastav.

11/6/18 11/6/2018 11/6/18

19-6-18 11/06/18 11/06/18

PRACTICALS

Minimum 16 (Eight from each group)

Experiments out of the following or similar experiments of equal standard

1. Study of Brownian motion.
2. Study of adiabatic expansion of a gas.
3. Study of conversion of mechanical energy into heat.
4. Heating efficiency of electrical kettle with varying voltage.
5. Study of temperature dependence of total radiation.
6. Study of temperature dependence of spectral density of radiation.
7. Resistance thermometry.
8. Thermo emf thermometry.
9. Conduction of heat through poor conductors of different geometries.
10. Experimental study of probability distribution for a two-option system using a coloured dice.
11. Study of statistical distribution on nuclear disintegration data (GM counter used as a black box).
12. Speed of waves on a stretched strings.
13. Studies on torsional waves in a lumped system.
14. Study of interference with two coherent source of sound.
15. Chlandi's figures with varying excitation and loading points.
16. Measurements of sound intensities with different situations.
17. Characteristics of a microphone-loudspeakers system
18. Designing an optical viewing system.
19. Study of monochromatic defects of images.
20. Determining the principle point of a combination of lenses.
21. Study of interference of light (biprism or wedge film).
22. Study of diffraction at a straight edge or a single slit.
23. Study of F-P etalon fringes.
24. Study of diffraction grating and its resolving power.
25. Resolving power of telescope system.
26. Polarization of light by reflection; also cos-squared law.
27. Study of optical rotation for any system.
28. Study of laser as a monochromatic coherent source.
29. Study of a divergence of laser beam.
30. Calculation of days between two dates of a year.
31. To check if triangle exists and the type of a triangles.
32. To find the sum of the sine and cosines series and print out the curve.

11/6/18 11/6/2018 11/6/18

11-6-18 11/06/18 11/06/18

Part A: Introdnction			
Program: **Certificate Course**	Class: **B.Sc.**	Year: **First**	Session: **2022-2023**

1	Course Code	**PHY – 1T**
2	Course Title	**MECHANICS**
3	Course Type	**Theory**
4	Pre-requisite (if any)	No
5	Course Learning Outcomes (CLO)	**After eompletion of the course students will he able to:** • Get knowledge about the vectors and differential equations used in physics. • Get an idea of different types of motions and conservation laws. • Get an idea about rotational motion and various properties of matter like elasticity and viscosity. • Understand various types of oscillatory motion and GPS system. • Get an idea about Frame of reference and special theory of relativity. • Solve numerical problems based on entire syllabus.
6	**Credit Value**	**Theory : 4**
7	**Total Marks**	**Max. Marks: 50** / **Min Passing Marks : 17**

Part B: Coutent of the Course		
Total Periods: 60		
Unit	**Topic**	**Nnmber of Periods**
I	**Veetors**: Vector algebra, Derivatives of a vector with respect to a parameter, Scalar and vector products of two, three and four vectors, Gradient, divergence and curl of vectors fields, Polar and Axial vectors. **Ordinary Differential Equatious:** 1st order homogeneous differential equations, exact and non-exact differential equations, 2nd order homogeneous and nonhomogeneous differential equations with constant coefficients (Operator Method Only).	12
II	**Laws of Motion:** Review of Newton's Laws of motion. Dynamics of a system of particles, Concept of Centre of Mass, determination of center of mass for discrete and continuous systems having cylindrical and spherical symmetry. **Work and Energy:** Motion of rocket, Work-Energy theorem for conservative forces, Force as a gradient of Potential Energy, Conservation of momentum	12

	and energy, Elastic and in-elastic Collisions.	
III	**Rotational Dynamics:** Angular velocity, Angular momentum, Torque, Conservation of angular momentum, Moment of Inertia, Theorem of parallel and perpendicular axes (statements only), Calculation of Moment of Inertia of discrete and continuous objects (rod, disc, cylinder, solid sphere). **Elasticity:** Hooke's Law – Stress – strain diagram – Elastic moduli – Relation between elastic constants – Poisson's Ratio – Expression for Poisson's Ratio in terms of Elastic Constants – Work done in stretching and work done in twisting a wire – Twisting couple on a cylinder – Determination of Rigidity modules, Elementary idea of Surface tension and Viscosity, flow of fluids, coefficient of viscosity, Stoke's law, expression for terminal velocity, wetting.	12
IV	**Gravitation:** Newton's Law of Gravitation, Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant), Kepler's Laws (statements only), Satellite in circular orbit and applications, Geosynchronous orbits. **Oseillations:** Simple harmonic motion, Differential equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Compound pendulum, Differential equations of damped oscillations and forced oscillations (Conceptual only).	12
V	**Speeial Theory of Relativity:** Frame of reference, Galilean Transformations, Inertial and Non-inertial frames, Outcomes of Michelson Morley's Experiment, Postulates of Special Theory of Relativity, Length contraction, Time dilation, Relativistic transformation of velocity, Relativistic variation of mass, Mass-energy equivalence, Transformation of Energy and Momentum.	12

Part C - Learuing Resource

Text Books, Reference Books, Other Resources

Reference Books:

1. University Physics. FW Sears, MW Zemansky & HD Young 13/e, 1986.AddisonWesley
2. Mechanics Berkeley Physics course, v.1:Charles Kittel, et.al. 2007, Tata McGrawHill
3. Physics – Resnick, Halliday & Walker 9/e, 2010, Wiley
4. Engineering Mechanics, Basudeb Bhattacharya, 2nd edn., 2015, Oxford University Press
5. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.

Link for e-Books for Physics:

1. *All e-books of physics* *https://www.e-booksdirectory.com/listing.php?category=2*
2. *Free physics text book in PDF* *https://www.motionmountain.net/?gclid=CjwKCAjwmq3kBRB_EiwAjkNDp5v8Yy6xK1s0*

Kma0VR0AWGlichRwFfCC0-vpZK1jrPoEOAnBq8fcqRoCILsQAvD_BwE

3. *Cambridge University Books for Physics https://www.cambridgeindia.org/*
4. *Books for solving physics problems https://bookboon.com/en/physics-ebooks*

Part D: Assessment and Evaluatiou

Suggested Continnons Evalnation Methods:

Maximum Marks: 50

Min Marks : 17

Continuous Comprehensive Evaluation (CCE): As per University Guideline

University Exam(UE): 50 Marks

Interual Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	As per University Guideline

DECLARATION

This is to certify that the syllabus is framed by the Central Board of studies (Physics) as per the guidelines (TOR) of The Department of Higher Education, Raipur, Chhattisgarh

01/ Dr.S.K.Gupta, Govt. E.R.R. P.G Science College, Bilaspur - Chairman

02/ Dr. Jagjeet Kaur Saluja, Govt. V Y T P.G. College, Durg - Member

03/ Dr.Meera Gupta, Govt. Dr. W.W.Patankar Girls P.G. College, Durg, - Member

04/ Dr.S.J. Dhoble, R.T.M Nagpur University Nagpur - Member

05/ Dr.D.P.Bisen, Pt.R.S.U. Raipur - Member

06/ Dr.R.S. Kher, Principal, Govt.M.L.S. College Seepat - Member

07/ Dr. Anjali Oudhia, Govt. N.P.G. College of Science Raipur - Member 8/6/22

08/ Dr.Smriti Agrawal, Govt. Coilege ,Vaishali nagar, bhilai - Member 8/6/22

09/ Dr.S.K.Shrivastava, Govt.P.G. Coilege, Ambikapur - Member

10/ Dr.Kamal K.Prasad Govt.N.E.S.College, Jaspur - Member

11/ Dr. A.P.Goswami, Govt.Bilasa Girls P.G. College, Biiaspur - Member

12/ Dr. V.K. Dubey, Govt.N.P.G. Science Coilege, Raipur - Member

13/ Dr. Anil Kumar Panigrahi, Kirodimal Govt. Arts/Science College, Raigarh - Member

14/ Dr. Ugendra Kumar Kurrey, Govt.C.L.C Arts & Science College, Patan, Durg, - Member

15/ Dr.Dipti Jha , Dr. Radhabai Govt. Navin Kanya Mahavidyaiya, Raipur, - Member 8.6.22

16/ Dr.Shashi Kant Rathor,Dr. B.R. Ambedkar Govt.Coilege,Baloda,Dist-Janjgir-Champa- Member

17/ Dr. Vikas Guihare, Govt. G.N.A. P.G. Coliege, Bhathapara - Member

Part A: Introdnction			
Program: **Certificate Course**	Class: **B.Sc.**	Year: **First**	Session: **2022-2023**

1	Course Code	**PHY – 2T**
2	Course Title	**ELECTRICITY AND MAGNETISM**
3	Course Type	**Theory**
4	Pre-requisite (if any)	No
5	Course Learning Outcomes (CLO)	**After completion of the course students will be able to –** • Get knowledge about the vectors analysis and able to apply in electrostatic and Magnetostatics. • Get idea about electric fields, force and potential. • Get idea about Dielectric and Electric currents and also the application in AC circuits. • Get idea about Magnetic properties of material. • To get idea about Electromagnetic Induction and Maxwell's equation and Electromagnetic wave propagation. • Solve numerical problems based on entire syllabus.
6	**Credit Value**	**Theory : 4**
7	**Total Marks**	**Max. Marks: 50** / **Min Passing Marks : 17**

Part B: Content of the Course		
Total Periods: 60		
Unit	Topic	Number of Periods
I	**Vector Analysis**: Vector Integration, Line, surface and volume integrals of Vector fields, Gauss-divergence theorem and Stoke's theorem of vectors and its application in electrostatics and magnetostatics.	12
II	**Electrostatics:** Electrostatic Field, electric flux, Gauss's theorem of electrostatics, Applications of Gauss theorem- Electric field due to point charge, infinite line of charge, uniformly charged spherical shell and solid sphere, plane charged sheet, charged conductor. Electric potential as line integral of electric field, potential due to a point charge, electric dipole, uniformly charged spherical shell and solid sphere, Calculation of electric field from potential, Capacitance of an isolated spherical conductor, Parallel plate, spherical and cylindrical condenser, Energy per unit volume in electrostatic field.	12

III	**Dieleetric & Electric Currents:** Dielectric medium, Polarisation, Displacement vector, Gauss's theorem in dielectrics, Parallel plate capacitor completely filled with dielectric. Steady current, current density J, non – steady current an ontinuity equation, Kirchoff's law (statement only), Ideal constant – voltage and constant – current sources, Thevenin theorem, Norton theorem, Superposition theorem, Reciprocity theorem and maximum power transfer theorem, Rise and decay of current in LR, CR, LCR circuits.	12
IV	**Magnetism:** Magnetostatics: Biot-Savart's law and its applications- straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital law, Magnetic properties of materials: Magnetic intensity, magnetic induction, permeability, magnetic susceptibility, Brief introduction of dia, para and ferro-magnetic materials.	12
V	**Electromagnetic Induction:** Faraday's laws of electromagnetic induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils, Energy stored in magnetic field. **Maxwell's equations and Electromagnetic wave propagation:** Equation of continuity of current, Displacement current, Maxwell's equations, Wave equation in free space.	12

Part C - Learning Resonrce

Text Books, Reference Books, Other Resources

Reference Books:

1. Vector analysis – Schaum's Outline, M.R. Spiegel, S. Lipschutz, D. Spellman, 2nd Edn., 2009, McGraw- Hill Education.
2. Electricity and Magnetism, Edward M. Purcell, 1986, McGraw-Hill Education.
3. Electricity & Magnetism, J.H. Fewkes & J.Yarwood. Vol. I, 1991, Oxford Univ. Press
4. Electricity and Magnetism, D C Tayal, 1988, Himalaya Publishing House.
5. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
6. D.J.Griffiths, Introduction to Electrodynamics, 3rd Edn, 1998, Benjamin Cummings.

