

संस्कृत विभाग

Program out comes:-

संस्कृत साहित्य समस्त साहित्यिक विषयों में उच्च स्थान को प्राप्त किए हुए हैं। संस्कृत का अध्ययन कर व्यक्ति भारतीय इतिहास, संस्कृति और सभ्यता, धर्म और सामाजिक जीवन को वास्तविक रूप से जान सकता है।

स्नातक और स्नातकोत्तर के पाठ्यक्रम न केवल व्यावहारिक कौशल के लिए तैयार किए गए हैं अपितु विभिन्न संस्कृत ग्रंथों के माध्यम से भारत के समृद्ध विरासत और गतिशील प्रचलित परिदृश्य की गहरी समझ विकसित करते हैं। संस्कृत विषय से स्नातक और स्नातकोत्तर उत्तीर्ण कर छात्र और छात्राएं विभिन्न क्षेत्रों में सक्षम होते हैं:-

छात्र संस्कृत साहित्य, राष्ट्रीय और वैश्विक परिदृश्य को समझने में सक्षम होता है। वेद व्याकरण, स्मृति, काव्य, दर्शन आदि का ज्ञान प्राप्त कर उच्च शिक्षा के योग्य बनता है। उसमें आत्मिक, आध्यात्मिक, दार्शनिक, सांस्कृतिक और व्यावहारिक बौद्धिक शक्ति का विकास होता है। छात्र की तार्किक, आलोचनात्मक, विश्लेषणात्मक और समीक्षात्मक क्षमता का विकास होता है। संस्कृत के प्राचीन और अर्वाचीन ग्रंथों के अध्ययन से भारतीय इतिहास, दर्शन संस्कृत और साहित्य की एक मजबूत अवधारणा विकसित होती है। संस्कृत व्याकरण के अध्ययन से विद्यार्थियों में संचार कुशलता का विकास होता है। विद्यार्थी में सामाजिक जिम्मेदारी का समावेश होता है और समाज को संस्कृत भाषा के प्रति जागरूक करता है अतः वह राष्ट्र का जिम्मेदार नागरिक बनता है। संस्कृत साहित्य के विभिन्न क्षेत्रों में शिक्षण और अनुसंधान (शोध) के लिए दक्षता और व्यवहार कौशल को प्राप्त करता है। संस्कृत से स्नातक और स्नातकोत्तर करने के पश्चात् विद्यार्थी सरकारी और गैर सरकारी क्षेत्रों में रोजगार को प्राप्त कर सकता है। स्नातकोत्तर के पश्चात नेट और यू सेट आदि की

परीक्षाओं के लिए और उसके पश्चात महाविद्यालयों में शिक्षण कार्य के लिए योग्य बन जाते हैं। संस्कृत से स्नातक करने के पश्चात बीएड कर विद्यार्थी विद्यालयों में व अन्य शैक्षणिक संस्थानों में शिक्षक पदों के लिए आवेदन कर सकता है। छात्र भारतीय सेना में भी एक सम्मानित पद 'विषय गुरु' और 'धर्म गुरु' पद को प्राप्त करने के लिए आवेदन कर सकते हैं। छात्र अनुवादक, पत्रकार, योग-गुरु, वास्तु-आचार्य, पुरोहित, ज्योतिषाचार्य और विभिन्न केन्द्रीय तथा राजकीय सेवा पदों पर कार्य कर सकते हैं।

Course Out Comes:-

स्नातक स्तर:- बी.ए. संस्कृत विषय के अंतर्गत तीन वर्षीय पाठ्यक्रम में कुल छः प्रश्न पत्र सम्मिलित हैं।

बी.ए. प्रथम वर्ष

प्रथम प्रश्न पत्र:- (सुगम पाठ व्याकरण एवं अनुवाद)

भर्तृहरि के नीतिशतकम् का अध्ययन कर विद्यार्थी नैतिक कर्तव्य के प्रति जागृत होता है। विद्यार्थियों को हितोपदेश में वर्णित लोक कथाओं के माध्यम से नीति शिक्षा प्राप्त होती है। विद्यार्थी व्याकरण से संधि सूत्र, संज्ञा सूत्र तथा अनुवाद को सीखते हैं जिससे उनमें संस्कृत भाषा पर मजबूत पकड़ बनती है।

द्वितीय प्रश्न पत्र:- (नाटक अलंकार एवं छंद)

विद्यार्थियों को संस्कृत साहित्य के महान कवि कालिदास तथा उनकी विश्व प्रसिद्ध रचना अभिज्ञान शाकुंतलम् नाटक का परिचय प्राप्त होता है। काव्य की शोभा बढ़ाने वाले अलंकार तथा छंद का ज्ञान प्राप्त होता है। नाट्यसाहित्य में नाट्य तत्वों का अध्ययन करने से विद्यार्थियों में नाट्य सृजन की क्षमता का विकास होता है।

बी.ए. द्वितीय वर्ष

प्रथम प्रश्न पत्र:- (गद्य काव्य, प्राचीन एवं अर्वाचीन संस्कृत साहित्य का इतिहास)

विद्यार्थियों को बाणभट्ट तथा कादंबरी का परिचय प्राप्त होता है। शुकनाश के संक्षिप्त उपदेश विद्यार्थियों को मानवीय ज्ञान प्राप्त होता है। शिवराज विजय के अध्ययन से भारत देश की प्राचीन संस्कृति तथा स्थिति का ज्ञान प्राप्त होता है। प्राचीन तथा अर्वाचीन संस्कृत साहित्य की विशेषताओं का परिचय प्राप्त होता है।

द्वितीय प्रश्न पत्र:- (वेद एवं दर्शन)

विद्यार्थियों को ऋग्वेद के अग्नि सूक्त, विष्णु सूक्त, पुरुष सूक्त, यजुर्वेद के शिव संकल्प सूक्त और अथर्ववेद के पृथ्वी सूक्त के माध्यम से वैदिक देवताओं की विशेषताओं और महत्व का ज्ञान प्राप्त होता है। विद्यार्थी श्रीमद्भगवत गीता के ज्ञान से परिचित होते हैं। तर्कसंग्रह के सप्त पदार्थों का ज्ञान मिलता है। कठोपनिषद् में वर्णित नचिकेता और यम संवाद के द्वारा आत्म तत्व का ज्ञान प्राप्त होता है। वेद का अर्थ वैदिक छंद प्रतिपाद्य विषयों का ज्ञान वैदिक साहित्य का इतिहास के अध्ययन से होता है।

बी.ए. तृतीय वर्ष

प्रथम प्रश्न पत्र:- (काव्यलोचन, योग, आयुर्वेद तथा वास्तु विज्ञान)

विश्वनाथ की रचना साहित्य दर्पण के अध्ययन से काव्य का लक्षण, काव्य का प्रयोजन आदि का ज्ञान प्राप्त होता है। पतंजलि के योग सूत्र के अध्ययन से विद्यार्थियों को योग का अर्थ और प्रयोजन, योग के भेदों तथा समाधि आदि के विषय में ज्ञान प्राप्त होता है। चरक संहिता के षड् ऋतु चर्या मात्र के अध्ययन से विद्यार्थियों को छह ऋतुओं में किस प्रकार का आहार-विहार करना चाहिए यह जानकारी प्राप्त होती है वास्तुसौख्यम् के अध्ययन से वास्तु विज्ञान का परिचय मिलता है।

द्वितीय प्रश्न पत्र:- (उत्तराखंड का अर्वाचीन संस्कृत साहित्य, भारतीय संस्कृति एवं निबंध)

उत्तराखंड के आधुनिक लेखकों के पद काव्य, खंड काव्य, नाटकों का परिचय प्राप्त हुआ जिससे विद्यार्थियों को स्वयं काव्य रचना करने की प्रेरणा मिलती है। भारतीय संस्कृति का स्वरूप विशेषताएं पंच महायज्ञ, वर्ण व्यवस्था, आश्रम व्यवस्था, सोलह संस्कार आदि के विषय में ज्ञान प्राप्त होता है संस्कृत के निबंध को पढ़ने व लिखने से विद्यार्थियों में भाषा कौशल का विकास होता है।

स्नातकोत्तर स्तर:- एम.ए संस्कृत विषय के अंतर्गत द्वि-वर्षीय पाठ्यक्रम में 16 प्रश्न पत्र हैं।

एम.ए. प्रथम सत्र

प्रथम प्रश्न पत्र:- (वैदिक सूक्त तथा निरुक्त)

विद्यार्थी वैदिक मंत्रों पाठ करने में सक्षम होते हैं। विद्यार्थियों को इंद्र, सावितृ, रूद्र, उषस् आदि वैदिक देवताओं का परिचय प्राप्त होता है। नासदीयसूक्त का अध्ययन कर सृष्टि उत्पत्ति के विषय में ज्ञान प्राप्त होता है। यास्क के निरुक्त से वैदिक शब्दों का अर्थ ज्ञान व वैदिक शब्दों की व्युत्पत्ति के विषय में ज्ञान प्राप्त होता है।

द्वितीय प्रश्न पत्र:- (नाटक एवं नाट्य साहित्य का इतिहास)

नाटक एवं नाट्य साहित्य का अध्ययन कर विद्यार्थी में नाटक कौशल का विकास होता है भवभूति के प्रसिद्ध नाटक उत्तररामचरितम् के पाठ से विद्यार्थियों में नैतिक, सामाजिक, सांस्कृतिक मूल्यों और सिद्धांतों का समावेश होता है। संस्कृत साहित्य के विभिन्न नाटक-कारों का परिचय प्राप्त होता है।

तृतीय प्रश्न पत्र:- (भारतीय दर्शन)

भारतीय दर्शन संस्कृत के मूल सिद्धांतों का प्रतिपादन करते हैं। विद्यार्थी भारतीय दर्शन के इतिहास से परिचित होता है। तर्क भाषा में वर्णित सात पदार्थ द्रव्य, गुण, प्रमाण आदि और

सांख्यकारिका में वर्णित पच्चीस तत्वों का परिचय प्राप्त कर विद्यार्थी अपनी तार्किक, आलोचनात्मक और विश्लेषणात्मक शक्ति का विकास करता है।

चतुर्थ प्रश्न पत्र:- (व्याकरण एवं अनुवाद)

विद्यार्थी संस्कृत व्याकरण के उन्नत और वैज्ञानिकता का ज्ञान प्राप्त करता है समास व स्त्री प्रत्यय आदि का ज्ञान प्राप्त करता है और अनुवाद के माध्यम से संस्कृत भाषा पर अपनी पकड़ को मजबूत करता है।

एम. ए.द्वितीय सत्र

पंचम प्रश्न पत्र:- (महाकाव्य)

विद्यार्थी संस्कृत महाकाव्य की विशेषताओं का अध्ययन करता है। कालिदास के रघुवंशम् और श्रीहर्ष के नैषधीयचरितम् का पाठ कर विद्यार्थियों को तात्कालिक, भौगोलिक स्थिति की जानकारी होती है साथ ही प्राचीन संस्कृति का ज्ञान होता है। महाकाव्य के लक्षण का ज्ञान होने से विद्यार्थी स्वयं काव्य सृजन में सक्षम होता है।

षष्ठ प्रश्न पत्र:- (धर्मशास्त्र)

विद्यार्थी मनुस्मृति और याज्ञवल्क्य स्मृति में वर्णित सृष्टि उत्पत्ति, वर्णव्यवस्था, आश्रमव्यवस्था आदि और धर्म के वास्तविक स्वरूप का ज्ञान प्राप्त करता है। जिससे उसे अपने जीवन में वास्तविक धर्म व मानवीय कर्तव्य का पालन करने की प्रेरणा मिलती है। धर्म शास्त्र के पाठ से विद्यार्थियों में ना केवल बौद्धिक अपितु व्यवहारिक ज्ञान की भी वृद्धि होती है।

सप्तम प्रश्न पत्र:- (पुराणेतिहास)

वाल्मीकि रामायण और भागवत पुराण के अध्ययन करने से विद्यार्थी को उस काल की सामाजिक, सांस्कृतिक और राजनीतिक स्थिति के संदर्भ में ज्ञान प्राप्त होता है। रामायण के अध्ययन के माध्यम से विद्यार्थी आधुनिक काल में भी वांछित आदर्शों को प्राप्त करते हैं और पुराणों की विशेषताओं का ज्ञान प्राप्त करते हैं तथा भारतीय सांस्कृतिक विरासत के मूल स्रोत को जानते हैं, जिससे उनमें गौरवशाली सांस्कृतिक विरासत के प्रति आदर भाव जागृत होता है।

अष्टम प्रश्न पत्र:-(काव्यशास्त्र)

विद्यार्थियों को काव्यशास्त्र के अध्ययन से काव्य का प्रयोजन, काव्य का लक्षण, काव्य के हेतु, काव्य के प्रकार तथा रस, छंद, अलंकार आदि का गुण ज्ञान प्राप्त होता है और काव्यशास्त्र के इतिहास के अध्ययन से विभिन्न काव्यशास्त्रीयों मम्मट, विश्वनाथ, भामह, दंडी और आनंदवर्धन आदि विद्वानों का परिचय प्राप्त होता है। काव्यशास्त्र के सिद्धांतों का अध्ययन करने से विद्यार्थी को विभिन्न काव्यों को आलोचनात्मक प्रवृत्तियों की कसौटी पर परखने की सहायता मिलती है।

एम. ए. तृतीय सत्र

नवम प्रश्न पत्र:-(गद्यकाव्य)