Link for e-Books for Physics:

1. *All e-books of physics* https://www.e-booksdirectory.com/listing.php?category=2
2. *Free physics text book in PDF* https://www.motionmountain.net/?gclid=CjwKCAjwmq3kBRB_EiwAjkNDp5v8Yy6xK1s0Kma0VR0AWGlichRwFfCC0-vpZK1jrPoEOAnBq8fcqRoCILsQAvD_BwE
3. *Cambridge University Books for Physics* https://www.cambridgeindia.org/
4. *Books for solving physics problems* https://bookboon.com/en/physics-ebooks

Part D: Assessment and Evalnation		
Suggested Continuous Evalnation Methods: Maximum Marks: 50 Min Marks: 17 Continuous Comprehensive Evaluation (CCE): As per University Guideline University Exam(UE): 50 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test/Assignment/Presentation	As per University Guideline

DECLARATION

This is to certify that the syllabus is framed by the Central Board of studies (Physics) as per the guidelines (TOR) of The Department of Higher Education, Raipur, Chhattisgarh

01/ Dr.S.K.Gupta, Govt. E.R.R. P.G Science College, Bilaspur - Chairman

02/ Dr. Jagjeet Kaur Saluja, Govt. V Y T P.G. College, Durg - Member

03/ Dr.Meera Gupta, Govt. Dr. W.W.Patankar Girls P.G. College, Durg, - Member

04/ Dr.S.J. Dhoble, R.T.M Nagpur University Nagpur - Member

05/ Dr.D.P.Bisen, Pt.R.S.U. Raipur - Member

06/ Dr.R.S. Kher, Principal, Govt.M.L.S. College Seepat - Member

07/ Dr. Anjali Oudhia, Govt. N.P.G. College of Science Raipur - Member 8/6/22

08/ Dr.Smriti Agrawal, Govt. College ,Vaishali nagar, bhilai - Member 8.6.22

09/ Dr.S.K.Shrivastava, Govt.P.G. College, Ambikapur - Member

10/ Dr.Kamal K.Prasad Govt.N.E.S.College, Jaspur - Member

11/ Dr. A.P.Goswami, Govt.Bilasa Girls P.G. College, Bilaspur - Member

12/ Dr. V.K. Dubey, Govt.N.P.G. Science College, Raipur - Member

13/ Dr. Anil Kumar Panigrahi, Kirodimai Govt. Arts/Science College, Raigarh - Member

14/ Dr. Ugendra Kumar Kurrey, Govt.C.L.C Arts & Science College, Patan, Durg, - Member 8/6/22

15/ Dr.Dipti Jha , Dr. Radhabai Govt. Navin Kanya Mahavidyalya, Raipur, - Member 8.6.22

16/ Dr.Shashi Kant Rathor,Dr. B.R. Ambedkar Govt.College,Baloda,Dist-Janjgir-Champa- Member

17/ Dr. Vikas Guihare, Govt. G.N.A. P.G. College, Bhathapara - Member

B. A. – I

P S Y C H O L O G Y

Paper	Name of the Paper	Max. Marks	Duration
I	Basic Psychological Processes	50	3 hrs.
II.	Psychopathology	50	3 hrs.
III.	Practicum	50	4 Hrs.

PAPER - I

BASIC PSYCHOLOGICAL PROCESSES (Paper Code-0119) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Introduction: Definition and Goals of psychology; Behaviouristic, Cognitive and Humanistic; Cross-cultural Perspective; Methods: Experimental, Observational, Interview, Questionnaire, and Case study.

UNIT-2 Biological bases of behaviour: Genes and Behaviour, The Nervous System: The Central Nervous System (C.N.S.), The Autonomic Nervous System (A.N.S.) and The Peripheral Nervous System (P.N.S.); Glands and Hormones; Emotions- Types and Bodily changes (internal and external).

UNIT-3 Sensory Perceptual Processes: Nature and Types of Sensation, Perception and Attention: Process, Definition, Types and Determinants; Principles of Perceptual Organization; Illusion: Nature and Types.

UNIT-4 Learning and Memory: Classical and Operant Conditioning- Basic Processes; Verbal and Observational Learning; Memory: Sensory (S.M.), Short-term (S.T.M.) and Long-term (L.T.M.); Forgetting: Process and Theories.

UNIT-5 Cognitive and Non-cognitive processes: Intelligence: Nature and Types; Motivation: Biogenic and Sociogenic Motives; Thinking process: Nature and Types. Personality: Nature and Determinants; Approaches to study personality: Trait and Type approaches; Assessment of Personality.

Reference:

1. सिंह, अरूण कुमार। सामान्य मनोविज्ञान। बनारसीदास प्रकाषन।
2. वर्मा, प्रीति। आधुनिक सामान्य मनोविज्ञान।
3. Baron, R.A. & Byrne, D.A. Understanding Behavior. Tokyo: Halt Sounders.
4. Zimbardo, P.G. Psychology. New York: Haper Collings College publishers.
5. Lefton, L. A. (1985). Psychology. Bosten-Allyn publishers.
6. Walser, A.L. (1997).

●

B. A. - I

P S Y C H O L O G Y

PAPER- II

PSYCHOPATHOLOGY (Paper Code-0120) **M.M.:50**

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Introduction: The concept of Normality and Abnormality; Models of Psychopathology: Psychodynamic, Behavioral and Cognitive.

UNIT-2 Assessment of Psychopathology: Diagnostic Tests, Rating Scales, Clinical Interview, and Projective Tests.

UNIT-3 Anxiety Disorders: Panic Disorder, Phobias, Obsessive Compulsive Disorder (OCD), and Generalized Anxiety Disorder (GAD).

UNIT-4 Mood Disorders: Manic-Depressive Episode and Dysthymia; Personality Disorders: Paranoid, Schizoid, and Dependent Personality Disorder, Dissociative disorder and Obesity.

UNIT-5 Management of Psychopathology: Stress Management; Medico and Psychosocial Therapy: Shock therapy, Psychoanalysis, Group therapy and Behavior therapy.

Reference:

1. Lamm, A. (1997). Introduction to psychopathology. NY: Sage.
2. Buss, A. H. (1999). Psychopathology. NY: John Wiley.
3. सिंह तथा तिवारी। असामान्य मनोविज्ञान। आगरा: विनोद पुस्तक भण्डार।
4. कपिल, एच. के.। असामान्य मनोविज्ञान। आगरा: हरप्रसाद भार्गव।

●

B. A. – I

P S Y C H O L O G Y

PAPER- III

PRACTICUM **M.M.:50**

Note: This paper consists of two parts:

Part-A

(a) Comprises of laboratory **experiments**.
(b) Comprises of psychological **testing** and understanding of self and others.

(a) **Experiments-** (Any five of the following) :-

(i) Effect of Set on Perception
(ii) Effect of Frustration on Performance.
(iii) Division of Attention.
(iv) Learning Curve/ Serial Position Curve.
(v) Retroactive Inhibition.
(vi) S.T.M.
(vii) Concept Formation.
(vii) Judgement of Emotions through facial expressions.
(ix) Personality Test

(b) **Psychological Tests** (Any four of the following)

(i) Verbal/ Nonverbal Intelligence Test/ Performance Tests.

(ii) E.P.I./ Personality (iii) Anxiety test.

(iv) Depression Scale (v) Adjustment inventory.

(vi) Achievement motivation. (vii) Stress tolerance test.

Part-B

Anecdotal Record: Each student will be required to observe the behaviour of pupil in different setting and select an anecdote to understand, judge and narrate it as objectively as possible, so as to reveal his/her psychological insight existing in that anecdotal behavior. This record constitutes a part of psychological assessment of the students. Introduction to the measures of central tendency and graphical presentation of the ungrouped data.

Distribution of Marks

A.	Conduction of psychological experiment and reporting	-	15 Marks
B.	Administration of one psychological test and reporting	-	15 Marks
C.	Evalution of Practical notebook and Anecdotal record	-	10 Marks
D.	Viva-voce	-	10 Marks

Note : No condidate will be allowed to appear in the practical examination unless his/her day-to-day practical work and the report are found satisfactory.

Reference: Choubey, A. (2015). Psycho-lab- Experiment and Test. Raipur: Vaibhav Prakshan.

●

B.A. – II

P S Y C H O L O G Y

Paper	Name of the Paper	Max. Marks	Duration
I	Social Psychology	50	3 hrs.
II.	Psychological Assessment	50	3 hrs.
III.	Practicum	50	4 Hrs.

PAPER - I

SOCIAL PSYCHOLOGY (Paper Code-0189) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Nature, Goal and Scope of Social Psychology; Methods of social psychology: Experimental, Survey, Interview, Observational, and Sociometry; Approaches to the study of social behavior: Psychoanalytic, Cognitive, and Behavioral.

UNIT-2 Social Perception: Perception of Self and Others, Impression Formation and its Determinant, Prosocial Behavior: Co-operation and Helping- Personal, Situational and Socio-cultural Determinants.

UNIT-3 Stereotypes: Nature and Determinants; Prejudice: Nature and Determinants; Attitudes: Nature and Measurement; Interpersonal Attraction and Determinants.

UNIT-4 Group Structure and Function: Social Facilitation, Conformity, Cohesiveness; Group Norms; Leadership: Nature, Types, Characteristics and Functions.

UNIT-5 Social Issues: Aggression- Determinants, Prevention and Control; Population Explosion- Nature and Consequences (Socio-cultural); Pollution; Corruption; Mob Behavior; Gender Discrimination and Child Labour.

Reference:

1. सिंह, अरूण कुमार। समाज मनोविज्ञान की रूपरेखा। मोतीलाल बनारसीदास प्रकाषन।
2. मिश्रा एव जैन। समान मनोविज्ञान के मूल आधार। म.प्र. हिन्दी गंथ अकादमी।
3. त्रिपाठी, लालबचन। समाज मनोविज्ञान की रूपरेखा। हरप्रसाद भार्गव प्रकाषन।
4. Baron, R.A. & Byrne, D. Social Psychology. New Delhi: Prentice Hall Pub.
5. Secord, P.F. & Backman, C.W. (1994). Social psychology. Magraw-Hill.

●

B.A. - II

P S Y C H O L O G Y

PAPER- II

PSYCHOLOGICAL ASSESSMENT (Paper Code-0190) **M.M.:50**

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Psychological Assessment: Concept, Difference between Physical and Psychological assessment, Levels of assessment, Barriers in psychological assessment, Unidimensional and Multidimensional assessment.

UNIT-2 Psychological Tests: Concept, Characteristics, and Types- Standardized and Non-standardised, Group, Performance and Verbal; Uses of psychological tests.

UNIT-3 Test Construction: Steps in test construction, Reliability- Test-retest, Split-half; Factors affecting reliability; Validity: Content and Predictive; Factors affecting validity; Norms- Age and Grade.

UNIT-4 Cognitive and Non-cognitive Tests: Cognitive- Introduction to Intelligence, Aptitude, and Achievement testing; Non-cognitive: Introduction to Personality, Interest, and Value testing.

UNIT-5 Psychological Testing in applied aspects of life: Education, Occupation, Social, Health and Organization; Socio-cultural factors in psychological assessment.

Reference:

1. Anastasi (1997) Psychological testing, New York : MacGraw-Hill.
2. Ciminero, A.R. (1986) Handbook of Behavioral assessment, New York: John Wiley.
3. Gupta, S.P. (2001). Manovaigyanik Mapan evam Moolyankan. Agra: Sharda Prakashan.

●

B. A. - II

P S Y C H O L O G Y

PAPER- III

PRACTICUM **M.M.:50**

Note: This paper consists of two parts:

Part-A

(a) Comprises of laboratory **experiments**.
(b) Comprises of psychological **testing** and understanding of self and others.

(a) **Experiments** (Any five of the following):-

1. Effect of Group on Decision Making.
2. Social Facilitation.
3. Effect of Social setting on Sociometry.
4. Stereotypes.
5. Effect of Order of Information on Person-perception.
6. Effect of Leadership on Performance.
7. Effect of Cognitive dissonance on Attitude change.
8. Effect of Communicator's Credibility on Suggestibility.

(b) **Psychological Tests** (Any four of the following):-

1. Aggression.
2. Deprivation.
3. Self-concept.
4. Dependence proneness scale.
5. Value.
6. Vocational Interest.
7. Attitude Scale.
8. Creativity.
9. Personality Test.

Part-B

Field Work

Each student will be required to visit a hospital/ industrial organisation/ educational institution etc. under departmental supervision and shall be preparing his/her observation report, revealing his/her psychological insight about group dynamics that is operational in the unit. This record constitutes a part of assessment of field visit. Measures of central tendency in group data and correlation- Rank order.

Distribution of Marks

A.	Conduction of psychological experiment and reporting	15 marks.
B.	Administration of one psychological test and reporting	15 marks.
C.	Evaluation of Practical note book of the field work	10 marks.
D.	Viva-Voce	10 marks.

Reference: Sharma, R. (2018)- Psycho-laboratory- Experiment and Test. Raipur: Vaibhav Prakshan.

●

B. A. - III

P S Y C H O L O G Y

Paper	Name of the Paper	Max. Marks	Duration
I	Psychological Statistics	50	3 hrs.
II.	Human Development/ Environmental Psychology	50	3 hrs.
III.	Practicum	50	4 Hrs.

PAPER - I

PSYCHOLOGICAL STATISTICS (Paper Code-0250) M.M.: 50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Statistics: Meaning and Application in psychology; Nature of Score, Categorical and Continuous variables; Frequency Distribution; Graphic representation of data.

UNIT-2 Measures of Central Tendency: Mean, Median and Mode of grouped and ungrouped data, Measures of Variability: Range, Standard Deviation (S.D.), Quartile Deviation (Q.D.), Average Deviation (A.D.), Applications of the measures of central tendency and variability.

UNIT-3 Nature and Characteristics of Normal Probability Curve (NPC): The concept of Skewness and Kurtosis; Correlation: Concept, Types and Methods- Rank Difference and Product Moment (in ungrouped data).

UNIT-4 Inferential statistics: Concept of Null Hypothesis; Level of Significance; Type-I Error & Type-II Error, t-test (for uncorrelated data).

UNIT-5 Distribution-free statistics: Chi-square test, Median and Sign test, Applications of Computer in psychological statistics.

Reference:

1. Siegel, S. (1994). Non parametric statistics. New York: Mcgraw Hill.
2. Garret. Statistics in Psychology and Education. Times of India Publisher.
3. कपिल, एच. के.। सांख्यिकी के मूल तत्व।
4. गैरेट। मनोविज्ञान एवं षिक्षा में सांख्यिकी।

●

B. A. - III

P S Y C H O L O G Y

PAPER- II (Optional)

(A) HUMAN DEVELOPMENT (Paper Code-0251) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-I The Concept of Human Development; Theories of Human Development: Psychoanaytical and Maslow's (Humanistic); Determinants of Human Development: Biological, Social, and Cultural; Approaches to study human development: Longitudinal and Cross-sectional.

UNIT-II Socialization: Role of Family, Peers and School; Media and Socialization; Cognitive Development: Theoritical Perspectives- Piaget's, Information Processing, Vygotsky's.

UNIT-III Self and Identity: Emergence of Self; Development of Personal Identity; Identity Crises; Physical and Sexual Development; Sequential Development of Emotions.

UNIT-IV Development of Morality and Self-control; Development of Gender Differences and Gender Roles; Role of Marriage, Family and Occupation in Human Development.

UNIT-V Problems of Aging: Cognitive, Conative, and Affective; Developmental Disabilities.

Reference:

1. Berk L.E. (1989) Child Development. Boston: Allyn and Bacon.
2. Santrock, J.W. (1999). Lifespan Development. New York: McGraw-Hill.
3. Hurlock, E.B. (1997). Developmental Psychology: A Life-span Approach.
4. शाह, गोवर्धन। विकासात्मक मनोविज्ञान।

●

B. A. - III

P S Y C H O L O G Y

PAPER- II (Optional)

(B) ENVIRONMENTAL PSYCHOLOGY (Paper Code-0252) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Evaluating environmental ethics from values about nature in the ancient Indian systems; Earth as a living system; Psychological Approaches to the environment: Eco cultural Psychology (Berry), Bio-social Psychology (Dawson), Ecological Psychology (Berkar), and Person Environment Transactions (Sokols, Itlelson etc.)

UNIT-2 Effects of Environment on Behavior: Noise pollution, Chemical Pollution, Crowding and Personal space; Effect of Behavior on Environment: Perception, Preferences and Awareness of environment.

UNIT-3 Human Nature and Environmental Problems; Pro-social and pro environment Behaviors; Eco-systems and their components; Demography: Mortality and Fertility; Resource Use: Common Property Resources; Sustainable Development; Ecology: Acculturation and Psychological Adaptation.

UNIT-4 Methods: Naturalistic observation and Field surveys; Environmental Assessment: Naturalistic Observation and Field Surveys; Socio-psychological Dimensions of environments impact; Environmental deprivation: Nature and Consequences; Creating environmental awareness: Social Movements: Chipko, Tehri, and Narmada Bachao.

UNIT-5 Applications of Psychology in Man Environment Fit: Education- Classroom Environment, Industry- Industrial/ Organisational Effectiveness, Health- Physical, Mental and Spiritual, Social- Communal harmony and National integration.

Reference:

1. Goldsmith, E. (1991). The Way: The Ecological World. Boston: Shambhala.
2. Jain, U. (1987). The Psychological Consequences of Crowding. New Delhi: Sage.
3. Mishra, R.C., Sinha, D & Berry, J.W. (1996). Ecology, Community and Life style. New Delhi.

●

B. A. - III

P S Y C H O L O G Y

PAPER- III

PRACTICUM **M.M.:50**

Note: This paper consists of two parts:

Part-A

(a) Comprises of laboratory **experiments**.
(b) Comprises of psychological **testing** and understanding of self and others.

(a) **Experiments** (Any five of the following):-

1. Bilateral Transfer of Training.
2. Measurement of Illusion.
3. Habit Interference.
4. Effect of Need priority on Selection of advertising material.
5. Effect of Mental fatigue on Performance.
6. Reaction Time.
7. Effect of Frustration on Learning.
8. Depth perception.

(b) **Psychological Tests** (Any four of the following):-

1. Level of Aspiration.
2. Need for Guidance.
3. Maturity Scale.
4. Attitude Scale.
5. Classroom Environment Scale.
6. Mental Health.
7. Family Environment Test
8. Test of Moral Values.

Part- B

The condidate will be alloted a topic of the project by the departmental committee. He/she is required to carry out a small scale project based on a small sample. He/she is required to complete the project and submit its report in 15-20 pages, covering all the major steps of scientific enquiry under the supervision of a departmental teacher. This will be the part of practical work. The suggested areas for the project work are as under Mental Health, Sibling Rivarly, Deprivation, Identity Crises, Drug Abuse, Aging, Media effect, Woman employment, Job sotisfaction, Stress, Stress Management, and Problems of Adolescents etc.

Distribution of Marks

Conduction of Experiment	-	10 marks
Administration of test	-	10 marks
Evaluation of Project Report and Practical record	-	10 marks
Viva - Voce	-	10 marks

●

पाठ्यक्रम

हिन्दी साहित्य

प्रथम प्रश्न-पत्र

(अर्वाचीन हिन्दी काव्य) (पेपर कोड-0173) **अंक-75**

प्रस्तावना—आधुनिक काव्य आधुनिकता की समस्त विशेषताओं को समेटे हुए है। स्वतन्त्रता प्राप्ति के पूर्व की भाव-भाषा, शिल्प, अन्तर्वस्तु सम्बन्धी समस्त विकास धारा यहाँ सजीव रूप से देखी जा सकती है। इसे अनदेखा करना मनुष्य की विकास यात्रा को नजर अंदाज करना है। इस यात्रा के साक्षात्कार के लिए आधुनिक काव्य का अध्ययन अपेक्षित ही नहीं अपितु अनिवार्य है।

पाठ्य विषय—

1. मैथिलीशरण गुप्त – भारत-भारती की कविताएँ
2. सूर्यकान्त त्रिपाठी 'निराला' – (1) सखि बसन्त आया।
   (2) वर दे, वीणा वादिनी वर दे।
   (3) हिन्दी के सुमनों के प्रति पत्र।
   (4) तोड़ती-पत्थर।
   (5) राजे ने अपनी रखवाली की।
3. सुमित्रानन्दन पंत – (1) बादल।
   (2) परिवर्तन 2 पद
      1. खोलता इधर जन्मलोचन
      2. आज का दुख कल का आह्लाद
   (3) ताज।
   (4) झंझा में नीम।
   (5) भारत माता।
4. माखनलाल चतुर्वेदी – (1) बलि पंथी से।
   (2) साँझ और ढोलक की थापें।
   (3) मैं बेच रही हूँ, दही।
   (4) उलाहना।
   (5) निःशस्त्र सेनानी।
5. स.ही. वात्स्यायन 'अज्ञेय' – (1) सवेरे उठा तो धूप खिली थी।
   (2) साम्राज्ञी का नैवेद्य दान।
   (3) घर।
   (4) चांदनी जी लो।
   (5) पूर्वांचल।

द्रुतपाठ—

द्रुतपाठ हेतु कवियों का अध्ययन किया जायेगा, जिन पर लघु उत्तरीय प्रश्न पूछे जायेंगे—

1. अयोध्या सिंह उपाध्याय "हरिऔध"।
2. सुभद्रा कुमारी चौहान।
3. श्रीकांत वर्मा।

अंक विभाजन—

3 व्याख्याएँ	–	21 अंक
2 आलोचनात्मक प्रश्न	–	24 अंक
5 लघु उत्तरीय प्रश्न पत्र	–	15 अंक
15 वस्तुनिष्ठ/अति लघु उत्तरीय प्रश्न	–	15 अंक
कुल अंक	–	**75 अंक**