गद्यसाहित्य का इतिहास का पाठ करने से विद्यार्थी को गद्य साहित्य की विशेषताओं और विद्वान गद्य लेखकों का परिचय प्राप्त होता है। कादंबरी की कथा का अध्ययन करने से विद्यार्थियों को तत्कालीन संस्कृति और भौगोलिक स्थिति का ज्ञान होता है शुकनाश के उद्देश्यों से विद्यार्थियों में मानवीय गुणों का समावेश होता है।

दशम प्रश्न पत्र:-(भारतीय संस्कृति तथा निबंध)

विद्यार्थियों में भारतीय संस्कृति के प्रति आदर भाव उत्पन्न होता है और वह वर्ण-व्यवस्था, आश्रम- व्यवस्था, पुरुषार्थ, संस्कार और पंच महायज्ञ के वास्तविक महत्व को जानकर वर्तमान में उसकी प्रासंगिकता को देखते हैं। विद्यार्थी को संस्कृत में निबंध लिखने का कौशल प्राप्त होता है।

एकादश प्रश्न पत्र:- (भाषा विज्ञान)

भाषा विज्ञान भाषा के अध्ययन की वह शाखा है जिसमें भाषा की उत्पत्ति स्वरूप विकास आदि का वैज्ञानिक और विश्लेषणात्मक अध्ययन किया जाता है और विद्यार्थी इसका अध्ययन कर राष्ट्रीय एवं अंतर्राष्ट्रीय, देसी-विदेशी, विकसित-अविकसित, सभी प्रकार की भाषाओं से परिचित होता है तथा शब्द और अर्थ की वैज्ञानिकता को जानता है।

द्वादश प्रश्न पत्र:- (अर्वाचीन संस्कृत साहित्य)

विद्यार्थी आधुनिक संस्कृत साहित्य का परिचय प्राप्त करता है जिससे उसमें प्राचीन व अर्वाचीन साहित्य की तुलना करने का कौशल बढ़ता है।

एम.ए. चतुर्थ सत्र

त्रयोदश प्रश्न पत्र:- (गद्य काव्य तथा चम्पू)

विद्यार्थी आचार्य दंडी और उनकी रचना दशकुमारचरितम् का परिचय प्राप्त करते हैं। त्रिविक्रम भट्ट के नल चम्पू काव्य का अध्ययन करते हैं। गद्य साहित्य की विशेषताओं का अध्ययन करते हैं।

चतुर्दश प्रश्न पत्र:- (नाट्य एवं नाट्य शास्त्र)

नाट्य शास्त्र के अध्ययन से विद्यार्थी को संस्कृत नाट्य परंपरा की प्रकृति और विशेषताओं का ज्ञान प्राप्त होता है धनंजय के दशरूपक के पाठ से विद्यार्थी को नाटक (रूपक) के दस

प्रकार, वस्तु नेता और रस का ज्ञान प्राप्त होता है। जिससे विद्यार्थियों में नाटकों का मूल्यांकन करने का कौशल बढ़ता है और वह स्वयं भी नाटक का सृजन कर सकता है।

पंचदश प्रश्न पत्र:- (साहित्य शास्त्र)

आनंद वर्धन की रचना ध्वन्यालोक का अध्ययन कर विद्यार्थी ध्वनि सिद्धांत को भलीभांति जान पाता है विद्यार्थी पंडितराज जगन्नाथ की रचना रसगंगाधर का अध्ययन कर रसस्वरूप, भावध्वनि, गुणगौरव, शब्दशक्ति, तथा काव्य अलंकारों का ज्ञान प्राप्त करता है, जिससे उसमें काव्य सृजन की क्षमता बढ़ती है।

षोडश प्रश्नपत्र:- (मौखिकी)

यह एक प्रकार की परीक्षा है, जिसमें परीक्षक द्वारा विद्यार्थी से संपूर्ण पाठ्यक्रम में से प्रश्न किए जाते हैं और विद्यार्थी मौखिक रूप से उन प्रश्नों का उत्तर देता है, इससे विद्यार्थी में अभिव्यक्ति की क्षमता का विकास होता है।

SUBJECT OUTCOMES OF THE B.ED PROGRAMME

1. Prepare teachers from upper primary to middle level (classes-VI-VIII) Secondary level (Classes-IX-X) & Senior Secondary level (Classes-XI-XII).
2. Understand various educational issues in the context of diverse socio-culture & Multilingual Indian society.
3. Internalize the nature of education and pedagogic process through enriched experiences.
4. Contribute to reduce the gap between theory and practice by dovetailing both appropriately.
5. Use varied modes of learning engagement in accordance with the requirements.
6. Understand the nature purpose influencing factors and problems of secondary education in contemporary issues.
7. Describe teaching learning process in the classroom and various factors that influence it.
8. Plan and organize classroom through learners centered techniques of instruction and inclusive education.
9. Organize effective whole classroom instruction and justify it.
10. Conduct pedagogical content analysis in subject area and use it for facilitating learning in the classroom.
11. Use information communication Technology resource for effective classroom teaching.
12. Develop and select tests evaluate and keep records of student progress.
13. Foster skills and attitude for involving the community as an educational partner and use community resource in education.
14. Become self-regulated learners develop professional commitment and work as responsible professionals.

Childhood and Growing Up

- 1- Explain Education Psychology
- 2- Understand Children of Different ages by interacting and observing them diverse social economic and culture context.
- 3- Explain Childhood Child development and adolescence.
- 4- Describe theories of child development
- 5- Describe mental health & Hygiene its importance in school.
- 6- Understand personality and its measurement.
- 7- Understand the role of Family and the school in the child Development.
- 8- Understand personality its theory and assessment.

Contemporary india and Education

- 1- Contextualize contemporary india and education
- 2- Evolve a deeper understanding of its purpose and its relationship with Society and Humanity.
- 3- Understand the classroom as a Social Context.
- 4- Provide a setting for interaction generation of dialogue and the opportunity to appreciate diverse perspectives of issues.
- 5- Critically analyse human and child right.
- 6- Learn about policy debates overtime the implementation of policies and actual shaping of school education .

Language across the Curriculum

- 1- Understand the language background of the student .
- 2- Create sensitivity to the language diversity in the classroom .
- 3- Understand the nature of classroom discourse and develop strategies for using oral language .
- 4- Understand the nature of reading comprehension and writing in specific content areas .
- 5- Explain the nature of expository texts and narrative texts .
- 6- Describe journals and communication .
- 7- Understand writing with sense of purpose writing to learn and Understand .
- 8- Understand function of language and how to use it as a tool.

Understanding Disciplines and subjects

- 1- Understand nature type and approaches of knowledge.
- 2- Understand emergence of discipline and subject in social political and intellectual context .
- 3- Understand theory related to human needs change with time.
- 4- Reflect on the nature and role of disciplinary knowledge and nature of knowledge.

Pedagogy of hindi

1. भाषा की विभिन्न भूमिकाओं को
2. हिन्दी भाषा का महत्व तथा सांस्कृतिक पृष्ठभूमि
3. हिन्दी भाषा के वाक्य विन्यास व्याकरण तथा उच्चारण की शुद्धता के महत्व
4. स्कूल की भाषा बच्चों की भाषा और समाज के बीच सम्बन्ध

Pedagogy of English

1. Explain nature and importance of English as a School Subject and its relation to other school.
2. Understand about the teaching of poetry prose and drama.
3. Identify methods approaches and materials for teaching English and various levels in the Indian context.

A.P.B Govt. P.G. College, Agastyamuni, Rudraprayag

Department of Chemistry

Program outcomes and course outcomes

2022-23

Graduation-

Courses affiliated from SDSUV (UG -I year semester pattern under NEP 2020 and UG-II- and III-year annual pattern)

Program outcome: - Chemistry is important since so many other fields of study rely on specific ideas and notions from it. Undergraduate chemistry programs at the university and college levels aim to educate students for a wide range of disciplines where a foundational understanding of chemistry is necessary, including academics and professional positions in a variety of enterprises and research institutes. The U.G program under SDSUV provide the understanding of fundamental chemistry from core to their basic application in daily life. At the end of this program student have acquired the knowledge of chemistry of system, surrounding and their positive and negative impact in our daily life and environment

Course outcome: -

Inorganic Chemistry: - This course includes the fundamental study of atomic structure, periodic properties, Nature of chemical bonding, related theories and chemistry of all the elements of periodic table.

Organic Chemistry: - This course gives the understanding of structure, bonding, mechanism and stereochemistry of organic compounds and the study of different functional groups in organic molecules. Also it involve the study of biomolecules like carbohydrates, amino acids proteins, vitamins which constitutes of body and monitor the functioning of life.

Physical Chemistry: - This course links physical state with the chemical changes occurs in our surroundings and nature. The chemistry of different states i.e Solid, liquid and gaseous state and colloidal state. This branch of science deals with the quantitative relationship between heat and

other forms of energy called thermodynamics and the chemistry related to electrolytes called electrochemistry.

VOCATIONAL/SKILL COURSE (*applicable for UG-I only, NEP 2020*)

Basic Analytical Chemistry: - This course is value-based and/or skill-based and is aimed at providing hands-on-training, competencies, skills, etc. This course may be chosen from a pool of courses designed to provide skill-based knowledge. Basic analytical techniques will be taught in this course. From this course student learn to Characterize/test various organic/inorganic molecules using different analytical techniques. Learn about various sampling methods and can work as a sample analyst.

Minor elective

Basics of Chemistry

This course provides the basic information about chemistry. The course includes the study of constituents of matter, particles and the fundamental study of atomic structure, periodic properties, nature of chemical bonding and some idea of states of matter and thermochemistry.

Post-Graduation: -

Program outcome:- The P.G program give the understanding of detail, advanced and fine knowledge of chemistry. This program explore and covers the remaining concept of U.G program and links the text book chemistry to the daily life activities and their application. Importantly this program include the course that deals with the study of interaction of light with matter called spectroscopy which help in the real analysis.

Course outcome:-

Inorganic Chemistry:- This Course encompass the theories and bonding concepts in coordination compound and acids-bases in detail. The interesting chemistry of organometallic compounds.

Organic Chemistry:- This advance organic chemistry course includes the mechanism, energy consideration, stereochemistry and different types of organic reactions in detail.

Physical Chemistry: - This course includes the thermodynamic and kinetic behavior of reaction and various theories for reaction kinetics. Also, the course provided information about quantum and statistics.

Spectroscopy: - This course deals with the study of interaction of light with matter. The light of different energy cause different type of changes like electronic, vibrational, rotational, nuclear etc. in molecule by interaction with different frequency light. Organic spectroscopy includes NMR, ESR, Mossbauer, IR, UV-visible spectroscopy.

Group Theory and Instrumentation techniques: - Group Theory is the mathematical application to determine the symmetry of molecule and molecular operation and to obtain knowledge of its physical properties and binding nature. Instrumentation techniques involve the understanding about the instruments and techniques used in analysis.

Reagents in organic synthesis and Organometallics: - The important transformation like oxidation-reduction, substitution, addition, elimination in organic reaction have been performed

using specific reagents and conditions, this course covers all the important reagents for such transformations.

Organic Photochemistry: - Various reactions takes place by the effect of temperature change called thermal reaction. The reactions which takes place by the effect of light of different frequency and wavelength is called photochemical reaction and mechanism of such reactions studied under photochemistry.

Chemistry of Natural Products: - This course includes the study of natural products like alkaloids, terpenoids, steroids, vitamins and their extraction, purification, chemical effects and applications.

Organic Synthesis: - The synthesis of organic molecules involves various approached and mechanism, new molecules synthesized by mimicking the existing route amd concept. Retrosynthetic or disconnection approach also used to design various drug molecule and biologically active molecule.

Heterocyclic Chemistry: - Heterocyclic molecules are of great importance in medicinal or drug chemistry. This course covers the preparation, properties, reactivity and application of different type of heterocycles

Environmental Chemistry: - This course give idea about environmental terminologies, natural cycles like hydrological, oxygen and nitrogen cycles and composition of atmosphere. Knowledge about air- water pollution, their cause, effects and outcome. The purification process, the analytical methods involves for measuring the air-water quality parameters and standard.

PROGRAM OUTCOMES, COURSE OUTCOMES

(FOR THE ACADEMIC YEAR (2022-23))

BACHLOR OF COMMERCE (BCOM)

Program Outcome	After the completion of the three year Bachelor of Commerce (B Com) student will gain knowledge in the area of commerce, economics, finance, marketing, business, auditing, accounting and Entrepreneurship etc. After completing graduation decision making capacity of students will improve. Students will be able to prove their efficiency in competitive exams like CA, CS, ICWA and other courses and able to go for higher education and research in the field of Marketing and Finance. The placement options open up to them such as- cost accountant, teachers, stock agent, bank manager etc.
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B. Com I Sem

Course	Outcomes
Financial Accounting	Student will get conceptual knowledge of financial accounting and applying both quantitative and qualitative knowledge to their future careers in business.
Business Regulatory Framework	Students acquire a brief knowledge about the framework of Indian Contract Act, 1872 and will be able to understand various important laws pertaining to functioning of Business in India.
Business Organization and Management	The student will be able to understand the concept of Business Organization along with the basic laws and norms of Business Organization also acquire the knowledge about Principles & functions of Management, Process of decision making, and Modern trends in management process.
E-Commerce	Student will able to assess all electronic payment system and understand legal issue and privacy in E- Commerce.