इकाई विभाजन—

इकाई-1 व्याख्या

इकाई-2 गुप्त, निराला

इकाई-3 पंत, चतुर्वेदी, अज्ञेय

इकाई-4 द्रुतपाठ के कवि एवं आधुनिक काव्यधारा का इतिहास
(राष्ट्रीय काव्यधारा, छायावाद, प्रगतिवाद, प्रयोगवाद, नई कविता)

इकाई-5 वस्तुनिष्ठ/अति लघु उत्तरीय प्रश्न (सम्पूर्ण पाठ्यक्रम से)

हिन्दी साहित्य

द्वितीय प्रश्न-पत्र

हिन्दी निबन्ध तथा अन्य गद्य विधाएँ (पेपर कोड-0174) **अंक-75**

पाठ्य विषय—

व्याख्या एवं आलोचनात्मक प्रश्नों के लिए एक नाटक, पाँच प्रतिनिधि निबन्ध और पाँच एकांकी का निर्धारण किया गया है।

नाटक–अंधेर नगरी – भारतेन्दु हरिश्चन्द्र

निबन्ध-

1. क्रोध – आचार्य रामचन्द्र शुक्ल।
2. बसन्त – डॉ. हजारी प्रसाद द्विवेदी।
3. उस अमराई ने राम-राम कही है – डॉ. विद्यानिवास मिश्र।
4. काव्येषु नाट्यम रम्यम् – बाबू गुलाबराय।
5. बेईमानी की परत – हरिशंकर परसाई।

एकांकी–

1. औरंगजेब की आखिरी रात – डॉ. रामकुमार वर्मा।
2. स्ट्राईक – भुवनेश्वर
3. एक दिन – लक्ष्मीनारायण मिश्र
4. दस हजार – उदयशंकर भट्ट
5. मम्मी ठकुराईन – डॉ. लक्ष्मीनारायण लाल

द्रुतपाठ–

द्रुतपाठ के लिए तीन गद्यकारों का अध्ययन किया जायेगा, जिन पर लघु उत्तरीय प्रश्न पूछे जायेंगे।

1. राहुल सांकृत्यायन
2. महादेवी वर्मा
3. हबीब तनवीर

अंक विभाजन–

3	व्याख्याएँ	–	21 अंक
2	आलोचनात्मक प्रश्न	–	24 अंक
5	लघु उत्तरीय प्रश्न	–	15 अंक
15	वस्तुनिष्ठ/अति लघु उत्तरीय प्रश्न	–	15 अंक
	कुल	–	75 अंक

इकाई विभाजन–

इकाई-1 व्याख्या

इकाई-2 अंधेरी नगरी एवं क्रोध, बसन्त, उस अमराई ने राम-राम कही है।

इकाई-3 औरंगजेब की आखिरी रात, स्ट्राईक, एक दिन, दस हजार, मम्मी ठकुराईन।

इकाई-4 द्रुतपाठ के गद्यकार–राहुल सांकृत्यायन, महादेवी वर्मा, हबीब तनवीर।

इकाई-5 वस्तुनिष्ठ/अति लघु उत्तरीय प्रश्न (समग्र पाठ्यक्रम से)

HOME SCIENCE

PAPER - I

ANATOMY PHYSIOLOGY & HYGIENE

M.M. : 50

Structure & functions of cell general introduction of Tissue and their functions skeletal system - Types of bones, classification general structure & functions of bones. Muscular system - General structure, types and function.
Circulatory system - General structure of organs and functions. composition of blood & function. Respiratory system - General structure of organs and functions.
Digestive system - General introduction of Nutrients, Liver and spleen organs of digestion their general structure and function. Excretory system- organs of excretion.
Kidney & skin - structure & function.
Nervous system - Central nervous system structure and function.
Senses and Sensory organs - ear and eye structure & function.
Hygiene - Personal Hygiene
social Hygiene
Enviromental and Industrial Hygiene
Water - its importance and purification.
Air - its importance and purification.
First aid home nursing - Principles, qualities of nurse, Responsibilities, selection of sick room. care of the patient. Some common accidents and their aid, poision, bleeding, Burns and scalds, fracture sprain, dislocation.

प्रायोगिक

कुल अंक- 50

3 घंटे

अंको का विभाजन

1. सेशनल - 10
2. प्राथमिक उपचार - 10
3. गृह परिचर्या - 15
4. शरीर रचना एवं स्वास्थ्य विज्ञान - 15

'परीक्षा के समय छात्राऐं प्रायोगिक नेट बुक एवं प्राथमिक उपचार पेटी जमा करें)।

क-1 रिपोर्ट : कालेज की कक्षाओं का प्रतिदिन की सफाई एवं वायुविजन संबंधित निरीक्षण।

क-2 स्वयं के परिवार में पीने के पानी के प्राप्ति के साधन, संग्रह के प्रकार एवं साधन पानी की शुद्ध एवं स्वच्छता के लिये प्रयुक्त विधि।

क-3 रिपोर्ट : स्वयं के परिवार एवं अन्य दो पड़ोसी परिवार के घर में अगस्त से दिसम्बर (अनुमानत: पांच महीने) के दौरान हुई बीमारियों के संबंध में जानकारी।

1. रोग का नाम।
2. प्राथमिक उपचार - जो दिया गया।
3. आहार (जो उपयोग में लाया गया)।

प्रयोग क्रमांक-4 प्राथमिक उपचार पेटी (आवश्यक सामान)

1. घाव धोने एवं बांधने का सामान।
2. दर्द कम करने की दवाईयाँ।
3. अपाचन - से संबंधित दवाईयाँ।

प्राथमिक उपचार पेटी छात्राएँ परीक्षा के समय अपना नाम एवं परिवार के सदस्यों की संख्या लिखकर प्रस्तुत करें।

प्रयोग क्रमांक-5 रोगी के लिये उपचारात्मक व्यंजनों का अध्यापक द्वारा करके बताना।

1. सब्जियों का सूप।
2. दाल का सूप।
3. उबला अंडा।
4. फटे दूध का पानी (व्हे वाटर)।
5. सब्जी एवं फलों का स्टू (Vegetable and fruit stew).

इन व्यंजनों की विधि एवं उपयोगिता नोट बुक में अंकित की जावेगी।

प्रयोग क्रमांक-6 प्राथमिक उपचार

1. विभिन्न प्रकार की पट्टियाँ (तिकोनी, गोल)।
2. घाव की देखभाल।
3. कृत्रिम श्वसन।

प्रयोग क्रमांक-7 गृह परिचर्या

1. शरीर के तापमान का चार्ट।
2. गरम एवं ठंडे पानी की थैली तैयार करना।
3. बिस्तर लगाना / चद्दर बदलना।

प्रयोग क्रमांक-8 दृष्य श्रव्य यंत्र का बनाना।

महत्वपूर्ण निदेर्श- प्रयोग क्रमांक 1, 2, 3, तथा 5 की रिपोर्ट छात्राओं द्वारा प्रायोगिक नोट बुक में लिखकर एवं अध्यापक द्वारा प्रति हस्ताक्षरित / प्रमाणित करवाकर परीक्षा के समय प्रस्तुत की जावेगी।

HOME SCIENCE

Paper - II

HOME SCIENCE - EXTENSION EDUCATION

UNIT-1 Introduction of Home Science Extension Education :

(A) Home Scince - Concepts, goals and Areas of Home Science & their inter relationship with extension.

(b) Principles and methods of home science extension education general concepts of extension work.

(c) Objectives of extension educatuoln qualities of extension workers, extension education process.

UNIT-2 Community Development problems and Role of Home Scientists :

(A) Principles of community development organization and function of community development.

(B) Role of home scientists in community development, programmes of extension education for community, programmes of community development at central, state, district, block and village level.

Family plainning programme.

Community problems, child marriage, Dowery system, parda pratha, rural indibtendness unemployment.

UNIT-3 **Teaching methods & aids :**

Methods of learning - Discussion, demonstration, observation and their applecation to home science teaching.

Extension Methods - their scope advantages and apolication.scope and use in Home Science teaching

Extension Methods - their scope advantages and application.

UNIT-4 **Attitude towards Home Science :**

Attitudes towards Home Science, Motivation towards Home Science. Applecation of Home Science towards improvement in family living. Job opportunities in Home Science National and International agencies and their collaboration with Home Science, Official organization Home Science Association of India, W.H.O. FAG, CARE, ICAR, ICDS, ICSSR, ICMR, IRDP, Adult education.

UNIT-5 **Curriculum Planning in Home Science :**

Basic concept of curriculum planning components of curriculum planning implementation evoluation and improvement required in the existing system of H.Sc. education policy and its relevance to H.Sc. Programme planning-concept, principles objectives and steps in programme planning.

REFERENCE :

1. Extension education and community development by Dhama O. P.
2. Co-operative Extension Work by Kelsey, L.D. and Hearne C. R.
3. Extension education, Shri Lakshmi press by Reddy A. A.
4. An Introduction to programme evaluation John Wiley
   - Fracklin, J. K. & Thrashe / J.H.

- - - - - - - -

गृह विज्ञान

प्रश्न पत्र - 1

तंतु एवं वस्त्र विज्ञान

पूर्णांक : 50

इस परीक्षा में दो लिखित प्रश्न पत्र होंगे। जिसमें से प्रत्येक तीन घंटे की अवधि तथा 50 अंकों का होगा। एक प्रायोगिक परीक्षा 50 अंकों की होगी। जिसमें से 10 अंक सत्रीय कार्य के लिये सुरक्षित रहेंगे। कुल अंक 150 होंगे। परीक्षार्थियों को लिखित एवं प्रायोगिक परीक्षा में पृथक-पृथक उत्तीर्ण होना अनिवार्य है-

इकाई - 1 तन्तु विज्ञान का परिचय- तंतुओं का वर्गीकरण, विशेषतायें, भौतिक एवं रासायनिक परीक्षण। वस्त्र बुनाई (Weaves) : के प्रकार- सादी ट्विल रोटिंग जैकार्ड, पाइल।

इकाई - 2 आधारभूत परिसज्जाऐं, विशेष परिसज्जाऐं। रंगों का वर्गीकरण एवं विभिन्न तंतुओं के लिये उनकी उपयुक्तता।

इकाई - 3 छपाई-प्रकार, ब्लाक, स्टेनिसल, स्क्रीन, डिसचार्ज रोलर। प्रत्येक प्रकार की छपाई की विधियां। टाई एंड डाई- विशेषता, विधि।

इकाई - 4 धुलाई : जल, साबुन; शुष्क धुलाई, कलफ, तथा नील। धब्बे छुड़ाना, विभिन्न प्रकार के वस्त्र धोना।

इकाई - 5 परिधान : परिधान एवं व्यक्तित्व, परिधान का चुनाव, ड्रापिंग की विधि, सीवन (प्रकार) परिधान में पूर्णता (डार्ट, प्लीट्स, टक्स, गेदर्स) प्लैकट ओपनिंग, फासनर।

संदर्भित पुस्तकें :

वस्त्र विज्ञान एवं परिधान	डॉ. प्रमिला
वस्त्र विज्ञान के मूल सिद्धांत	डॉ. जी.पी. शैरी
हाउसहोल्ड फिजिक्स	डॉ. कुलश्रेष्ठ
गृह व्यवस्था एवं गृह सज्जा	श्रीमती के. बक्शी
गृह व्यवस्था एवं गृह सज्जा	चन्द्रकांता मांडलिक
गृह व्यवस्था एवं गृह कला	जी.पी. शैरी
गृह व्यवस्था एवं गृह कला	श्रीमती कांति पांडेय
पारिवारिक परिधान एवं व्यवस्था	मंजु पाटनी व सपना हेनरी
गृह व्यवस्था	डॉ. करुणा शर्मा

गृह विज्ञान

प्रश्न पत्र - 2

पारिवारिक संसाधन प्रबंधन

पूर्णांक : 50

इकाई - 1 गृह प्रबंध : गृह प्रबंध की परिभाषा, गृह प्रबंध प्रक्रिया, परिवार में गृहणी के कर्त्तव्य एवं उत्तरदायित्व- मूल्य, लक्ष्य स्तर-अर्थ विशेषता वर्गीकरण एवं विकास, निर्णय प्रक्रिया।

इकाई - 2 गृह सज्जा : कला के सिद्धांत एवं कला के तत्व। नमूना-रचनात्मक एवं अलंकारमय नमूना, नमूने के सिद्धांत। रंग-रंग के महत्व एवं प्रभाव, फर्नीचर का चुनाव एवं महत्व, गृह सज्जा के उपसाधन। पुष्प सज्जा, प्रकार, सिद्धांत, उपयोग।

इकाई -3 **पारिवारिक साधन** : पारिवारिक साधन, वर्गीकरण, विशेषतायें, उपयोग को प्रभावित करने वाले तत्व, समय-अवधारणा, समय, व्यवस्थापन के साधन । समय व्यवस्थापन की प्रक्रिया ।

शक्ति-अवधारणा, विभिन्न घरेलू कार्यों में शक्ति का मूल्य, शक्ति व्यवस्थापन की प्रक्रिया ।

आय के साधन एवं प्रकार, पारिवारिक बजट, लाभ बचत, रहन सहन का स्तर, आय व्यय का लेखा जोखा (एकाउंट कीपिंग) ।

इकाई - 4 **रसोई घर** : आधुनिक रसोई घर, प्रकार, रसोई-घर के कार्यकेन्द्र, ईंधन के गैर परम्परागत स्रोत, सौर ऊर्जा, जल वितरण प्रणाली, वायुवीजन, प्रकाश की व्यवस्था, संग्रह व्यवस्था ।

इकाई - 5 **कार्य का सरलीकरण** : अर्थ, कार्य विधियों एवं आदतों में सुधार की तकनीक, प्रोसेस चार्ट, पाथवे चार्ट, परिवर्तन की श्रेणियाँ । समय शक्ति एवं धन बचत के उपकरण ।

प्रायोगिक कार्य

1. सिलाई- ब्लाउज, बेबी फ्राक, झबला, [illegible], [illegible], सलवार, पेटीकोट, पुष्प सज्जा ।
2. धुलाई- विभिन्न वस्त्रों की धुलाई, धब्बे छुड़ाना, बांधनी का कार्य ।
3. पुष्प सज्जा ।

अंक विवरण - सत्रीय : 10
सिलाई : 20
धुलाई : 15 (धुलाई कार्य, बांधनी-10, धब्बा छुड़ाना 5)
पुष्प सज्जा : 5

स्वीकृत पुस्तकें :

1.	वस्त्र विज्ञान एवं परिधान	:	डॉ. प्रमिला
2.	वस्त्र विज्ञान के मूल सिद्धांत	:	डॉ. जी.पी. शैरी
3.	हाउसहोल्ड फिजिक्स	:	[illegible]
4.	प्रारंभिक कृषि विज्ञान	:	[illegible]
5.	उद्यान विज्ञान	:	[illegible]
6.	गृह व्यवस्था एवं गृह सज्जा	:	[illegible]
7.	गृह व्यवस्था एवं गृह सज्जा	:	[illegible]
8.	गृह व्यवस्था एवं गृह कला	:	[illegible]
9.	गृह व्यवस्था एवं गृह कला	:	[illegible]
10.	कृषि विज्ञान	:	[illegible]
11.	उद्यान शास्त्र	:	[illegible]
12.	पारिवारिक परिधान एवं व्यवस्था	:	[illegible] शैरी

HOME SCIENCE

Paper - I

"HUMAN DEVELOPMENT"

UNIT-I

1. Development-meaning of child growth and development. Different aspects of gowth, principles of development, factors affecting child development, heredity and environment.
2. Stages of development -
   1. Physiology of pregnancy
   2. Prental
      - (a) Reproductive system
      - (b) Prenatal development
   3. Infancy
      - (a) Early infancy
      - (b) Infancy
   4. Childhood
      - (a) Early childhood
      - (b) Late childhood
   5. Adolescence
      - (a) Early adolescence
      - (b) Late adolescence

   (ii) Prental growth and development -
   - (a) Sources of study prenatal life
   - (b) Stages of growth prenatal and development
   - (c) Factors affecting prenatal and development growth
     - (1) Mother's food
     - (2) Health of mother
     - (3) Narcotics
     - (4) Age of mother
     - (5) Effect of radiation
     - (6) Emotion of mother

UNIT-2

1. Effect of normal and caesarean delivery
2. Adjustment to new environment -
   - (a) Temperature
   - (b) Respiration
   - (c) Food consumption
   - (d) Excretion
3. Physical development of infant
   - (a) Physical proportion
   - (b) Height
   - (c) Weight
   - (d) Pulse rate
   - (e) Respiration rate
   - (f) Body temperature
   - (g) Frequency of bowel
4. Sensory development of infant
   - (a) Light

(b) Sound
(c) Taste
(d) Smell
(e) Skin sensi[illegible]

5. Motor activity of [illegible] -
   (a) Mass activiti[illegible]
   (b) Specific activities -
      (i) Reflex activities
      (ii) Advantages of reflex [illegible]

6. Emotions of infants -
   (a) Types of emotions
   (b) Significance of emotions

7. Characteristics of infant behaviour -
   (a) Dependancy
   (b) Individual difference
   (c) Adjustment

UNIT-3 Childhood : Adolescence.

1. Characterstics of this stage.
2. Factors affecting growth and development during childhood and adolescence.
3. Physical growth height, weight, body proportion, teeth
4. Growth and development of internal organs (a) Nervous (b) Mental (c) Circulatory system (d) Digestive system, (e) [illegible] system (f) Tissues and muscles systems.
5. Development of motor abilities (i) types of motor abilities (ii) importance and characteristics of motor abilities in childhood (iii) Development of motor skills, Types of motor skills (iv) Delayed motor development.

UNIT-4 6. Development of emotional behaviour characteristics special emotions (affection, anger, fear, jealousy and worries) [illegible] emotional behaviour.

7. Social development stages : [illegible] nursery school period (c) elementary school period (d) [illegible] development.

8. Development of intelligence - [illegible] Thorndyke, theories regarding intelligence.

UNIT-5 9. Play meaning of play, [illegible] play, characteristics of children's play, [illegible] importance of play.

10. Habits :
   1. Definition.
   2. Function [illegible]
   3. Habits [illegible] [illegible]ning.
   4. Laws of [illegible]
   5. Habit form[illegible]
      (a) [illegible]
      (b) [illegible] [illegible]tures.

11. Children delinquency [illegible]

द्वितीय पेपर
आहार एवं पोषण विज्ञान

पूर्णांक-50

यूनिट-1 पोषण

1. पोषण [illegible]
2. कार्यों के आधार पर [illegible]
   (अ) ऊर्जा [illegible]
   (ब) शरीर का निर्माण [illegible]
   (स) सुरक्षा व नियमन [illegible]
3. कार्बोज - परिभाषा, कार्य [illegible] एवं इसके नियमन अधिकता [illegible]
4. वसा - परिभाषा, [illegible] संतृप्त व असंतृप्त वसीय अम्ल, आवश्यक वसीय [illegible] दैनिक आवश्यकता।
5. प्रोटीन - परिभाषा, [illegible] नाइट्रोजन संतुलन, प्रोटीन का जैविक मूल्य, प्रोटीन का [illegible] एवं दैनिक आवश्यकता।
6. खनिज लवण - [illegible] करने वाले तत्व कमी व अधिकता। [illegible], व फ्लोराईड)
7. विटामिन्स - [illegible] प्रभाव, प्राप्ति के साधन, (वीटामिन [illegible] ए.बी.सी.डी. [illegible])
8. जल - सामान्य [illegible]

यूनिट-2 आहार

1. आहार का वर्गीकरण [illegible] समूह
2. अनाज - प्रकार, [illegible], पारबाईलिंग, फर्मेंटेशन, [illegible] खमीरीकरण व ब्लीचिंग के प्रभाव। पारम्परिक आहार [illegible]
3. दालें - प्रकार, [illegible]
4. दूध - प्रकार, [illegible] पाश्चुराइजेशन एवम् होमोजीनाइजेशन। [illegible] की प्रक्रिया।
5. फल व सब्जियाँ - [illegible]
6. अण्डे - संगठन, [illegible]
7. मांस - उर्जा, [illegible]
8. शक्कर गुड़, [illegible]
9. पेय पदार्थ - [illegible]
10. मसाले - प्रकार, [illegible]

यूनिट-3
1. [illegible]
2. खाद्य [illegible]
3. भोज्य [illegible] को पहचानने की सरल [illegible]
4. खाद्य [illegible] विधियां।

(50).

5. आहार [illegible]

6. [illegible]

यूनिट-4 आहार [illegible]

1. [illegible] आहार आयोजन को [illegible]

(अ) [illegible]

(ब) [illegible]

(स) [illegible]

[illegible] पदार्थों का उपयोग, बचे [illegible]

2. शिशु [illegible] माता का दूध, फार्मूला [illegible]

3. [illegible] आवश्यकता, शालेय आहार [illegible] और भोजन विधियाँ।

4. [illegible] आवश्यकता, असामान्य [illegible]

5. [illegible] आवश्यकता। असामान्य [illegible]

यूनिट-5 उपचारात्मक [illegible]

सामान्य [illegible] पदार्थों का सम्मिलित न करना।

चयापचयी [illegible] हाइपोग्लाइसेमिक दवाईयाँ,

1. [illegible]

[illegible] स्थितियां।

2. [illegible]

पौष्टिक [illegible]

1. रक्तहीनता - [illegible]

2. ए-विटामिनोसिस

3. [illegible]

रोग [illegible]

1. [illegible]

आमाशय [illegible]

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

5. [illegible]

गृह विज्ञान

प्रायोगिक

पूर्णांक : 50

1. अनाज - दालें, अण्डा, दूध, मेवे, सब्जियों, फलों के उपयोग तैयार करना, हर भोज्य पदार्थ की कोई भी तीन पात्र विधियों के प्रायो[illegible] रिकार्ड बुक में लिखना । कैलोरी एवं प्रोटीन की गणना ।
2. आहार [illegible] योजने -
   (अ) [illegible] वती महिला
   (ब) [illegible] ज की स्थिति;
   (स) [illegible] ह रोग
   (द) [illegible] रिक वजन की स्थिति
3. विभिन्न [illegible] रिक स्थिति में आहार योजना ।
4. खाद्य संर[illegible] कोई भी चार पाक विधि से बनायी जाये ।
5. सम्पूरक [illegible] जन - आयोजन, गणना
6. व्यक्तित्व [illegible] न विधि
7. बुद्धियाप[illegible] विधि

प्रायोगिक परीक्षा अंकों का विभाजन

सेशनल	10
योजना	10
तैयारी	10
गणना	10
मौखिक प्रश्न	10
कुल अंक	50

REFERENCE BOOKS :

Normal & Th[illegible]epentic Nutrition.