B.ComII Sem

Course	Outcomes
Basic Business Finance	The students will be able to demonstrate the knowledge to manage the finance and financial requirements in business.
Business Statistics	The Student will develop the ability to analyze

	and interpret data to provide meaningful information to assist in making management decision.
Entrepreneurship and Small Business	At the end of this course student will be able to know the difference between entrepreneurs/ entrepreneurship and know about various government schemes, rules and regulations for promotion of entrepreneurs/ entrepreneurship
Inventory Management	After completing this course a student will have ability to understand the concept of Inventory Management and identify the appropriate method and techniques of inventory management for solving different problems.
Entrepreneurship	The purpose of this paper is to orient the students towards entrepreneurship as a career option, develop entrepreneurship skill. Students will be able to apply these skills in the context of both new ventures as well as in established companies.

B Com IInd Year

Group- I	Management Group	
	Personnel Management	Student will able to understand about procurement, development, compensation, integration, and maintenance of the personnel of an organization.
	Basic Business Finance	The students will be able to demonstrate the knowledge to manage the finance and financial requirements in business.
Group- II	Accounting Group	
	Cost Accounting	The student will be able to understand various aspects of cost ascertainment using various costing method and its determinants and advise the management to maximize its profits and used to streamline manufacturing operations.
	Corporate Accounting	The student will get knowledge of corporate accounting and to understand the various techniques of preparing accounting and financial statements of companies.

Group- III	Business Economics and Legal Aspects of Business	
	Money, Banking and Insurance	Student will be able to understand Indian banking system and their working and develop the practical knowledge and skill related to banking functions and also gets the knowledge about Insurance.
	Legal Aspects of Business	Students acquire knowledge of Indian company act of 2013 and its amendments as well as statutory provisions of Industrial and Labour Laws.

B Com IIIrd Year

Group- I	Management Group	
	Marketing Management	Students will be able to develop understanding of basic concepts of marketing, marketing philosophies and environmental conditions effecting marketing decisions of a firm.
	Management Accounting	The students acquires the knowledge of concept, methods and techniques of management accounting for the purpose of managerial planning, control and decision making.
Group- II	Accounting Group	
	Income Tax Law and Accounts	The students can understand the various principles and provisions of Income tax Act: 1961 and the relevant rules.
	Auditing and Corporate Governance	The student will be understand fundamental concepts of Auditing and corporate governance and help to understand the right and wrong things in organization.
Business Economics and Legal Aspects of Business		

Group- III	Goods and Service Tax(GST)	Student will be able to get basic knowledge of goods and service tax and relevant rules and can also acquire practical skills to work as tax consultant, and other financial supporting services.
	Fundamental of Investment	The students will be able to understand different investment alternatives in the market, Understand how securities are traded in the market, able to manage a portfolio and understand basics in derivatives.
Group- V	Communication Group	
	Business Communication	Students acquire skill in reading, writing, comprehension and communication, and also use to use electronic media for business communication.
	Business Communication (Viva- voce)	Student will be enhancing their presentation and communication skill also they learn to develop their personality, so that they can face the challenges of competitive world.

Department of Economics
NEP SYLLABUS
PROGRAMME OUTCOME

BA FIRST SEM

In the first semester various definitions of Economics, choice of goods, consumer behaviour, consumer savings, market knowledge, complete perfect competition etc this leads to the country towards balance in demand and supply and this situation becomes stronger advertisement also becomes a medium to generate an interest in the consumer.

BA 2nd semester

Under this, we study macroeconomics, in this how economic equilibrium can be established how national income and per capita income can increase employment opportunities which are necessary for the youth how to increase the business cycle it is an important link of any economy we study how to increase export and reduce imports so that maximum foreign currency can be obtained and the country can become self-sufficient.

B.A. 1st sem skill

Data analysis representation of primary and secondary types of data study and how to do tabulation and classification of data and how to reveal them through graphic presentation, it also includes the study of mean, median, mode and correlation etc is studied in detail.

B.A. 2nd sem skill

At present environment is everyone's need so the responsibility of its protection is not only of one country but of the whole World, India has a broad thinking in this context, therefore in the G20 summit in India, efforts have been made to make the earth beautiful so that all the world can know that how important our planet i.e. Earth is or us so it is the responsibility of all of us to keep it safe and clean.

Department of English

Undergraduate

Programme Outcome (2022-23)

English plays an essential role in our lives. This is the main language for studying all subjects around the world. English is important for by students because it improves their quality of life broadening their horizons, developing emotional skills, and providing employment opportunities. In addition, the use of English as an international language has increased over time as it is the only means of communication in many countries. Provide students an extensive view of the cultural and social patterns of the society in the specific time and situations in which it flourished in an intellectual and emotional engagement with the work. Make students aware of the different kinds of literature written /translated in various English speaking countries across the world as well as the literature from Asia.

Course outcomes:

B.A FIRST SEMESTER: INTRODUCTION TO ENGLISH PROSE (CORE COMPELSURY)

Get an Introductory knowledge of the development and significance of literature in English. Develop an understanding of the basic prose devices to read, identify and analyze various literary forms of prose.

Learn the art of story-telling through short stories and define its basic elements such as plot, characterization and narrative technique. Critically evaluate the style and contributions of some of the greatest short-story writers, including Indian writers towards the development of short-story as a genre.

VOCATIONAL COURSE: COMUNICATIVE ENGLISH GRAMMAR

At the end of the semester students will be able to acquire basic language skills and use them in communication.

Make use of thesaurus for learning synonyms, antonym and one word-substitution. Comprehend the meaning of prose and verse passages. Provide job opportunities through skill-based courses.

Recreate a response through creative indulgences like script-writing, dialogue writing, and be able to exploit his /her creative potential through online media like blogging.

B.A SECOND SEMESTER: HISTORY OF ENGLISH LITERATURE

After studying this course, the students will be able to develop an understanding of the evolution of English literature, the concept, causes and the impact of Renaissance and Reformation.

Trace the origin and development of English drama through Miracle and Morality plays and the plays of university Wits. Understand the characteristics of Elizabethan and Metaphysical poetry and special Features of Neo-classical age and its literature.

Comprehend the basic difference and special characteristics of the major literary tendencies of various ages and develop familiarity with major literary works by British writers in the field of Poetry, Drama and fiction.

VOCATIONAL COURSE: ENGLISH LISTENING AND SPEAKING SKILLS

Students will be able to learn basic concepts of phonetics. Improve fluency through regular practice and speaking drills.

Learn the skills of facing interviews, making a speech, presentation etc. develop their own creativity by enhancing their writing skills. Get enhanced /enriched vocabulary to demonstrate a significant modification in their speaking skills and writing techniques.

Organize and write paragraphs and short essays in a variety of rhetorical styles.

MINOR ELECTIVE: CREATIVE WRITING

The course will help students to describe or express their opinions on topics of personal interest such as their experiences of events, their hopes and ambitions.

Read and understand information on topical matters and explain the advantages and disadvantages of a situation.

Write formal letters, personal notes, blogs, reports, and texts on familiar matters. Comprehend and analyze text in English.

B.A THIRD SEMESTER: BRITISH POETRY (CORE COMPULSORY)

After studying this course, the students will be able to identify various forms of poetry and understand the development of these forms in the works of greatest practitioners of these poetic forms.

Characterize some basic stanza patterns, their origin and elements. Critically analyze poems with an understanding of its basic elements. Understand and gain

informative understanding of the poems written by modern British poets. Able to learn about transition of poetic style and form. Elizabethan age to the 20th century. Understand the history, significance and scope of translation, in Indian context.

VOCATIONAL COURSE: LANGUAGE THROUGH LITERATURE

At the end of the semester students will be able to improve their grammatical competence.

Learn the art of writing paragraphs, essays, and letters, Biodata, Resume and CV.

Identify the meaning of homophones and homonyms.

B.A II Year

Paper I: Poetry

Students are trained in getting acquainted with modern poetic forms and genres through classroom lectures and discussions.

Paper II: Fiction

Students are encouraged to read texts followed by critical essays and develop their ideas and arguments around British and Indian Fictions.

B.A III Year

Paper I: Indian and American Poetry

Students get introduced to Indian literary traditions such as poems and Epics. Through this course they are able to locate American Poetry as a second world literary site.

Paper II: Drama

This course introduced to different genre of American literature. It represents modern drama in English Literature.

Programme Outcome

Po 1: the programme educates students in both the artistry and utility of the English language and literature through an aesthetic study of Language and the various historical and contemporary forms of texts.

Po2: The programme helps student for their personal interest in literature, and develops their reading and writing skills in English.

M.A in English (4 Semester)

Semester1

Paper I: English Literature from Chaucer to John Milton

This course familiarizes students with the early modern world, earlier called the Renaissance, through poetry, fiction and philosophy. It familiarizes students with literary texts and intellectual debates of 16th or 17th century Europe.

Paper II: Drama Excluding Shakespeare

The main features of Shakespeare drama taught: liberty from the unities, philosophical complexity. This course introduced students with drama of the 16th or 17th centuries with a focus on the play of Shakespeare.

Paper III: Early Humanist's Literature

Students familiarize with humanist writers of classical literature and regions. It introduces the students to idea of classicism.

Paper IV: English Prose

Students learn how to analyses a text or textual passages (prose). Students are encouraged to read texts followed by critical essays.

M.A 2nd Semester

Paper V (William Shakespeare)

The student exposed to the main contemporary critical approaches to Shakespeare: Feminist, new historicist. They learn about drama as well as the generic differences between the tragedy and the comedy.

Paper VI (18th Century Literature)

To uncover the radical potential of poetry, A Foundational level of fluency with the basics of poetry will have been achieved.

Paper- VII: (American Literature)

This introductory course offers insights into the literatures of the Americas written in English. This course will introduce students to writings across the Americas.

Paper VIII: (19TH Century literature)

Students will be trained to understand the continuities between the nineteenth century and high modernity.

Paper –IX (Dissertation and Viva –Voce)

Discussing Exam Questions and Making students give presentations.

III Semester

Paper- X (20th century poetry)

Students will gain a critical appreciation of varied genre of poetry and their contexts building upon skills and insights they acquired in poetry.

Paper- XI (Indians Writing in English)

The course aims to give students a glimpse of a vast diversity of modern Indian writings. Students also read Rabindranath Tagore as a poet and understand his views on humanism.

Paper XII (b) Literary Criticism –II

To build on students understanding about the principals of western European philosophy and theory. Students will gain familiarity with a range of twentieth and twenty-first century theoretical approaches.

Paper- XIII (b) (Literature and Gender)

This course will familiarise students with theorising about gender, be it feminism, queer studies or masculinity studies. The students will be taught to interpret a text and read social change through the lens of gender.

IV Semester

Paper- XIV (20TH Century Drama)

This course is a genre- based and performance oriented course. It provides learners with an overview of formative theatrical movements in Europe. The plays included focus on innovative performance trends that began at the end of the twentieth century and evolved into diverse forms in the twentieth century.

Paper – XV (Literary Criticism)

Students will acquire skills in the handling of theoretical issues related to the study of literature and culture.

Paper- XVI (a) (Literature of Indian Diaspora)

Students will get a critical introduction to the fascinating yet highly contested field of diasporic literature and theory.

Paper- XVII (b) (Indian Literature in Translation)

This course introduces students to literary texts from a range of regional, cultural, social and political locations within India since independence. It train the students in a multi-genre approach to Dalit writings also.

Paper- XVIII (Dissertation and Viva Voce)

To enable the students to analyse texts and identify the generic distinctions across prominent milieus and regions. To enable students to understand various paradigms of research, its tools, ethics and challenge related to English studies and related fields and develop creative and academic skills in them.

Department of Geography

Programme Outcomes

Upon completion of the Bachelor's of Arts and Master of Arts in Geography, students will be able to demonstrate the following -

1. Understand the unifying themes of both human and Physical geography.
2. Have a working knowledge of the discipline's diverse conceptual and methodological approaches.
3. Identify, characterize and explain spatial pattern and structures, the interrelationship between people and places and the interactions between nature and society.

Course Outcomes of Geography

1. **Physical Geography**
 - (a) Understand the effect of rotation and revolution of the earth.
 - (b) Know the internal and exterior structure of the earth.
 - (c) Understand the type of winds and composition of atmosphere etc.
2. **Human Geography**
 - (a) Studies of races of mankind.
 - (b) Understand the relationship of man and environment.
3. **Economic Geography**
 - (a) Study the human economic activities.
 - (b) Understand the minerals and power resources etc.
 - (c) Study of the location of industries like Steel, Cotton, Sugar etc.
 - (d) Study of world transportation and trade patterns and transport.
4. **Geography of India**
 - (a) To know about their own country's land formation, climate and natural vegetation etc.
 - (b) To understand the economic resources of India.
 - (c) Understand the social distribution of population of their country.
5. **Evolution of Geographical Thought**
 - (a) Acquire knowledge of geographical thought of Greek, Roman, Arab, German, French, British and American.

(b) Understand modern geographical thoughts and contribution of geography.

6. **Environmental Geography**

(a) Understand the fundamental concepts related to environment, meaning, structure, components and man's interaction with environment.

(b) Understand the role of environmental legislation laws and act of environmental protection and conservation.

7. **Geomorphology**

(a) To know the fundamental of physical geography.

(b) Acquire knowledge about origin of various land forms.

8. **Geography of Natural resource**

(a) Understand the classification of resources.

(b) Understand the approaches to resource utilization.

(c) Appreciate the significance of resources.

(d) Assess the pressure on resources.

(e) Analyze the problems of resources depletion with special reference to forests, water and fossil fuels.

9. **Geography of Himalaya**

(a) Understand the origin of Himalayas, its structure etc.

(b) Understand the utility of the Himalayas about its sensitivity.

10. **Research Methodology**

(a) Examine the introduction of research, motivation in research, types of research, significance of research, research process and criteria of good research.

(b) Understand interpretation and report writing – Techniques, mechanics of writing of report.

11. **Urban Geography**

(a) Understand the urban settlements and distribution of urban centers.

(b) To understand issue and planning, models and national urban policies, master plan etc.

12. **Climatology**

(a) To understand the process of weather and climate, climate change and global warming.

- (b) Understand the composition and structure of atmosphere, weather phenomena, wind, humidity precipitation.
- (c) Understand heat budget.

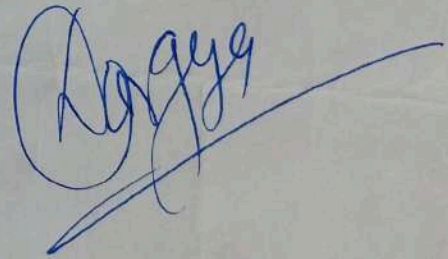
13. **Practical Geography**

- (a) Introduce the student of toposheet, weather map, scale, profile, weather image.
- (b) Get knowledge about statistical methods.
- (c) Skill of drawing of map, graph, diagrams and scale.

Programme Specific Outcomes

Student will appreciate the relevance of geographical knowledge to everyday living by –

1. Applying geographical knowledge to every day living.
2. Demonstrating an appreciation and for the diversity of perspectives, world, views and cultures.
3. Showing an awareness and responsibility towards the society.



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अ० प्र० ब० राजकीय स्नातकोत्तर महाविद्यालय अगस्त्यमुनि (रुद्रप्रयाग) हिन्दी

विभाग

स्नातक स्तर:-

Programme Outcomes:

साहित्य मानव संवेदना की अभिव्यक्ति का प्रमुख स्रोत रहा है। कलाओं में यह सम्पूर्ण कला है। साहित्य समाज का प्रतिदर्श है। स्नातक उपाधि में हिन्दी विषय के चयन एवं अध्ययन से विद्यार्थी को साहित्य के सांगोपांग महत्व का ज्ञान होता है। इसके द्वारा विद्यार्थी को राष्ट्र की सर्वप्रमुख भाषा के अत्यन्त समृद्ध साहित्य के सम्पूर्ण स्वरूप का ज्ञान होता है। हिन्दी साहित्य की सभी प्रमुख विधाओं का ज्ञान प्राप्त होता है, जिससे उनमें रचनात्मकता का प्रस्फुटन एवं विकास होता है। जीवन के आजीविकोपार्जन सम्बन्धी पक्ष के रूप में हिन्दी के प्रयोजनमूलक स्वरूप एवं महत्व का ज्ञान प्राप्त होता है। साहित्य के अध्ययन में अन्य अनुशासनों के सन्दर्भ यथा - सामाजिक, राजनीतिक, आर्थिक, ऐतिहासिक, पर्यावरणीय आदि समाहित होते हैं। इस प्रकार स्नातक में हिन्दी साहित्य का चयन विद्यार्थी को समग्र रूप से शिक्षित करता है। विद्यार्थी संघ लोक सेवा योग एवं प्रादेशिक लोक सेवा आयोगों की परीक्षा के पाठ्यक्रम में सम्मिलित हिन्दी साहित्य की आधार तथा अनिवार्य शिक्षा प्राप्त करता है।

Course Outcomes:

स्नातक प्रथम सेमेस्टर प्रथम प्रश्नपत्र – “प्राचीन एवं भक्तिकालीन काव्य” (Core Compulsory)

इस प्रश्नपत्र के अध्ययन से विद्यार्थी हिन्दी साहित्य के आरम्भिक काल की कविता का ऐतिहासिक एवं सैद्धांतिक ज्ञान सोदाहरण प्राप्त करता है। चंदबरदाई, कबीर, जायसी, सूर और तुलसी के कृतित्व को समझने के क्रम में महाकाव्य विधा एवं मुक्तक विधा का शिल्पगत परिचय एवं ज्ञान पाता है। आदिकालीन वीरकाव्य, निर्गुण काव्यधारा एवं संत साहित्य का सैद्धांतिक परिचय एवं ज्ञान सोदाहरण पाता है। इसी के साथ विद्यार्थी सूफी काव्यधारा, सगुण काव्यधारा तथा इनके अंतर्गत रामभक्ति और कृष्णभक्ति के महत्वपूर्ण काव्य का भी सैद्धांतिक परिचय एवं ज्ञान सोदाहरण प्राप्त करता है।

स्नातक प्रथम सेमेस्टर द्वितीय प्रश्नपत्र – “गढ़वाली भाषा एवं संस्कृति” (Skill Development Course)

इस प्रश्नपत्र के अध्ययन से विद्यार्थी भाषा और संस्कृति का ज्ञान अर्जित करता है। स्थानीय परम्पराओं और रिवाजों से परिचित होता है। गढ़वाली भाषा के उद्भव एवं उसके विविध रूपों का ज्ञान प्राप्त करता है। गढ़वाली संस्कृति के विविध पक्षों से परिचित होकर विद्यार्थी का गढ़वाल में रोजगार हेतु कौशल संवर्धन होता है।

स्नातक द्वितीय सेमेस्टर प्रथम प्रश्नपत्र – “हिन्दी कथा साहित्य” (Core Compulsory)

इस प्रश्नपत्र के अध्ययन से विद्यार्थी हिन्दी की उपन्यास एवं कथा-परम्परा का परिचय एवं ज्ञान प्राप्त करता है। हिन्दी उपन्यास एवं कहानी के उद्भव एवं विकास का ज्ञान पाता है। इस प्रश्नपत्र में सम्मिलित उपन्यास एवं कहानियों के अध्ययन से उपन्यास एवं कहानी विधा का शिल्पगत ज्ञान पाता है। इसी के साथ विद्यार्थी उपन्यास एवं कथा-साहित्य की समीक्षा का ज्ञान भी प्राप्त करता है।

स्नातक द्वितीय सेमेस्टर द्वितीय प्रश्नपत्र – “प्रयोजनमूलक हिन्दी” (Skill Development Course)

प्रयोजनमूलक हिन्दी का ज्ञान अर्जित करके विद्यार्थी भाषा के विविध रूपों से परिचित होता है। दृश्य एवं श्रव्य माध्यमों का ज्ञान प्राप्त करता है। साथ ही विद्यार्थी पत्रकारिता के विविध पक्षों से परिचित भी होता है, जिससे विद्यार्थी का रोजगार हेतु कौशल संवर्धन होता है।

स्नातक द्वितीय सेमेस्टर तृतीय प्रश्नपत्र – “हिन्दी भाषा : व्याकरण ” (Minor Elective Paper)

इस प्रश्नपत्र के अध्ययन से विद्यार्थी हिन्दी भाषा के व्यावहारिक प्रयोजनार्थ वर्तनी एवं शब्दों के मानक स्वरूप का ज्ञान एवं प्रशिक्षण पाता है। शुद्ध लेखन हेतु हिन्दी की वाक्य-संरचना एवं व्याकरण का ज्ञान एवं प्रशिक्षण प्राप्त करता है। हिन्दी भाषा की अत्यन्त समृद्ध शब्द सम्पदा तथा उसकी समाहार-समायोजन शक्ति का ज्ञान पाता है। साथ ही विद्यार्थी कार्यालयी प्रयोजनार्थ पारिभाषिक-प्रतिपारिभाषिक शब्दों के प्रयोग का ज्ञान एवं प्रशिक्षण भी प्राप्त करता है।

स्नातक द्वितीय वर्ष प्रथम प्रश्नपत्र – “गद्य एवं नाट्य साहित्य”

उपन्यास , कहानियों , निबंध , नाटक , एकांकी , रेखाचित्र , यात्रा-संस्मरण की पाठ्यवस्तु का अध्ययन करके विद्यार्थी में विविध प्रकार की गद्य विधाओं के शिल्प और संवेदना को समझने के पश्चात् गद्य साहित्य-सृजन करने की क्षमता का विकास होता है। साथ ही इन प्रतिष्ठित लेखकों के उपन्यास , कहानी , निबंध , नाटक , एकांकी , रेखाचित्र , यात्रा-संस्मरणों को पढ़कर समाज के विभिन्न पक्षों – राष्ट्रभक्ति , स्त्री विमर्श , दलित विमर्श , भूख , गरीबी , लाचारी , ग्रामीण परिवेश , नगरीय परिवेश , राजनैतिक विचार आदि का समावेश विद्यार्थी को जीवन जीने की एक नवीन दृष्टि प्रदान करता है।

स्नातक द्वितीय वर्ष द्वितीय प्रश्नपत्र – “आधुनिक हिन्दी कविता”

काव्य विकास-क्रम में आधुनिक हिन्दी कविता के स्वरूप एवं उसके विकास के चरणों से विद्यार्थी परिचित होते हैं, जिससे वे आधुनिक स्तर पर काव्य-सृजन की क्षमता को वृद्धिगत कर सकें।

स्नातक तृतीय वर्ष प्रथम प्रश्नपत्र – “प्रयोजनमूलक हिन्दी”

इसका दूसरा नाम कामकाजी हिन्दी भी है। विभिन्न सरकारी कार्यालयों में अनिवार्य रूप से इसका प्रयोग होता है। संक्षेपण, प्रारूपण, टिप्पण, पल्लवन, अनुवाद, पत्रकारिता, पारिभाषिक शब्दावली, जनसंचार माध्यमों आदि का अध्ययन इसके अंतर्गत किया जाता है। विभिन्न सरकारी कार्यालयों के विभागों एवं अनुभागों में इससे सम्बन्धित कार्य प्रतिदिन होते हैं। यह रोजगारपरक हिन्दी भी कहलाती है।

स्नातक तृतीय वर्ष द्वितीय प्रश्नपत्र – “जनपदीय भाषा साहित्य”

गढ़वाली एवं कुमाऊँनी साहित्य के उद्भव एवं विकास का अध्ययन करके विद्यार्थी क्षेत्रीय भाषा को गहनता से समझता है। हिन्दी भाषा के साथ ही साथ अपनी क्षेत्रीय भाषा के साहित्य एवं व्याकरण का ज्ञान होना भी साहित्य के विद्यार्थी के लिए अत्यंत आवश्यक है। लोकगीत, लोककथाएं, लोकगाथाएं हमें उत्तराखंड की सामाजिक, राजनैतिक, धार्मिक एवं आर्थिक परिस्थितियों से परिचित कराकर पहाड़ के जनजीवन एवं मानवीय मूल संवेदनाओं को समझने में सहायक होती हैं।

स्नातकोत्तर स्तर:-

Programme Outcomes:

एम० ए० हिन्दी विषय के अंतर्गत द्वि-वर्षीय पाठ्यक्रम में कुल 18 प्रश्नपत्र सम्मिलित हैं। इन सभी प्रश्नपत्रों का गहन अध्ययन विद्यार्थी के लिए विभिन्न राज्यस्तरीय एवं राष्ट्रीय स्तरीय प्रतियोगी परीक्षाओं में सफल होने में सहायक है। स्नातकोत्तर उपाधि में हिन्दी विषय के चयन एवं अध्ययन से विद्यार्थी को हिन्दी साहित्य के विविध पक्षों का ज्ञान प्राप्त होगा, जिससे वह भाषा तथा साहित्य के उच्चस्तरीय आधारभूत ज्ञान एवं कुशलता के साथ भविष्य में शोध हेतु अग्रसर होगा।

Course Outcomes:

प्रथम सेमेस्टर

प्रथम प्रश्नपत्र- हिन्दी साहित्य का इतिहास (आरम्भ से रीतिकाल तक)

हिन्दी साहित्य के इतिहास के प्राम्भिक युगों को उनके प्रवृत्तिगत एवं तत्कालीन परिस्थितियों के आधार पर विस्तृत अध्ययन करके विद्यार्थी का साहित्यिक ज्ञान समृद्ध होता है।

द्वितीय प्रश्नपत्र- आदिकालीन एवं निर्गुण काव्य

आदिकालीन एवं भक्तिकालीन कवियों के काव्य का अध्ययन करके विद्यार्थियों की काव्य-सृजन क्षमता विकसित होती है।

तृतीय प्रश्नपत्र- मध्यकालीन सगुण एवं रीतिकालीन काव्य

भक्तिकालीन एवं रीतिकालीन कवियों के काव्य का अध्ययन करके विद्यार्थियों की काव्य-सृजन क्षमता में वृद्धि होती है।

चतुर्थ प्रश्नपत्र- हिन्दी साहित्य का इतिहास (भारतेन्दु युग से अब तक)

स्नातकोत्तर स्तर पर युगीन परिस्थितियों एवं प्रवृत्तियों के आधार हिन्दी साहित्य के इतिहास का विस्तृत अध्ययन करके विद्यार्थी का साहित्यिक ज्ञान समृद्ध होता है।