1. C.H. Ro[illegible]nson
2. F.P. An[illegible]
3. M. Swa[illegible]nathon
4. P. Raja[illegible]mi
5. C. Gop[illegible]n-etal
6. Mango[illegible]Konge
7. Jyoti k[illegible]rni
8. Geeta [illegible]hpa Shaw
9. Kreuse[illegible]l.
10. आहार ए[illegible]ण विज्ञान
11. खाद्य परि[illegible]

Normal & Therapeutic Nutrition.
Clinical Nutrition & Dietetics.
Essentials of N[illegible] Vol. I & II.
Appli[illegible] Nutrition.
The Nutrition value of Indian Foods. ICHR. 1991.
Normal & Therapeutic Nutrition (In Hindi).
Normal & Therapeutic Nutrition.

Food Nutrition & [illegible] Therapy.
[illegible], इन्दौर
[illegible], इंदौर ।

PAPER-III : PHYSICAL CHEMISTRY

M.M. : 34
60 Hrs.

UNIT 1. **Quantum Mechanics-I :** Black-body radiation, Planck's radiation law, photoelectric effect, Compton effect. Operator : Hamiltonian operator, angular momentum operator, Laplacian operator, postulate of quantum mechanics, eigen values, eigen function, Schrodinger time independent wave equation, physical significance of ψ and ψ^2, application of Schrodinger wave equation to particle in a one dimensional box, hydrogen atom (separation into three equations) radial and angular wave functions.

UNIT 2. **Quantum Mechanics -II :** Quantum Mechanical approach of Molecular orbital theory, basic ideas-criteria for forming M.O. and A.O., LCAO approximation, formation of H_2^+ ion, calculation of energy levels from wave functions, bonding and antibonding wave functions, Concept of σ-σ^*, π-π^*orbitals and their characteristics, Hybrid orbitals-sp, sp^2, sp^3, calculation of coefficients of A.O.'s used in these hybrid orbitals.
Introduction to valence bond model of H_2, comparison of M.O. and V.B. models. Huckel theory, application of Huckel theory of ethane, propane, etc.

UNIT 3. **Spectroscopy : Introduction :** Characterization of Electromagnetic radiation, regions of the spectrum, representation of spectra, width and intensity of spectral transition, Rotational spectrum of diatomic molecules. Energy levels of a rigid rotor, selection rules, determination of bond length, qualitative description of non-rigid rotator, isotopic effect.
Vibrational Spectroscopy : Fundamental vibration and their symmetry vibrating diatomic molecules, Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, determination of force constant, anharmonic oscillator. **Raman Spectrum :** Concept of polarizability, quantum theory of Raman spectra, stokes and antistokes lines, pure rotational and pure vibrational Raman spectra spectra. Applications of Raman Spectra. **Electronic Spectroscopy :** Basic principles, Electronic spectra of diatomic molecule, Franck-Condon principle, types of electronic transition, application of eletronic spectra.

UNIT 4. **Electrochemistry-I : [A] Electrolytic Conductance :** Specific and equivalent conductance, measurement of equivalent conductance, effect of dilution on conductance, Kohlrausch law, application of Kohlrausch law in determination of dissociation constant of weak electrolyte, solubility of sparingly soluble electrolyte, absolute velocity of ions, ionic product of water, conductometric titrations. **[B] Theories of Strong Electrolytes :** Limitations of Ostwald's dilution law, weak and strong electrolytes, Elementary ideas of Debye-Huckel-Onsager's equation for strong electrolytes, relaxation and electrophoretic effects. **[C] Migration of ions :** Transport number, Determination by Hittorf method and moving boundary method, ionic strength.

UNIT 5. **Electrochemistry-II : [A] Electrochemical cell and Galvanic cells :** Reversible and irreversible cells, conventional representation of electrochemical cells, EMF of the cell and effect of temperature on EMF of the cell, Nernst equation, Calculation of ΔG, ΔH and ΔS for cell reactions. **[B] Single Electrode Potential :** Standard hydrogen electrode, calomel electrode, quinhydrone electrode, redox electrodes, electrochemical series. **[C] Concentration cell** with and without transport, Liquid-junction potential, application of concentration cells in determining of valency of ions, solubility product and activity coefficient. **[D] Corrosion :** Types,

Silicates, phosphazenes and polyphe...

PAPER-II : ORGANIC CHEMISTRY

M.M. : 33
60 Hrs.

UNIT 1. ***Heterocyclic*** **Compounds :** Classification and nomenclature, Structure, aromaticity in 5 and 6-membered rings containing one heteroatom; Synthesis, reactions and mechanism of substitution reactions of : Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrole synthesis, Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis), Indole (Fischer indole synthesis and Madelung synthesis), Quinoline and isoquinoline (Skraup synthesis, Friedlander's synthesis, Knorr quinoline synthesis, Doebner-Miller synthesis, Bischler-Napieralski reaction, Pictet- Spengler reaction, Pomeranz-Fritsch reaction).

UNIT 2. **[A] Organometallic Reagents : Organomagnesium compounds :** Grignard reagents formation, structure and chemical reactions.
Organozinc Compounds : Formation and chemical reactions.
Organolithium Compounds : Formation and chemical reactions.
[B] Organic Synthesis via Enolates : Active methylene group, alkylation of diethylmalonate and ethyl aceto-acetate, Synthesis of ethyl acetoacetate : The Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. Robbinson annulations reaction.

UNIT 3. **Biomolecules : [A] Carbohydrates :** Occurrence, classification and their biological importance. **Monosaccharides :** Relative and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projections and conformational structures; Intercon-versions of aldoses and ketoses; Killiani-Fischer synthesis and Ruff degra-dation; **Disaccharides :** Structural comparison of maltose, lactose and sucrose. **Polysaccharides :** Elementary treatment of starch and cellulose. **[B] Amino Acids, Proteins and Nucleic acids :** Classification and Nomenclature of amino acids, Configuration and acid- base properties of amino acids, Isoelectric point, Peptide bonds, Protein structure, denaturation/renaturation, Constituents of nucleic acid, DNA, RNA nucleoside, nucleotides double helical structure of DNA.

UNIT 4. **[A] Synthetic Polymers :** Addition or chain growth polymerization, Free radical vinyl polymerization, Ziegler-Natta polymerization, Condensation or step growth polymerization, polyesters, polyamides, phenols-formaldehyde resins, urea-formaldehyde resins, epoxy resins and polyurethanes, natural and synthetic rubbers. **[B] Synthetic Dyes :** Colour and constitution (Electronic concept). Classification of dyes. Chemistry of dyes. Chemistry and synthesis of Methyl Orange, Congo Red, Malachite Green, Crystal Violet, phenolphthalein, fluorescein, Alizarine and Indigo.

UNIT 5. **[A] Infra-Red Spectroscopy :** Basic principle, IR absorption band their position and intensity, IR spectra of organic compounds. **[B] UV-Visible Spectroscopy :** Beer-Lambert's law, effect of Conjugation, Types of electronic transition λ_{max}, Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption, Visible spectrum and colour. **[C] NMR Spectroscopy :** Basic principles of proton magnetic resonance, Tetramethyl silane (TMS) as internal standard, chemical shift and factors influencing it; Spin-Spin coupling and coupling constant (J); Anisotropic effects in alkene, alkyne, aldehydes and aromatics, Interpretation of NMR spectra of simple organic compounds. ^{13}C-NMR spectroscopy : Principle and applications, Magnetic resonance imaging (MRI).

CHEMISTRY

B.Sc. PART-III

PAPER-I : INORGANIC CHEMISTRY

M.M. : 33
60 Hrs.

UNIT 1. **[A] Metal-Ligand Bonding in Transition Metal Complexes :** Limitations of valence bond theory, limitations of crystal field theory, application of CFSE, tetragonal distortion from octahedral geometry, Jahn-Teller distortion, Square planar geometry. Qualitative aspect of Ligand field theory and MO theory. **[B] Thermodynamic and Kinetic Aspects of Metal Complexes :** A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes, Trans-effect, theories of trans-effect. Mechanism of substitution reactions of square planar complexes.

UNIT 2. **[A] Magnetic Properties of Transition Metal Complexes :** Types of magnetic behaviour, methods of determining magnetic susceptibility, spin only formula, L-S coupling, correlation of $\mu_{so(spin\,only)}$ and $\mu_{eff.}$ values, orbital contribution to magnetic moments, applications of magnetic moment data for 3*d*-metal complexes. **[B] Electronic Spectra of Transition Metal Complexes :** Types of electronic transitions, selection rules for *d*-*d* transitions, spectro-scopic ground states, spectro-chemical series. Orgel-energy level diagram for d^1 and d^9 states, discussion of the electronic spectrum of $[Ti(H_2O)_6]^{3+}$ complex ion.

UNIT 3. **Organometallic Chemistry :** Definition and classification of organo-metallic compounds on the basis of bond type. Concept of hapticity of organic ligands. Metal carbonyls : 18-electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3*d*-series. General methods of preparation (direct combinatio.., reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of 3*d*-series. Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. π-acceptor behaviour of CO (MO diagram of CO to be discussed), Zeise's salt : Preparation and structure.

Catalysis by Organometallic Compounds : Study of the following industrial processes and their mechanism :

1. Alkene hydrogenation (Wilkinson's catalyst)
2. Polymeration of ethene using Ziegler-Natta catalyst.

UNIT 4. **Bio-Inorganic Chemistry :** Essential and trace elements in biological processes, Excess and deficiency of some trace metals, Toxicity of some metal ions (Hg, Pb, Cd and As), metalloporphyrins with special reference to hemoglobin and myoglobin. Biological role of alkali and alkaline earth metals with special reference to Ca^{2+} and Mg^{2+}, nitrogen fixation.

UNIT 5. **[A] Hard and Soft Acids and Bases (HSAB) :** Classification of acids and bases as hard and soft. Pearson's HSAB concept, acid-base strength and hardness and softness. Symbiosis, Applications of HSAB principle.

इकाई 1

इकाई 2

इकाई 3

इकाई 4

इकाई 5

B. THERMO CHEMISTRY

Thermochemistry, laws of thermochemistry, heats of reactions, standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations) and pressure on enthalpy of reactions, Adiabatic flame temperature, explosion temperature.

UNIT-II THERMODYNAMICS-II

A. Second Law of Thermodynamics : Spontaneous process, second law, statement of Carnot cycle and efficiency of heat engine, Carnot's theorem, thermodynamic state of temperature. Concept of entropy : Entropy change in a reversible and irreversible process, entropy change in isothermal reversible expansion of an ideal gas, entropy change in isothermal mixing of ideal gases, physical signification of entropy, molecular and statistical interpretation of entropy.