द्वितीय सेमेस्टर

पंचम प्रश्नपत्र- भारतीय काव्यशास्त्र और हिन्दी आलोचना

विभिन्न काव्यशास्त्रीय सिद्धांतों- रस सिद्धांत , अलंकार सिद्धांत , वक्रोक्ति सिद्धांत , ध्वनि सिद्धांत , औचित्य सिद्धांत का अध्ययन करते हुए काव्य को विभिन्न आलोचनात्मक प्रवृत्तियों की कसौटी पर परखने में विद्यार्थी को सहायता मिलती है।

षष्ठम प्रश्नपत्र- आधुनिक गद्य (निबन्ध, नाटक एवं अन्य गद्य विधाएं)

विविध विधाओं के साहित्य का अध्ययन विद्यार्थियों में लेखन की अपार संभावनाएं उत्पन्न एवं विकसित करता है।

सप्तम प्रश्नपत्र- उपन्यास एवं कथा साहित्य

उपन्यास एवं कहानियाँ हमारे आम जन-जीवन से जुड़ी हुई घटनाओं पर आधारित होती हैं, जो हमें सामाजिक , धार्मिक , राजनैतिक एवं सांस्कृतिक जीवन-मूल्यों को समझने में सहायता प्रदान करती है।

अष्टम प्रश्नपत्र- पाश्चात्य काव्यशास्त्र

विभिन्न पाश्चात्य कवियों- प्लेटो , अरस्तू , लॉजाइनस , वर्ड्सवर्थ , कॉलरिज , इलियट , रिचर्ड्स आदि के सिद्धांतों का अध्ययन विद्यार्थी को पाश्चात्य लेखन शैली से परिचित करता है तथा पाश्चात्य आलोचनात्मक प्रवृत्तियों के आधार पर काव्य की समीक्षा करने में सहायता प्रदान करता है ।

नवम प्रश्नपत्र- आधुनिक काव्य (भारतेन्दु युग से उत्तर छायावाद तक)

विभिन्न आधुनिक कवियों ने तत्कालीन परिवेश के आधार पर काव्य में विभिन्न तत्वों को समाहित किया, जिसका अध्ययन करके विद्यार्थी में नवीन एवं मौलिक काव्य-सृजन की क्षमता में वृद्धि होती है ।

तृतीय सेमेस्टर

दशम प्रश्नपत्र- भाषा विज्ञान एवं हिन्दी भाषा

विद्यार्थियों को भाषा का व्याकरणिक ज्ञान- स्वन , वाक्य , रूपिम , अर्थ विज्ञान की विस्तृत जानकारी प्राप्त होती है ।

एकादश प्रश्नपत्र- आधुनिक काव्य (छायावादोत्तर हिन्दी कविता)

आधुनिक कवियों के काव्य में वर्तमान परिस्थितियों की झलक विद्यार्थी को वर्तमान यथार्थ से परिचित कराती है। कविता केवल काल्पनिक लोक ही नहीं , अपितु यथार्थ वस्तु जगत से भी बोध कराती है । इस प्रश्नपत्र के द्वारा हिन्दी साहित्य के आधुनिक काव्य की कविताओं के स्वरूप से परिचित होकर विद्यार्थी में काव्य- सृजन की क्षमता का भी विकास होता है ।

द्वादश प्रश्नपत्र- जयशंकर प्रसाद

छायावाद के चार स्तम्भों में से एक जयशंकर प्रसाद के सम्पूर्ण साहित्य का विस्तृत अध्ययन करके विद्यार्थी विशिष्ट साहित्यिक प्रतिभा को विकसित कर सकता है । प्रेम और सौन्दर्य के कवि जयशंकर प्रसाद के साहित्य में मानवीय संवेदना, प्रकृति-चित्रण , रहस्यवादी अनुभूति , कल्पना प्रवणता , भारतीय जीवन दर्शन की अभिव्यक्ति आदि विशेषताएं सर्वत्र दृष्टिगोचर होती हैं ।

त्रयोदश प्रश्नपत्र- सूरदास

सूरदास के सम्पूर्ण साहित्य के विस्तृत अध्ययन में वात्सल्य और माधुर्य भावों से युक्त कृष्ण काव्य का चित्रण हृदय में स्वाभाविक आनंद की अभिव्यंजना करता है, साथ ही उनका काव्य एक साथ ही लोक और परलोक को प्रतिबिंबित करता है।

चतुर्थ सेमेस्टर

चतुर्दश प्रश्नपत्र- भाषा विज्ञान और हिन्दी भाषा

भाषा के उद्भव एवं विकास का व्याकरणिक स्तर पर विस्तृत अध्ययन करके विद्यार्थी में विषय विशेष की गहन समझ विकसित होती है।

पंचदश प्रश्नपत्र- प्रयोजनमूलक हिन्दी और मीडिया लेखन

हिन्दी केवल साहित्यिक भाषा न होकर राजभाषा (कामकाजी हिन्दी) भी है। विभिन्न प्रशासनिक कार्यों, वित्त, वाणिज्य, बैंकिंग, बीमा, व्यापार, विधि, विज्ञापन, संवाद लेखन, पटकथा लेखन, जनसंचार माध्यम, सरकारी पत्राचार, पारिभाषिक शब्दावली का निर्माण आदि विभिन्न कार्यों में इसका महत्वपूर्ण योगदान है।

षोडश प्रश्नपत्र- गढ़वाली लोक साहित्य

गढ़वाली लोक साहित्य, लोकगीतों, लोककथाओं, लोकगाथाओं के स्वरूप एवं विशेषताओं के ज्ञानार्जन के माध्यम से विद्यार्थी लोकभाषा, लोक संस्कृति, स्थानीय परम्पराओं और रीति-रिवाजों से परिचित होता है।

सप्तदश प्रश्नपत्र- जनपदीय भाषा साहित्य (गढ़वाली भाषा साहित्य)

क्षेत्र विशेष के साहित्य का ज्ञान साहित्य के विद्यार्थी को अवश्य होना चाहिए। विद्यार्थी में क्षेत्रीय भाषा के प्रति रुचि उत्पन्न होने से वह अपने क्षेत्र विशेष की साहित्यिक एवं सांस्कृतिक विरासत को समृद्धिशाली बनाने में सदैव प्रयासरत रहता है।

अष्टादश प्रश्नपत्र- मौखिकी

यह एक प्रकार की परीक्षा है, जिसमें बाह्य परीक्षक द्वारा विद्यार्थी से सम्पूर्ण पाठ्यक्रम में से प्रश्न पूछे जाते हैं और विद्यार्थी को मौखिक रूप से उन प्रश्नों का उत्तर देना होता है। इससे विद्यार्थी में अभिव्यक्ति की क्षमता का विकास होता है।

Department of History

APB PG College Agastyamuni

Program outcomes, course outcomes, specific program outcomes

There is a three year degree program in History. From the session 2021 -22 new education policy has adopted and according to that semester system has started.

Here is program outcome of subject-

Course(semester 1 new NEP)	program outcomes
1. History of India (Earliest times up to 300 A.D.)	Students will develop an understanding of nature of History and will also obtain preliminary knowledge of archaeology. They will understand the rise and expansion of empire. Emergence of religious reforms and evolution of Buddha-Jain dharama.
2. History of India (300 A.D to 1200 A.D.) (2 nd semester new NEP)	Student will be able to understand the decline of central power and feature of decentralization. Student will obtain knowledge about rise of feudal system.
3. History of India (1206 A.D. to 1707 A.D.) (old syllabus)	Student will understand the nature of foreign invaders and destruction of Indian ancient temple-social and cultural values. It will provide the clear idea about the Sultanate and Mughal empire. Their establishment, consolidation and fall.
4. World History (1453 A.D. to 1815 A.D.)	Students will understand that how the modern Europe came in to existence. Student will understand that how the humanism, individualism, cultural enhancement became the part of Modern Europe. Impact of industrial revolution on society and rise of socialism.
5. History of India (1707 A.D. to 1947 A.D.)	Student will understand the deep impact of colonialism on India. It badly affects the socio-economic condition of India. They will understand the contribution of freedom fighters in the struggle for independence.
6. World History (1818A.D. to 1945 A.D.)	Student will connect to the global history. They will understand how the nationalism changes the nation-state system. Two world war and peace process. Declaration of a worldwide organization name- UNO. Rise of a Bipolar world between USA and USSR. Victory of democratic forces over the Nazi-Fascist terror.

Course outcomes

Course	Course outcomes
1. History of India (Earliest times to 185 B.C.)	The course has been designed in such a manner that a student can get an idea of nature of history and early stage of human development. It also covers the religious perspective of early Indian history and Santana Vedic Dhrama.
2. History of India (185 B.C. to 1206 A.D.)	The course has been designed in such a manner that student can get an idea of foreign attack when central power had fallen and regain the power by another dynasty. They also get the knowledge about the rise of different regional powers with their struggle and coming of Islam in India.
3. History of India (1206 A.D. to 1707 A.D.)	The course has been designed in such a manner that a student can get a clear idea of establishment, consolidation and decline of Sultanate and Mughal. It also gives ideas on different regional power (Maratha ,Jaat, Rajput revolt..Etc) administrative and cultural aspects during the period.
4. World History (1453 A.D. to 1815 A.D.)	From this course student will able to know the transformation of Europe towards modern age. Student can get a clear idea about humanism, individualism and new economic practices. The course also deals with major revolution taken place in Europe and America.
5. World History (1818 A.D.to 1945 A.D.)	The course has given idea that America emerge as a 'United State' after the civil war. It also give the idea about nation building on the basis of nationalism. The curriculum has designed in such a manner that it gives the clear idea about the circumstances, reasons and consequences of first and second world war. It also show the step taken towards peace -keeping effort around the world .
6. History of India (1707 A.D. to 1947 A.D.)	This paper deal with the war raged by East India Company to control the big landscape of India. It also gives clear picture about the establishment of British Raj. In this paper student can learn about the unique way of fight to obtain freedom from colonial rule. Student can also learn about Gandhi way of non violence-Satyagrah-civil disobedience against the oppressive British regime. perspective of Indian History like nationalist, imperialist and Marxists.The course show the success story of freedom struggle. Partition of India on the basis of religion and communal politics of Jinnah. Failure of congress

	leadership because first time in our civilization A great nation and the land is divided. An oppressive religious state like Pakistan is created.
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Program Specific Outcomes

- ***Graduates from our department will be able to do work as Researcher in various field of history.
- ***They can use their knowledge as a subject in the various examination to serve the society as a civil servant.
- ***Students can be an Archeologist and explore new dimension of early human development.
- ***Students also be the part of the formation of polices and planning of writing History.
- ***Students can work with the Archeological Survey of India, Museum of center and state government.
- ***Students can works as a guide and expert on historical-religious- sites of Uttarakhand
- ***Student can pursue higher education in different branches of History.

DEPARTMENT OF HISTORY

NAME OF HEAD OF DEPARTMENT – Mrs. Deepti Rana

(Signature)

APB PG College, Agastyamuni, Rudraprayag

**PROGRAM OUTCOMES,COURSE OUTCOMES
(FOR THE ACADEMIC YEAR 2022-2023)
B.A. HOMESCIENCE**

PROGRAM OUTCOMES	<p>The course focuses on skill development, innovation, and capacity building. Courses aim at making the student self reliant with necessary proficiencies for a wide variety of career with entrepreneurial skills and placement.</p> <p>Specialized courses are in sync with industry academic needs national and global issues and challenges.</p> <p>Students are sensitized toward challenges and solution for social development from grass root level that is home.</p>
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B.A. Ist Sem (NEP-2020)

COURSE	OUTCOMES
FOOD AND NUTRITION	<p>The students at the completion of the course will be able to gain knowledge of nutrition. Students will get familiar with different methods of cooking. Acquaint students with practical knowledge of nutrients rich foods.</p> <p>Students will gain the knowledge regarding nutritional classification of food method and medium of cooking, nutritive value and processing, storage of plant based food. Able to identify what foods are good source for what nutrients. Understand the function and sources of nutrients role of nutrients in maintenance of good health.</p>
FOOD & NUTRITION SKILLS – FOOD AND BAKERY SCIENCE(vocational)	<p>This course is intended to give the student a detailed understanding of the components of various bread, cookie and pastry preparation techniques including quick breads, yeast breads, enriched and laminated doughs, cookie mixing methods ,pies, tarts syrups,icing,sauces,custards,creams and cakes.</p>

COURSE	OUT COMES
<p>Introduction To Clothing And Textiles</p>	<p>The study of textile helps one to understand the properties of the fabric that will enable you to choose the best method of washing and dry cleaning. The programs include ginning spinning weaving dyeing and painting.</p> <p>Basic stitching and creative skill will be develop will help them to construct their garments. Students will be able to use different stitches and seams as per the requirement of the garment. Students will gain practical understanding of different textile materials (fibre, yarn, fabric)</p>
<p>Food & Nutrition Skills-Value Added Product From Fruits And Vegetables (Vocational)</p>	<p>Student will be able to interpret and apply nutrition concepts to evaluate and improve the nutritional health of communities. They will learn about nutrition can also help individuals develop important life skills , such as meal planning, grocery shopping ,food preparation,and food safety. They will learn about that how fresh fruits can be transformed into juices,jams and dried snacks.Also they learnvegetables can be processed into pickels,canned products,or frozen items.These value added products provide consumerswith various options,increasing the demand and marketability of agricultural produce.</p>