B. Gibbs and Helmholtz free energy, variation of G and A with pressure, volume, temperature. Gibbs-Helmholtz equation, Maxwell relations, elementary idea of Third law of thermodynamics, concept of residual entropy, calculation of absolute entropy of molecule.

UNIT-III CHEMICAL EQUILIBRIUM

Criteria of thermodynamic equilibrium, degree of advancement of reaction, chemical equilibria in ideal gases. Concept of Fugacity, Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient. Coupling of exergonic and endergonic reactions. Equilibrium constants and their quantitative dependence on temperature, pressure and concentration. Thermodynamic derivation of relations between the various equilibrium constants K_p, K_c and K_x. Le-Chatelier principle (quantitative treatment). Equilibrium between ideal gas and a pure condensed phase.

IONIC EQUILIBRIA

Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono protic acids (exact treatment). Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications. Solubility and solubility product of sparingly soluble salts-applications of solubility product principle.

UNIT-IV PHASE EQUILIBRIUM

A. Phase rule, phase, component and degree of freedom, derivation of Gibbs phase rule, Clausius-Clapeyron equation and its applications to Solid-Liquid, Liquid-Vapour and Solid-Vapour, limitation of phase rule, applications of phase rule to one component system; water system and sulphur system. Applications of phase rule to two component system : Pb-Ag system, desilverization of lead, Zn-Mg system. Ferric chloride-water system, congruent and incongruent, melting point and eutectic point. Three component system : Solid solution liquid pairs.

B. Nernst distribution law, Henry's law, application, solvent extraction.

UNIT-V PHOTOCHEMISTRY

Characteristics of electromagnetic radiation, interaction of radiation with matter, difference between thermal and photochemical processes, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry : Grothus-Drapper law, Stark-Einstein law, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions, quenching, role of photochemical reaction in biochemical process. Jablonski diagram depicting various process occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), photosensitized reactions, energy transfer processes (simple examples), photostationary states, chemiluminescence.

coupling.

PAPER-III : PHYSICAL CHEMISTRY

THERMODYNAMICS-I

A. Intensive and extensive variables; state and path functions; isolated, closed and open systems; Zeroth law of thermodynamics. First law : Concept of heat, work, internal energy and statement of first law; enthalpy, relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases under isothermal and adiabatic conditions. Joule-Thomson expansion, inversion temperature of gases, expansion of ideal gases under isothermal and adiabatic condition.

UNIT-II **ALCOHOLS**

A. Alcohols : Nomenclature, preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Bouvaelt-Blanc reduction for the preparation of alcohols. **Dihydric alcohols :** Methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$ and HIO_4] and pinacol-pinacolone rearrangement.

B. Trihydric alcohols : Nomenclature, methods of formation, chemical reactions of glycerol.

PHENOLS

A. Structure and bonding in phenols, physical properties and acidic character, comparative acidic strength of alcohols and phenols, acylation and carboxylation.

B. Mechanism of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesh reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction.

UNIT-III **ALDEHYDES AND KETONES**

A. Nomenclature, structure and reactivity of carbonyl group. General methods of preparation of aldehydes and ketones.

Mechanism of nucleophilic addition to carbonyl groups : Benzoin, Aldol, Perkin and Knoevenagel condensation. Condensation with ammonia and its derivatives, Wittig reaction, Mannich reaction, Beckmann and Benzil- Benzilic rearrangement.

B. Use of acetals as protecting group, Oxidation of aldehydes, Daeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen reduction, Wolff-Kishner reaction, $LiAlH_4$ and $NaBH_4$ reduction. Halogenation of enolizable ketones, an introduction to α,β-unsaturated aldehydes and ketones.

UNIT-IV **CARBOXYLIC ACIDS**

Preparation, structure and bonding, physical and chemical properties including, acidity of carboxylic acids, effects of substituents on acid strength, Hell-Volhard Zeilinsky reaction. Reduction of carboxylic groups, mechanism of decarboxylation.

Di carboxylic acids : Methods of formation and effect of heat and dehydrating agents. Hydroxyacids.

CARBOXYLIC ACID DERIVATIVES

Structure of acid chlorides, esters, amides and acid anhydrides, Relative stability of acyl derivatives. Physical properties, inter-conversion of acid derivatives by nucleophilic acyl substitution. Mechanism of acid and base catalyzed esterification and hydrolysis.

UNIT-V **ORGANIC COMPOUNDS OF NITROGEN**

A. Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanism of nucleophilic substitution in nitroarenes and their reduction in acidic, neutral and alkaline medium.

B. Reactivity, structure and nomenclature of amines, physical properties. Stereochemistry of amines. Separation of mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Preparation of alkyl and aryl amines (reduction of nitro compounds and nitriles), reductive amination of aldehydic and ketonic compounds. Gabriel-Phthalimide reaction, Hofmann-Bromamide reaction, reactions of amines, electrophilic aromatic substitution of aryl amines, reaction of amines with nitrous acid. Synthetic transformations of aryl diazonium salts, Azo coupling.

CHEMISTRY

B.Sc. PART-II

PAPER-I : INORGANIC CHEMISTRY

NIT-I CHEMISTRY OF TRANSITION SERIES ELEMENTS

Transition Elements : Position in periodic table, electronic configuration, general characteristics, *viz.*, atomic and ionic radii, variable oxidation states, ability to form complexes, formation of coloured ions, magnetic moment μ_{so} (spin only) and μ_{eff} and catalytic behaviour. General comparative treatment of 4*d* and 5*d* elements with their 3*d* analogues with respect to ionic radii, oxidation states and magnetic properties.

NIT-II OXIDATION AND REDUCTION

Redox potential, electrochemical series and its applications. Principles involved in extraction of the elements.

CO-ORDINATION COMPOUNDS

Werner's theory and its experimental verification, IUPAC nomenclature of co-ordination compounds, isomerism in co-ordination compounds. Stereochemistry of complexes with 4 and 6 co-ordination numbers. Chelates, polynuclear complexes.

IT-III CO-ORDINATION CHEMISTRY

Valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding. Crystal field theory, crystal field splitting and stabilization energy, measurement of 10 D*q* (Δ_o), CFSE in weak and strong fields, pairing energies, factors affecting the magnitude of 10 D*q* (Δ_o, Δ_t). Octahedral Vs. tetrahedral co-ordination.

IT-IV CHEMISTRY OF LANTHANIDE ELEMENTS

Electronic structure, oxidation-states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.

CHEMISTRY OF ACTINIDES

General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from uranium, similarities between the later actinides and the later lanthanides.

IT-V ACIDS-BASES

Arrhenius, Bronsted-Lowry, conjugate acids and bases, relative strengths of acids and bases, the Lux-flood, solvent system and Lewis concepts of acids and bases.

NON-AQUEOUS SOLVENTS

Physical properties of a solvent, types of solvents and their general characteristics, reaction in non-aqueous solvents with reference to liquid ammonia and liquid sulphur dioxide, HF, H_2SO_4, ionic liquids.

PAPER-II : ORGANIC CHEMISTRY

IT-I CHEMISTRY OF ORGANIC HALIDES

Alkyl halides : Methods of preparation, nucleophilic substitution reactions - S_N1, S_N2 and S_Ni mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution, elimination reactions.

Aryl halides : Preparation, including preparation from diazonium salts, nucleophilic aromatic substitution; S_NAr, benzyne mechanism. Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.

	moment, Percentage ionic character from dipole moment and electronegativity difference, Metallic bond-free electron and band theories.	
III	**Chemical bonding-II: Covalent bond**: Valence bond theory and its limitations, Concept of hybridization, equivalent and non-equivalent hybrid orbitals. Valence shell electron pair repulsion theory (VSEPR). shapes of the following simple molecules and ions containing lone pairs and bond pairs of electrons: H_2O, NH_3, PCl_3, H_3O^+, SF_4, ClF_3, ICl_2^-, XeF_2, XeF_4, XeF_6, $XeOF_2$, $XeOF_4$. Molecular orbital theory. Bond order and bond strength, Molecular orbital diagrams of diatomic and simple heteroatomic molecules N_2, O_2, F_2, CO, NO.	
IV	**Chemistry of s- & p- block elements:** General concepts on group relationships and gradation properties, Comparative study, salient features of hydrides, solvation & complexation tendencies, General concepts on group relationships and gradation properties. Halides, hydrides, oxides and oxyacids of Boron, Aluminum, Nitrogen and Phosphorus. Boranes, borazines, fullerenes, graphene and silicates. interhalogens and pseudohalogens. Chemical properties of the noble gases. **Metallurgical extraction of Fe, Al and Cu :** Principle of extraction of metal, The occurrence, extraction & isolation of Fe, Al, and Cu	
V	**Mathematical concepts for chemist**: Basic Mathematical Concepts: Logarithmic relations, curve sketching, linear graphs, Properties of straight line, slope and intercept, Functions, Differentiation of functions, maxima and minima; integrals; ordinary differential equations; vectors and matrices; determinants; Permutation and combination and probability theory, Significant figures and their applications. **Computer for chemists:** Introduction to computer, introduction to operating systems like DOS, Windows, Linux **Use of computer programs:** Running up standard programs & packages such as MS –Word, MS- Excel, Power Point, Execution of linear regression x-y plot, use of software for drawing structures and molecular formulae	
VI	**Chemical kinetics :** Rate of reaction, Factors influencing rate of reaction, rate law, rate constant, Order and molecularity of reactions, rate determining step, Zero, First and Second order reactions, Rate and Rate Law, methods of determining order of reaction, Chain reactions. Temperature dependence of reaction rate, Arrhenius theory, Physical significance of Activation energy, collision theory, demerits of collision theory, non-mathematical concept of transition state theory. **Catalysis:** Homogeneous and Heterogeneous Catalysis, types of catalyst, characteristics of catalyst. Enzyme catalyzed reactions, Micellar catalyzed reactions, Industrial applications of catalysis.	
	Keywords: Atomic structure, Periodic properties, ionic bonding, covalent bonding, dia metallurgy, computer, memory, chemical kinetics, catalysis	

	Max. Marks: 50	Min. Passing

Part B: Content of the Course

Total No. of Lecturers: 90

	Topics
	Atomic structure : Bohr's theory and its limitation. General idea of de-Broglie matter-waves, Heisenberg uncertainty principle, Schrödinger wave equation, significance of Ψ and Ψ^2, radial & angular wave functions and probability distribution curves, quantum numbers, Atomicorbital and shapes of *s*, *p*, *d* orbitals, Aufbau and Pauli exclusion principles, Hund's Multiplicity rule, electronic configuration of the elements. **Periodic properties:** Detailed discussion of the following periodic properties of the elements, with reference to *s*- and *p*- block. Trends in periodic table and applications in predicting and explaining the chemical behavior. a. Atomic and ionic radii, b. Ionization enthalpy, c. Electron gain enthalpy, d. Electronegativity, Pauling's, Mulliken's, Allred Rochow's scales. Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.
	Chemical bonding- I: Ionic bond: Ionic Solids - Ionic structures, radius ratio & co-ordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy Born-Haber cycle, Solvation energy and solubility of ionic solids, polarizing power & polarizability of ions, Fajan's rule, Ionic character in covalent compounds: Bond moment and dipole

MATHEMATICS

There shall be three theory papers. Two compulsory and one optional. Each paper carrying 50 marks is divided into five units and each unit carry equal marks.