B.A. IInd YEAR

COURSE	OUTCOMES
Fundamentals of Foods and Nutrition	<p>The students at the completion of the course will be able to gain knowledge of nutrition. Students will get familiar with different methods of cooking. Acquaint students with practical knowledge of nutrients rich foods.</p> <p>Students will gain the knowledge regarding nutritional classification of food method and medium of cooking, nutritive value and processing, storage of plant based food. Able to identify what foods are good source for what nutrients. Understand the function and sources of nutrients role of nutrients in maintenancace of good health.</p>
Human Development	<p>Analyze structural inequities related to life span development to identify strategies for promoting social justice. Use research method in human development to design analyze and conduct research and present research findings.</p> <p>Also they will learn to gain an understanding of your own life experience ,help others understand what ther are goingb through,understand the relationship of society and individual growth,lead more effectively,and support the physical and mental health of others.</p>

B.A. IIIrd YEAR

COURSE	OUTCOMES
HOUSING AND INTERIOR DECORATION	<p>Interior design is a good career choice especially for those who want to show off their creativity in the most basic of ways. It allows one to put their natural abilities to use while also providing excellent job satisfaction.</p> <p>Student will know about how to improve the aesthetic value of the space,increase the functionality of the space,and create a unique and personal environment.</p>
CLOTHING CONSTRUCTION	<p>Student will gain knowledge in textile production and processing It includes designing and sweing,knitting,weaving or other methods. It can be done by hand ,using a loom,or by using a sewing machine,depending on the type of garments that needs to be created.</p> <p>Also student will learn basic stitching and creative skill which will help them to construct their garments. Students will be able to use different stitches and seams as per the requirement of the garment. Students will gain practical understanding of different textile materials (fibre, yarn, fabric)</p> <p>They will also gain the knowledge of Pleats, Tucks,Gathers,and decorating stitches like chain,herring bone etc..</p>

APB GOVERNMENT PG COLLEGE AGASTYAMUNI

DEPARTMENT OF PHILOSOPHY

PROGRAMME AND COURSE OUTCOME (2022-2023)

Programme Outcome B.A. philosophy

1. Develop analytical skills of the student.

2. Become capable of critically appreciating a scholarly presentation of any form and debate upon the issues which invite cross discussions.

3. The programme instils among the students the greater values of life to become worthy citizens of the country.

4. Inculcate the skill of critical inquiry

5. Helpful in preparation of civil services exam in Gs paper 4 and philosophy optional subject.

B.A. 1st sem

Paper 1 core

Indian Philosophy

1. To make students familiar with Indian Philosophical systems and their philosophy. CO2. To make students develop a clear understanding of the major Epistemological and Metaphysical concepts within Indian philosophical studies.

2. Give exposure to various Indian texts.

3. To Improve critical reading of the texts, their rational and logical understanding, and writing abilities.

4. To help the students in understanding the significance of Indian philosophical studies in their daily life, how to overcome the stress, how to manage their life and take challenges in life; hence there will be a focus on the dialectical and analytical method to understand Indian philosophy.

Paper 2(Vocational Skill)

Yoga as applied Philosophy

To Develop Basic understanding of yogic theory

Develop Understanding of practical form of yoga

B.A. 2nd sem

paper 1(Core)

Ethics

1. To introduce students to the basic ethical theories
2. To help students enhance their decision-making capabilities with the help of these ethical theories
3. To help them achieve clarity and creative approach in a given situation
4. To make students aware of how judge the moral significance of an action and an event.

Paper 2 Skill (Ethical Decision Making)

Gain conceptual Knowledge on Ethical and moral concepts.

paper 3 Minor(contemporary Indian Philosophy)

Understand basic thoughts of swami vivekanand, Aurobindo, Gandhi, and s radhakrishna

B.A. 2nd Year

Paper 1-Western Philosophy

- 1.To provide students with a comprehensive understanding of the various theories of western philosophy beginning with Descartes, and also the distinction between rationalism and empiricism.
2. To help students understand and analyse the various texts of western philosophical traditions.
3. To enable students to witness how philosophers who were either predecessors or contemporaries evaluated the theories of others, thus will advise them in distinguishing good arguments from bad arguments
4. To help students to have a better understanding of how a man thinks and what goes on into the making of human thought.

Paper2- Philosophy Of Religion

- 1.understand the meaning of the words 'God' and 'religion'
- 2.understand what the main questions are in philosophy of religion

3. have a better sense of the differences between philosophical questions or arguments and other kinds of questions or arguments.

4. have a sense of the variety of arguments for or against God's existence, and of how to categorise this variety

B.A. 3rd Year

paper 1: Socio Political Philosophy

This paper philosophically analyses some issues related to society and politics. It aims at studying different ranges of social and political thinkers, theories and concepts.

2. It would provide a broad survey of fundamental, social and political questions in the current context discussing philosophical issues central to political and social thoughts.

paper 2: Yoga as applied Philosophy

To Develop Basic understanding of yogic theory

Develop Understanding of practical form of yoga

Subject Outcomes of Department of Mathematics

Graduation: Three year degree course.

Algebra

The concepts and results of Algebra are fundamental to the study of Mathematics and represent a human achievement of great beauty and power.

Real Analysis

Real Analysis is a major course in Mathematics, traditionally viewed as the difficult subject. Beauty and creativity involved in this important area of mathematics is highly appreciable.

Differential Equations

After completing the course, students will be able to formulate and solve differential equations arising from changes in physical world.

Mechanics

The objective of the course is to understand how one can use theory of calculus to determine centre of gravity, velocity and acceleration of a particle along a curve etc.

Linear Programming

After studying course, students will be able to formulate a given simplified description of a suitable real world problem as a linear programming model in general, standard canonical forms.

Differential and Integral Calculus

Upon completion of this course, students will be able to interpret a function from an algebraic, numerical, graphical and verbal perspective and extract information relevant to the phenomenon modeled by the function, students also will be able to study, how to differentiate and integrate standard functions.

Post Graduation: Two year degree course.

Algebra I

Algebra is a core topic for all discipline that uses higher mathematics and logics. It will help student is becoming sophisticated mathematicians.

Real Analysis

A great deal of the course is intended to immerse the student into the world of formal/abstract mathematics in which formal proofs and definitions are used in abundance.

Differential Equation

The course may be considered to occupy a central position from which different lines of development extend in many directions. The theory of differential equation is an important branch of mathematics and essential for understanding many physical and natural phenomena.

Metric Spaces

Metric spaces are a vital prerequisite for later mathematics courses including Analysis, Topology, Measure Theory, Complex Analysis etc.

Topology

Topology is a modern branch of geometry. The course is designed to develop an understanding of topological ideas and techniques and their role in analysis.

Measure and Integration I

On successful completion of this course, students will understand: How Lebesgue measure on \mathbb{R} is constructed, the general concept of measure and how measures may be used to construct integrals.

Discrete Mathematics

The primary goal of this course is to provide an introduction to discrete structure for information technology. After studying this course, students will be able to relate computing theory with applications, apply the concepts of Boolean algebra in various areas of Computer Science.

Operation Research I

The problem in Optimisation is the most common applications of mathematics. The main aim of this course is to present different methods of solving Optimisation problem in the area of linear programming, game theory, assignment and transportation problem.

Operation Research II

After completing this course, students will understand how the problems of Economics, Business Management, and other industrial problems may be solved with the help of Inventory Control and Queuing theory.

Measure and Integration II

Investigations in probability theory, partial differential equations, hydromechanics and quantum mechanics often pose problems which require integration over sets. This course gives sufficient answers to such type of problems.

Abstract Algebra II

The main aim to study this course is it to understand a close relationship between the roots of a polynomial and its Galois group.

Numerical Analysis

This course aims to provide students with the techniques for finding approximate numerical solution to the mathematical problems for which exact or analytical solutions are unavailable or inappropriate.

Complex Analysis

This course aims to provide an understanding of the basic facts of complex analysis, in particular the nice properties enjoyed by the derivatives and integrals of function of a complex variable; and to show complex analysis can be used to evaluate real integrals.

Mechanics

Mechanics is the oldest branch of Physics deplanes and is well important in the discipline of Mathematics. It is, in fact a course in Classical Mechanics. Students can understand the applications of fundamental conservation principles to analyze mechanical system.

Algebraic Coding Theory

The objective of the course is to teach the students how to produce algebraic codes based on the methods of groups and finite fields and to make the students familiar with some of the most widely used codes and their applications.

Number Theory

The aim of the course is to give an introduction to elementary number theory, to show how certain number theoretical theorems can be applied to solve simple Diophantine equations.

Fluid Dynamics

Fluids have the ability to transport matters and its properties as well as transmit force; therefore Fluid Dynamics is an important subject that is particularly open to cross fertilization with other Sciences and disciplines of Engineering.

Fuzzy Set Theory

Upon successful completion of this course, students should be able to understand basic knowledge of Fuzzy sets, fuzzy relations, elements of fuzzy arithmetic and fuzzy logic.

Fundamental Analysis

Many of the topics studied in this course have applications on Approximation theory, Operator's theory and other areas of mathematics. At the end of the course, the students will be aware to interplay of algebra and topology.

Differential Geometry

Differential Geometry is a mathematical discipline that uses the method of Differential and integral calculus, as well as linear and multi linear algebra, to study problems in Geometry. The theory of plane and space curves and of the surface in the three-dimensional Euclidean space formed the basis for its initial development in the 18th and 19th century.

Program Outcomes, Program Specific Outcomes & Course outcomes

1. DEPARTMENT OF PHYSICS

Program Outcomes (POs): The Physics department offers two programs:

1. Physics for B.Sc. students of PCM.
2. M.Sc. Physics.

Both these programs are primarily geared towards cultivating the idea – “**Physics is the study of nature and its laws (till the most fundamental level)**”, amongst the students. The Program Specific Outcomes (PSOs) and the Course Outcomes (COs) of the individual programs/courses/papers are more or less spun around this theme and are listed below.

Program Specific Outcomes (PSOs): For the Under-Graduate Physics program (B.Sc. Physics for PCM).

Students having Degree in B.Sc. (with Physics) should have knowledge of different concepts and fundamentals of Physics and ability to apply this knowledge in various fields of academics and industry. They may pursue their future career in the field of academics, research and industry.

PO 1 1. Competence in the methods and techniques of calculations using Mechanics.

2. Students are expected to have hands-on experience to apply the theoretical knowledge to solve practical problems.

PO2 1. Students are expected to have deep understanding of electricity and magnetism.

2. Student should be able to make basic electrical circuits and handle electrical instruments.

PO 3 1. Competence in the concepts of Thermodynamics and Statistical Physics.

2. Students are expected to have hands on experience in Thermal and Statistical Physics Experiments.

PO 4 1 Knowledge of different concepts in Geometrical and Physical Optics.

2 Students are expected to have hands on experience of Experiments of Geometrical and Physical Optics.

PO 5 1. Knowledge of basic concepts of solid state physics with their applications.

2. Students are expected to have an insight in handling in solid state and basic electronic instruments.

PO 6 1. Comprehensive knowledge of modern physics, elementary quantum mechanics, Analog & Digital electronics and their Applications.

2. Learn the integrated approach to analog electronic circuitry and digital electronics for R&D.

Programme specific outcomes (PSOs):

UG I Year / Certificate course in Basic Physics

After completing this certificate course, the student should have

- Acquired the basic knowledge of Mechanics, Electricity and Magnetism.
- Hands-on experience to apply the theoretical knowledge to solve practical problems of basic physical phenomena. He should be able to carry out experiments to understand the laws and concepts of Physics.
- An insight in understanding electrical circuits and in handling electrical instruments.

Programme specific outcomes (PSOs):

UG II Year/ (Diploma in Applied Physics)

After completing this diploma course, the student should have

- Knowledge of different concepts in Thermodynamics, statistical physics, Geometrical and Physical Optics.
- Knowledge of different aspects of Thermal Physics and Statistical Mechanics which serves as a basis for many physical systems used in industrial applications and deals with the physics and technology of Engines and Refrigerators.
- A deeper insight in Ray Optics to understand the Physics of many optical instruments which are widely used in research and Industry, Optoelectronics, IT and communication devices, and in industrial instrumentation.
- Knowledge of basic concepts of optical instruments with their applications in technology.

Programme specific outcomes (PSOs):

UG III Year / Bachelor of Science

After completing this degree course, the student should have:

PSO 1 Knowledge of Mechanics and basic properties of matter. The course will empower him to apply his theoretical knowledge in various physical phenomena that occur in day to day life and he can use this scientific knowledge for the betterment of the society.

PSO2 Understanding of basic concepts related to Electricity and Magnetism .He should be proficient in designing and handling different electrical circuits

PSO3 Expertise in different aspects of Thermal and Statistical Physics which serves as a basis for many physical systems used in industrial applications and deals with the physics and technology of Engines and Refrigerators.

Proficient in the field of Optics which will increase his demand in research and industrial establishments engaged in activities involving optical instruments.

PSO4 Proficient in the field of Solid State Physics which will increase his demand in R & D.

PSO5 Basic knowledge in the field of Modern physics and Quantum Mechanics which have utmost importance at both undergraduate and graduate level.

PSO6 Comprehensive knowledge of Basic Electronics, Analog & Digital Principles and their Applications.

Learn the integrated approach to analog electronic circuitry and digital electronics for R&D.

Course Outcomes (COs): For the Under-Graduate Physics program (B.Sc. Physics for PCM).

B.Sc. 1st Semester

Mechanics

Vector algebra. Scalar and vector products, scalar and vector triple products, Derivative of a vector with respect to a parameter, Del operator, gradient, divergence and curl, Gauss divergence theorem, Stokes curl theorem and Green's theorem, Line, surface and volume integral of a vector function. Gravitational field and potential, Gravitational potential energy, Gravitational field Intensity and potential due to a ring, a spherical shell, solid sphere and circular disc, gravitational self-energy, Inverse square law of forces, Kepler's laws of planetary motion.

Frames of reference, Concept of inertial and Non-inertial frames of references, Work energy theorem, Conservative and non-Conservative forces, Linear restoring force, Gradient of potential, Conservation of energy for the particle; Energy function, Concept of Centre of mass, Angular momentum and torque, Laws of conservation of total energy, total linear momentum and total angular momentum along with their examples.

Translatory and Rotatory motion, Equation of motion for Rotating rigid body, angular momentum vector and moment of inertia, Theorem of parallel and perpendicular axes, Moment of inertia of a cylinder, rod, lamina, ring, disc, spherical shell, solid sphere, kinetic energy of rotation, rolling along a slope, Application to compound pendulum.

Basic concept, Elastic constants and their Interrelations, torsion of cylinder, bending of beam, bending moment, Cantilever, shape of Girders/ rail tracks. Viscosity, Stokes's law, Poiseuille's formula, Equation of continuity, Bernoulli's theorem, Surface tension and its molecular interpretation.

<p>Basic Instrumental Skill- 1st</p>	<p>Instruments accuracy, precision, sensitivity, resolution, range, least count of different instruments, Errors in measurements, Types of errors. Hand tools and their Uses: Identification, specifications, uses and maintenance of commonly used hand tools: Tweezers Screwdriver (Combination Set), Pliers, Wire Cutters, Wire Strippers, Crimping Tools, Sockets & Hex drivers, Clamps, Rotary Tools: Grinders, Portable Drill Machine, Small Hand Saws. Different type of electrical cables and their Specifications. Types of wires & cables, Standard wire gauge (SWG), Practice on different type of cable joint, Testing phase , neutral and Earth by tester and multi-meter and test lamp. Introduction and explanation of electrical wiring systems, cleat wiring, casino & Capping, house wiring, specification and types, rating & material, Demonstration & Practice on connecting common electrical accessories in circuits and testing them in series board., Testing & replacement of different types of fuses, switches, plug, sockets. Identification of different wiring materials and their specification, Removing of insulation from assorted wires and cable, Making a switch board with electrical accessories, Making Extension board.</p>
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<p>List of Experiment (For B.Sc. 1st Sem)</p>	<ol style="list-style-type: none"> 1. To study the Motion of Spring and calculate (a) Spring constant, (b) g and (c) Modulus of rigidity. 2. To determine the Moment of Inertia of a Flywheel. 3. To determine g and velocity for a freely falling body using Digital Timing Technique. 4. To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille's method). 5. To determine the Young's Modulus of a Wire by Optical Lever Method. 6. To determine the Young's Modulus by bending of beam. 7. To determine the Modulus of Rigidity of a Wire by Maxwell's needle. To determine the elastic Constants of a wire by Searle's method. 8. To determine the value of g using Bar Pendulum. 9. To determine the value of g using Kater's Pendulum. 10. To determine Surface Tension. 11. To determine the modulus of rigidity by Barton's Apparatus (Horizontal and Vertical) 12. To determine the elastic constants by Searle's method.
<p>Electricity & Magnetism</p>	<p style="text-align: center;"><u>B.Sc. 2nd Semester</u></p> <p>Coulomb law, Gauss' theory, its integral and differential forms, line integral of Electric field, Electric field and potential due to an arbitrary charge distribution. Electrostatic energy, energy stored in an Electric field. Electric field and potential due to long charged wire, Spherical shell, sphere, disc, dipole.</p> <p>Moments of charge distributions, Polar and non-polar molecule, polarization vector, electric displacement vector, three electric vectors, dielectric susceptibility and permittivity, polarizability, Clausius-Mossotti relation</p> <p>Magnetization, magnetic susceptibility, diamagnetic, paramagnetic and ferromagnetic substances, Hysteresis and B-H curve, Langevin's theories of Diamagnetism and paramagnetism, Weiss theory of ferromagnetism.</p> <p>Current density, Equation of Continuity, Ohm's law and electrical conductivity, Lorentz Drude theory, Wiedmann-Frenz law, Kirchhoff's Laws and their applications, Transient current, Growth and decay of D. C. in L - R and L - C circuits, charging and discharging of a capacitor through a Resistance.</p>

	<p>Lorentz force, Bio-Savert's law, Ampere's law, Application of Biot-Savert law, magnetic field due steady current in a long straight wire, Interaction between two wires, field due a Helmholtz coil, solenoid and current loop, magnetic vector potential, permeability, Energy stored in Magnetic field.</p> <p>Faraday's laws of induction, Lenz's law, Electromotive force, Measurement of magnetic field, Eddy current, Mutual inductance, Self-inductance. Impedance, admittance and reactance, R-C, R-L and L-C circuits with alternating e.m.f. source, series and parallel L-C-R circuits, resonance and sharpness, Quality factor, Power in A. C. circuits, Choke coil.</p>
<p>Basic Instrumental Skill-2nd</p>	<p>Types of Batteries, Primary Cell, Secondary Cell, Wet charged, Dry-charged, Low maintenance, Construction of Battery, Case Cover plates, Separator, Cells, Electrolyte, Principles of Batteries, Lead Acid battery, Electrochemical reaction, Measure the voltages of the given cells/battery using analog/ digital multimeter, Charge and discharge the battery through load resistor, Maintain the secondary cells, Measure the specific gravity of the electrolyte using hydrometer. Testing Factor affecting charging, Cause of battery failure, diagnosis and testing, visual inspection, Heavy load test Professional, Test a battery and verify whether the battery is ready for use or needs recharging. Solders, flux and soldering technique. Different types of soldering guns related to Temperature and wattages, types of tips, Solder materials and their grading. Use of flux and other materials, Selection of soldering gun for specific requirement, Soldering and De-soldering stations and their specifications. Soldering/ De-soldering and Various Switches, Practice soldering on different electronic components, small transformer, Practice de-soldering.</p>
<p>List of Experiments (For B.Sc. 2nd Sem)</p>	<ol style="list-style-type: none"> 1. Frequency of A.C. Mains. 2. Calibration of Voltmeter by potentiometer. 3. Calibration of ammeter by potentiometer. 4. Specific resistance determination. 5. Conversion of a Galvanometer into a Voltmeter. 6. Conversion of a Galvanometer into Ammeter. 7. Variation of magnetic field along the axis of a current carrying circular coil. 8. Comparison of capacities by Ballistic Galvanometer. 9. Determination of Ballistic Constant. 10. Electrochemical equivalent. 11. De Sauty's bridge- C1/ C2 12. R1/R2 by potentiometer. 13. Study of R-C, L-C-R circuits. 14. Determination of self inductance, mutual inductance. 15. Magnetic field determination by search coil and ballistic galvanometer.

Minor Elective (Elementary Physics)

Basic Idea of Physics and it's uses in daily life, Electric charge, Conductors, Insulators and Semiconductors, Coulomb's law, Quantization and conservation of charge, Basic Idea of electric field
Resistance, Resistance in Series and Parallel, Direct and Alternating Current, Color codes for Resistors, Household Circuits, Wiring in Houses, Importance of fuse, Power and Power Losses, Unit of power loss, Heating effect of electric current, Uses of heating effect of current.
Transformers, Types of transformers, Step up transformer, Step down transformer,
Auto transformer, Central tap transformer, Wiring of transformer.
Short and open circuits, Shorts in series circuit, shorts in parallel circuit, Open in series circuit, Open in parallel circuit, Duality in series and parallel circuits.
Ammeters- Voltmeters and their uses, Measurements of thickness, Diameter and depth by Vernier- calipers Screw gauge and Spherometer, Multimeter and its uses, Dynamometer and Wattmeter, Block diagram of basic CRO, Construction of CRT, Electron gun, electrostatic focusing and acceleration.

B.Sc. 2nd Year

Thermal Physics & Statistical Mechanics

Understanding the basic thermodynamic concepts- State variable, Equilibrium, Heat, Work, Zeroth and First Laws and the concepts of Temperature and Internal Energy, Applications of First Law to various processes (Adiabatic, Isothermal etc.), Mayer's relation.
Understanding the need of second law of thermodynamics, Reversible & Irreversible processes, Heat Engine and Refrigerator, Second Law of Thermodynamics (in term of Engines and Refrigerators), Concept of Entropy, The Carnot's cycle, Second law in terms of entropy change, Third law of thermodynamics (the Nernst theorem).
Understanding the four thermodynamic potentials, The Maxwell's relations and applications (response functions, Joule-Thompson cooling, Clausius-Clapeyron equation etc.)
Understanding the Kinetic Theory of Gases (towards a microscopic description), Maxwell's velocity distribution law, transport phenomenon, the classical equipartition theorem and its use to determine specific heats of mono- atomic and diatomic gases.
Understanding Blackbody radiation (the first step towards quantum mechanics), Spectral emissive power, Energy Density of Cavity Radiation, The Rayleigh- Jeans Law, Planck's law and deducing Wien's displacement law, Wien's distribution laws (1st and 2nd), Stefan-Boltzmann law and Rayleigh-Jeans limit.

Optics	<p>Understanding Geometrical Optics- Fermat's principle of extremum path and applications, Cardinal points, Combination of Lenses, Lagrange equation of magnification.</p> <p>Understanding optical instruments- Eye pieces (Ramsden's, Huygen's and Gaussian), Aberrations (and types) and their corrections.</p> <p>Understanding the Interference of Light- The superposition principle, Coherence and conditions for interference, Double slit interference, Division of amplitude and division of wavefront, Fresnel's Biprism, Phase change upon reflection, Thin-film interference (Haidenger and Fizeau fringes), Newton's rings (theory and experimental setup), The Michelson Interferometer and its (experimental) use, Fabry-Perot interferometer.</p> <p>Understanding diffraction of light- Fresnel diffraction, Half-period zones and zone-plate, Diffraction pattern of edge, slit and wire, Fraunhofer diffraction (single, double and multiple slits), The diffraction grating as a measurement tool.</p> <p>Understanding polarization of light- Transverse EM Wave, Plane polarized light (production and analysis), Malus Law, Brewster's Law, The Nicol Prism, Circularly and Elliptically polarized light, Optical rotation, The polarimeter (experimental setup also).</p>
Solid State	Understanding Crystal Structure, Lattice, Basis, Bravais Lattice, Unit Cell, The

Physics	<p>seven crystal systems and the fourteen Bravais lattices; SC, BCC, FCC, HCP and diamond structures, NaCl, CeCl and Zinc Blende structures.</p> <p>Understanding reciprocal lattice, Brillouin Zone, Reciprocal lattices of SC, BCC and FCC lattices, Miller indices, X-ray diffraction, Bragg's Law, Methods of X-ray diffraction (Laue, Powder, Rotating Crystal).</p> <p>Understanding lattice vibrations and phonons (sound quanta), Monoatomic and Diatomic chains, Acoustical and Optical branches, Specific heats of solids (Dulong-Petit, Einstein and Debye theories), the T^3 law.</p> <p>Understanding the free electron theory of metals (the electron gas), Lorentz-Drude Theory, Properties of metals (Thermal and Electrical conductivities, Electronic specific heat, Thermionic emission), Wiedemann-Franz relation, Sommerfeld theory.</p> <p>Understanding the basics of band theory- the Kronig-Penny model, Band gaps, Conductors, Semiconductors and Insulators, Intrinsic and Extrinsic Semiconductors (P & N type), Conductivity, Hall effect and Hall coefficient.</p>
Practical (B.Sc. 2nd Year)	<p>The various practicals included in the Physics syllabus of B.Sc. 1 are aimed at understanding (and measuring) the phenomenon/ quantities studied in the theory papers (e.g. ideas about Moment of Inertia, Elastic constants, Simple & Compound pendulums, Current, Voltage, Resistances, Solenoid, LCR circuit, SHM, Normal modes of a string etc.). The student should use and develop "hand-skills", observation-skills, mathematical tools (analytical, numerical, graphical etc.) to connect theory with experiments.</p>
Quantum Mechanics	<p style="text-align: center;"><u>B.Sc. 3rd Year</u></p> <p>Understanding the origins of quantum theory- Blackbody radiation and early radiation laws, Planck's (revolutionary) idea (the quantum hypothesis & birth of quantum mechanics), Photoelectric and Compton effects.</p> <p>Understanding the wave nature (and hence dual nature) of matter, De Broglie's idea of matter waves and their wavelength, Davisson-Germer Experiment, Wave-particle duality, The uncertainty principle (position-momentum and Energy-time), Interference experiments with particles.</p> <p>Understanding the Schrodinger's equation (quantum mechanical equation of motion), Time dependent and time-independent versions, Framework of QM (postulates, wavefunction- properties and physical significance), Probability and Conservation, Operators, Eigenfunctions and Eigenvalues, Expectation values, The free particle wavefunction.</p> <p>Learning to solve the Schrodinger's equation, Stationary states, Boundary conditions lead to quantization, Potential Step & Barrier and transmission, Potential well (infinite and finite depths), The one dimensional harmonic oscillator in QM, Zero point energy.</p> <p>Learning to solve the Schrodinger's equation in three dimensions (for spherically symmetric systems), The Schrodinger's equation for the Hydrogen atom and solving it using separation of variables, Angular momentum eigenfunctions (spherical harmonics), Solving the radial equation using Frobenius's method, Emergence of the various quantum numbers (n, l and m).</p>

**Modern
Physics**

Understanding the various atomic models- Thomson, Rutherford and Bohr, the Bohr model and the hydrogen spectra, Other quantum ideas/experiments- Bohr-Sommerfeld model and quantization condition, the Stern-Gerlach experiment and electron spin, Electron magnetic moment, Bohr magneton, Larmor's precession, The vector atom model, Space quantization.