B.Sc. Part-III
PAPER - I
ANALYSIS

REAL ANALYSIS

UNIT-I Series of arbitrary terms. Convergence, divergence and oscillation. Abel's and Dirichlet's test. Multiplication of series. Double series. Partial derivation and differentiability of real-valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem. Fourier series. Fourier expansion of piecewise monotonic functions.

UNIT-II Riemann integral. Integrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus. Improper integrals and their convergence. Comparison tests. Abel's and Dirichlet' tests. Frullani's integral. Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.

COMPLEX ANALYSIS

UNIT-III Complex numbers as ordered pairs. Geometrical representation of complex numbers. Stereographic projection. Continuity and differentiability of complex functions. Analytic functions. Cauchy-Riemann equations. Harmonic functions. Elementary functions. Mapping by elementary functions. Mobius transformations. Fixed points. Cross ratio. Inverse points and critical mappings. Conformal mappings.

METRIC SPACES

UNIT-IV Definition and examples of metric spaces. Neighbourhoods. Limit points. Interior points. Open and Closed sets. Closure and interior. Boundary points. Sub-space of a metric space. Cauchy sequences. Completeness. Cantor's intersection theorem. Contraction principle, construction of real numbers as the completion of the incomplete metric space of rationals. Real numbers as a complete ordered field.

UNIT-V Dense subsets. Baire Category theorem. Separable, second countable and first countable spaces. Continuous functions. Extension theorem. Uniform continuity, isometry and homeomorphism. Equivalent metrics. Compactness, sequential compactness. Totally bounded spaces. Finite intersection property. Continuous functions and Compact sets. Connectedness. Components. Continuous functions and Connected sets.

REFERENCES :

1. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
2. R.R. Goldberg, Real Analysis, Oxford & IBH publishing Co., New Delhi, 1970.
3. S. Lang, Undergraduate Analysis, Springer-Verlag, New York, 1983.
4. D. Somasundaram and B. Choudhary, A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. Shanti Narayan, A Course of Mathematical Analysis, S. Chand & Co. New Delhi.
6. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
7. R.V. Churchill and J.W. Brown, Complex Variables and Applications, 5th Edition, McGraw- Hill, NewYork, 1990.
8. Mark J. Ablowitz and A.S. Fokas, Complex Variables : Introduction and Applications, Cambridge University Press, South Asian Edition, 1998.
9. Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.
10. E.T. Copson, Metric Spaces, Cambridge University Press, 1968.
11. P.K. Jain and K. Ahmad, Metric Spaces, Narosa Publishing House, New Delhi, 1996.
12. G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill, 1963.

B.Sc. Part-III
PART - II
ABSTRACT ALGEBRA

UNIT-I Group-Automorphisms, inner automorphism. Automorphism of groups and their computations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group. Center for Group of prime-order, Abelianizing of a group and its universal property. Sylow's theorems, Sylow subgroup, Structure theorem for finite Abelian groups.

UNIT-II Ring theory-Ring homomorphism. Ideals and quotient rings. Field of quotients of an integral domain, Euclidean rings, polynomial rings, Polynomials over the rational field. The Eisenstien criterion, polynomial rings over commutative rings, Unique factorization domain. R unique factorisation domain implies so is $R[x_1, x_2, \ldots, x_n]$. Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems.

UNIT-III Definition and examples of vector spaces. Subspaces. Sum and direct sum of subspaces. Linear span, Linear dependence, independence and their basic properties. Basis. Finite dimensional vector spaces. Existence theorem for bases. Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a finite dimensional vector space. Dimension of sums of subspaces. Quotient space and its dimension.

UNIT-IV Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem. Change of basis. Dual space. Bidual space and natural isomorphism. Adjoint of a linear transformation. Eigenvalues and eigenvectors of a linear transformation. Diagonalisation. Annihilator of a subspace. Bilinear, Quadratic and Hermitian forms.

UNIT-V Inner Product Spaces-Cauchy-Schwarz inequality. Orthogonal vectors. Orthogonal Complements. Orthonormal sets and bases. Bessel's inequality for finite dimensional spaces. Gram-Schmidt Orthogonalization process.

REFERENCES :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. N. Jacobson, Basic Algebra, Vols. I & II. W.H. Freeman, 1980 (also published by Hindustan Publishing Company).
3. Shanti Narayan, A Text Book of Modern Abstract Algebra, S.Chand & Co. New Delhi.
4. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi, 2000.
5. P.B. Bhattacharya, S.K. Jain and S.R. Nagpal, Basic Abstract Algebra (2"" Edition) Cambridge University Press, Indian Edition, 1997.
6. K. Hoffman and R. Kunze, Linear Algebra, (2nd Edition), Prentice Hall. Englewood Cliffs, New Jersey, 1971.
7. S.K. Jain, A. Gunawardena and P.B. Bhattacharya, Basic Linear Algebra with MATLAB. Key College Publishing (Springer-Verlag) 2001.
8. S. Kumaresan, Linear Algebra, A Geometric Approach, Prentice-Hall of India, 2000.
9. Vivek Sahai and Vikas Bist, Algebra, Narosa Publishing House, 1997.
10. I.S. Luther and I.B.S.Passi, Algebra, Vol. I-Groups, Vol. II-Rings. Narosa Publishing House (Vol. I-1996, Vol. II-1999)
11. D.S. Malik, J.N. Mordeson, and M.K. Sen, Fundamentals of Abstract Algebra, McGraw- Hill International Edition, 1997.

B.Sc. Part-III
PAPER - III - (OPTIONAL)
(I) PRINCIPLES OF COMPUTER SCIENCE

UNIT-I **Data Storage** - Storage of bits. Main Memory. Mass Storage. Coding Information of Storage. The Binary System. Storing integers, storing fractions, communication errors.
Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer- Peripheral Communication.

UNIT-II **Operating System and Networks** - The Evolution of Operating System. Operating System Architecture. Coordinating the Machine's Activities. Handling Competition Among Process. Networks. Networks Protocol.
Software Engineering - The Software Engineering Discipline. The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation. Software Ownership and Liability.

UNIT-III **Algorithms** - The Concept of an Algorithm, Algorithm Representation. Algorithm Discovery. Iterative Structures. Recursive Structures. Efficiency and Correctness. (Algorithms to be implemented in C++).
Programming Languages - Historical Perspective. Traditional Programming Concepts, Program Units. Language Implementation. Parallel Computing. Declarative Computing.

UNIT-IV **Data Structures** - Arrays. Lists. Stacks. Queues. Trees. Customised Data Types. Object Oriented Programming.
File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role of the Operating System.
Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model. Object-Oriented Database. Maintaining Database Integrity. E-R models

UNIT-V **Artifical Intelligence** - Some Philosophical Issues. Image Analysis. Reasoning, Control System Activities. Using Heuristics. Artificial Neural Networks. Application of Artificial Intelligence.
Theory of Computation - Turning Machines. Computable functions. A Non computable Function. Complexity and its Measures. Problem Classification.

REFERENCES :

1. J. Glen Brookshear, Computer Science : An Overview, Addition -Wesley.
2. Stanley B. Lippman, Josee Lojoie, C++ Primer (3rd Edition), Addison-Wesley.

B.Sc. Part-III
PAPER - III - (OPTIONAL)
(II) DISCRETE MATHEMATICS

UNIT-I **Sets and Propositions** - Cardinality. Mathematical Induction, Principle of inclusion and exclusion. **Computability and Formal Languages** - Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II **Relations and Functions** - Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.

Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs. Trees.

UNIT-III **Finite State Machines** - Equivalent Machines. Finite State Machines as Language Recognizers. **Analysis of Algorithms** - Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV **Recurrence Relations and Recursive Algorithms** - Linear Recurrence Relations with constant coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V **Boolean Algebras** - Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES :

1. C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986

B.Sc. Part-III
PAPER - III - (OPTIONAL)
(III) PROGRAMMING IN C AND NUMERICAL ANALYSIS
(Theory & Practical)
Theory component will have maximum marks 30.
Practical component will have maximum marks 20.

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II **Solution of Equations:** Illsection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials. **Interpolation:** Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulas using Differences. Numerical Differentiation. Numerical Quadrature: Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III **Linear Equations:** Direct Methods for Solving Systems of Linear Equations (Gauss Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).
The Algebraic Eigenvalue problem: Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

UNIT-IV **Ordinary Differential Equations:** Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.
Approximation: Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Monte Carlo Methods

Unit-V Random number generation, congruential generators, statistical tests of pseudo-random numbers. Random variate generation, inverse transform method, composition method, acceptance rejection method, generation of exponential, normal variates, binomial and Poisson variates.
Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo integration.

REFERENCES :

1. Henry Mullish and Herbert L. Cooper, Spirit of C: An Introduction to Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie, The C Programming Language 2nd Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C : A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutchisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1986.
6. V. Rajaraman, Programming in C, Prentice Hall of India, 1994.
7. Byron S. Gottfried, Theory and Problems of Programming with C, Tata McGraw-Hill Publishing Co. Ltd., 1996.
8. C.E. Froberg, Introduction to Numerical Analysis, (Second Edition), Addison-Wesley, 1979.
9. James B. Scarborough, Numerical Mathematical Analysis, Oxford and IBHPublishing Co. Pvt. Ltd. 1966.

10. Melvin J. Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co., Inc. New York, 1982.
11. M.K. Jain, S.R.K. Iyengar, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.
12. M.K. Jain, S.R.K. Iyengar, R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International (P) Ltd., 1999.
13. R.Y. Rubistein, Simulation and the Monte Carlo Methods, John Wiley, 1981.
14. D.J. Yakowitz, Computational Probability and Simulation, Addison-Wesley, 1977.

PAPER - III - (OPTIONAL)
(IV) PRACTICAL
PROGRAMMING IN C AND NUMERICAL ANALYSIS

LIST OF PRACTICAL TO BE CONDUCTED...

1. Write a program in C to find out the largest number of three integer numbers.
2. Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules :

Monthly Salary	Income Tax
9000 or more	40% of monthly salary
7500 or more	30% of monthly salary
7499 or less	20% of monthly salary

3. Write a program in C that reads a year and determine whether it is a leap year or not.
4. Write a program in C to calculate and print the first n terms of fibonacci series using looping statement.
5. Write a program in C that reads in a number and single digit. It determines whether the first number contains the digit or not.
6. Write a program in C to computes the roots of a quadratic equation using case statement.
7. Write a program in C to find out the largest number of four numbers using function.
8. Write a program in C to find the sum of all the digits of a given number using recursion.
9. Write a program in C to calculate the factorial of a given number using recursion.
10. Write a program in C to calculate and print the multiplication of given 2D matrices.
11. Write a program in C to check that whether given string palindrome or not.
12. Write a Program in C to calculate the sum of series:

$$1 + x + \frac{1}{2!}x^2 + \frac{1}{3!}x^3 + \ldots\ldots + \frac{1}{n!}x^n$$

13. Write a program in C to determine the grade of all students in the class using Structure. Where structure having following members - name, age, roll, sub1, sub2, sub3, sub4 and total.
14. Write a program in C to copy one string to another using pointer. (Without using standard library functions).
15. Write a program in C to store the data of five students permanently in a data file using file handling.