	<p>Understanding optical spectra (on the basis of the vector atom model), LS and JJ couplings, Selection and Intensity Rules, The fine structure of sodium D lines, Magnetic interactions and Zeeman effect, X-ray spectra and Moseley's Law.</p> <p>Understanding basics of radiation, Absorption and Emission (spontaneous and stimulated), The Einstein's A and B coefficients, Metastable states (long living), Population inversion, Pumping, Lasing action and Laser/Maser.</p> <p>Understanding the atomic nucleus, Constituents of the nucleus, properties, Nature of nuclear force, Binding Energy and BE curve, Stable nuclei, The semi-empirical mass formula, Models of the nucleus (Liquid drop and Shell model).</p> <p>Understanding radioactivity, Decay of nuclei, Radioactive decay law, Mean and half life, alpha, beta and gamma decays and their features, Pauli's neutrino prediction, Ideas of fission and fusion of nuclei, Mass deficit and energy generation, Controlled nuclear fission and the nuclear reactor, Energy production in stars, Particle detectors.</p>
<p>Basic Electronics</p>	<p>Understanding elementary semiconductors and devices (intrinsic, extrinsic- P & N), the PN diode and its characteristics in forward and reverse bias, Zener diode, Optoelectric devices- LEDs, Photodiode and Solar cell.</p> <p>Understanding diode circuits- The rectifier- Half-wave, Full-wave (Centre tapped and Bridge versions), Ripple factor and Efficiency, Filters (C, L, Pi etc.), Clipping and Clamping circuits using diodes, Voltage multipliers, Zener diode and voltage regulation.</p> <p>Understanding transistors and amplifiers- Bipolar Junction transistors (NPN, PNP), Characteristics (input and output) in various configurations (CE, CB & CC), Current gains alpha and beta and their relation, Load line analysis, Q-point, Active, Cutoff and Saturation regions, Transistor biasings; Transistor Amplifiers- Voltage, Current and Power, Class A, B and C amplifiers; The Field Effect Transistor (FET) and the Uni-Junction Transistor (UJT)</p> <p>Understanding Oscillator circuits- Feedback (negative and positive), Barkhausen's criterion, RC (Wein bridge and Phase-Shift) & LC (Collector tuned and Colpitt) oscillators and frequency of oscillation, Crystal oscillators, The Multivibrator and various operation modes (Monostable, Astable and Bistable).</p> <p>Understanding Digital Electronics and Circuits- Number systems (Binary etc.) and conversions, Basic Logic Gates (AND, OR & NOT) and realizations using diodes and transistors, Universal Gates (NAND & NOR), Other gates, Boolean Algebra- De Morgan's Theorem, Simplifying logic circuits, Minterm, Maxterm, SOP and POS, Karnaugh Map, Binary arithmetic (addition, subtraction) using circuits- Half/Full adders, Word (4-bit) binary adder-subtractor.</p>
<p>Practical (B.Sc. 3rd Year)</p>	<p>The various practicals included in the Physics syllabus of B.Sc. 3 are aimed at understanding (and measuring) the phenomenon/ quantities studied in the theory papers (e.g. ideas about Energy quanta, quantization, diodes, LEDs, rectifiers, power supplies, transistors, amplifiers, oscillators, logic gates, Boolean algebra, logic circuits etc). The student should use and develop "hand- skills", observation- skills, mathematical tools (analytical, numerical, graphical etc.) to connect theory with experiments.</p>

Program Specific Outcomes (PSOs): For M.Sc. Physics.

PSO1: Strengthening and further understanding of the fundamental concepts of Physics and its basic laws (as acquired during the Under-graduate studies) by augmenting mathematical

rigor (at the Physicists level) along with Physical interpretations (and clear physical picture(s)) of any theory/process/situation.

PSO2: Acquire the necessary mathematical-tools (analytic, approximate, numerical, graphical etc.) and concepts required for understanding the underlying physics and use them to solve complex and advanced problems (including those with real world applications).

PSO3: Gain substantial knowledge in the various (core) branches of Physics- viz. Classical Mechanics, Electrodynamics, Mathematical Methods, Quantum Mechanics, Statistical Mechanics, Condensed Matter Physics, Astrophysics, Electronics, Nuclear Physics, Particle Physics etc.

PSO4: Acquire theoretical and experimental knowledge/skill related to the physical phenomenon, as well as the ability to connect both (theory & practical). Also gradually develop the scientific method by designing and conducting experiments.

PSO5: To get an exposure to research and research methodology during the dissertation work (theoretical and/or experimental) to be performed during the last semester.

PSO6: Motivation to pursue a research/academic career in Physics. Aim towards writing and qualifying in various competitive exams- (e.g. CSIR-UGC-NET, GATE, JEST, BARC, DRDO, Entrance exams of premier research institutes (National & International)).

PSO7: Gain knowledge of the subject along with general competence and analytical skill for employment in other sectors viz. industry, R&D, consultancy, public administration etc.

Course Outcomes (COs): For M.Sc. Physics.

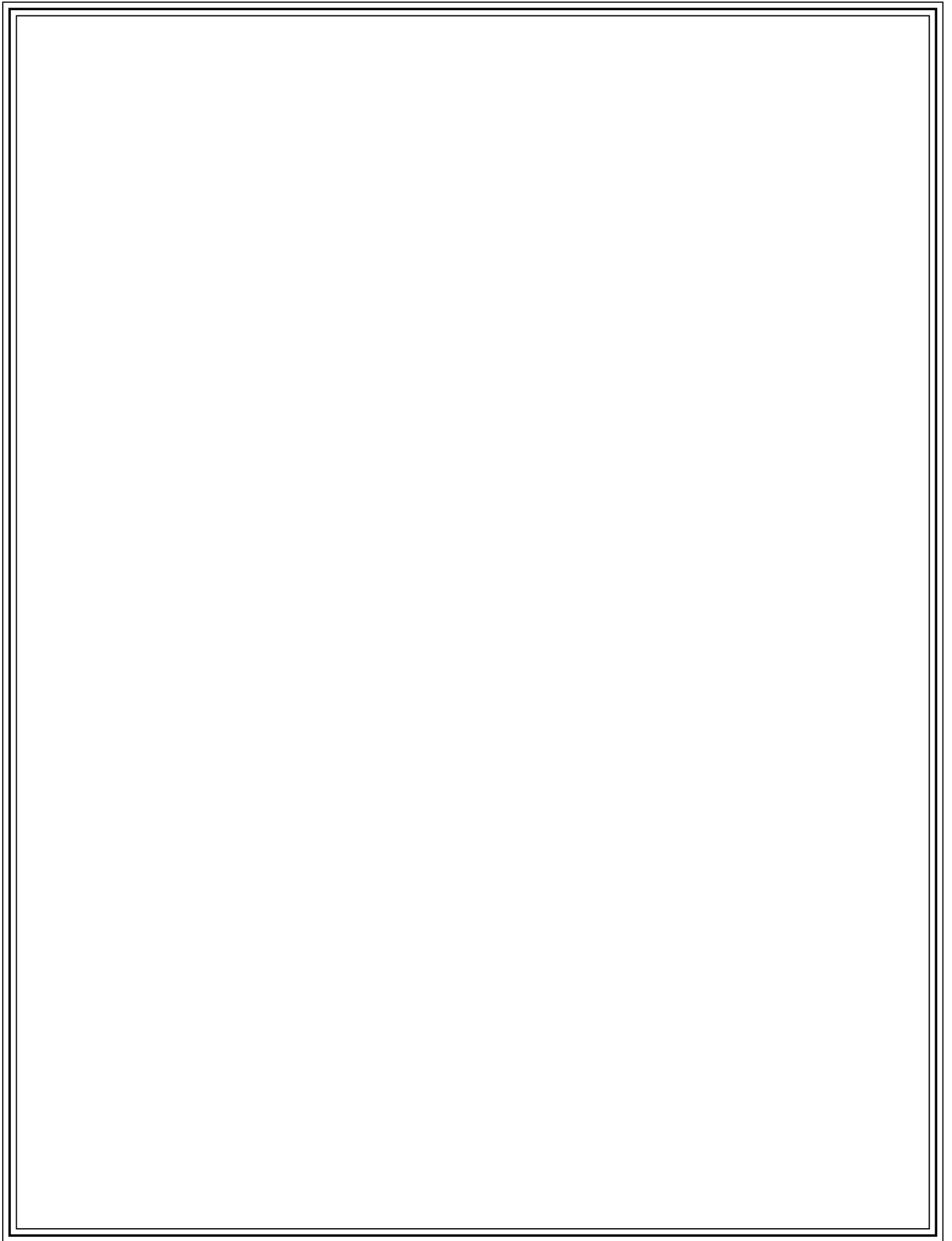
Classical Mechanics	Understanding the various alternative formulations of Classical Mechanics (e.g. Newtonian, Action Principle(s), Lagrangian and Hamiltonian formulations). Realizing the need (Advantages/Disadvantages) of the various formulations and the unified appearance of the various conservation laws. Paving the way for transition towards Quantum Mechanics (as well as proper understanding/formulation of Statistical Mechanics) via the appropriate formulation of Classical Mechanics. Applying the ideas to problem solving- Rigid body dynamics, Small Oscillations etc.
Mathematical Physics	Acquiring the mathematical tools needed during Physics study at the M.Sc. level (and elsewhere also). Realizing the “unreasonable effectiveness” of Mathematics in the Physical Sciences (in general). Working with mathematical rigor (at the Physicists level of rigor) and developing the ability/habit of tackling complex problems. Applying the tools acquired here to the other courses (e.g. CM, ED, QM, SM etc.)
Astrophysics	Gain a basic understanding of applying Physics at the grandest scales i.e. in Astrophysics/Cosmology.

	<p>Understanding observational methods/tools and related theoretical concepts to infer properties of bodies/system located far away in the Universe.</p> <p>Understanding stellar processes and features (Energy generation, Magnitudes, H-R diagram, Evolution, Brightness, Luminosity, Spectra etc.)</p> <p>A mathematical understanding of the processes occurring within a star in the form of some fundamental physics equations (Mass distribution, Hydrostatic Equilibrium, State equations, R-V theorem etc.)</p>
Electrodynamics	<p>Realizing the unification of Electricity and Magnetism as a single physical concept- Electromagnetism (or Electrodynamics) and that Maxwell's equations express this fact.</p> <p>Understanding various electromagnetic phenomenon (EM Wave in vacuum, conductors, non-conductors, plasma, bounded media, wave guides).</p> <p>Understanding the potential formulation of ED (and its advantages).</p> <p>Understanding generation and nature of radiation (fields) from moving (accelerated) charges.</p> <p>Formulating ED (and writing and performing calculations) within the relativistic framework i.e. four-vector & Tensor notations. Understanding the role of this relativistic formulation and ability to apply it elsewhere.</p>
Practical	<p>The various practicals included in the Physics syllabus of M.Sc. 1st Semester are aimed at understanding (and measuring) the phenomenon/ quantities studied in the theory papers of various other semesters (e.g. LCR, UJT, Transistors, Diodes, DIAC, TRIAC, FET, Amplifiers, Oscillators etc.). The student should use and develop "hand-skills", observation-skills, mathematical tools (analytical, numerical, graphical etc.) to gradually connect theory with experiments.</p>
Atomic Molecular Physics &	<p>Understanding that optical properties of materials and realizing the fact that it are just an application of Quantum Mechanics to atomic/molecular systems.</p> <p>Understanding the atomic and molecular spectra along with their finer features (Fine structure, Vibrational-Rotational spectra).</p> <p>Understanding the effect of electric and magnetic fields on the various spectra via interactions (or charge and/or spin).</p> <p>Understanding the various theories/formulations/models to understand spectra (Vector atom model, LS, JJ coupling schemes, Raman spectroscopy, Heitler-London and Born-Oppenheimer treatments etc.)</p> <p>Understanding the quantum theory of radiation (Einstein's coefficients) and basic working principle of Lasers.</p>
Solid Physics State	<p>Understanding of the basic (theoretical) ideas involved in the study of Condensed Matter Physics.</p> <p>Understanding the origin of elasticity (and elastic constants) from the properties of the underlying crystal structure.</p> <p>Understanding the interaction of crystals with radiation (X-rays) and the related theoretical framework as well as experimental setup(s) (Diffraction experiments).</p> <p>Understanding the quantum treatment of elastic/sound waves (i.e. the idea</p>

	<p>of phonons and phonon gas etc.) Understanding the thermal properties of solids on the basis of the phonon picture.</p>
Statistical Mechanics	<p>Understanding the (average) microscopic description vs. the macroscopic description (as done in Thermodynamics) for a system with large no. of degrees of freedom. Understanding (and calculating within the framework) the various statistical ensembles and the corresponding (thermodynamic) formulations. Application of the statistical ideas to derive/understand the behavior of gases (ideal as well as real). Understanding the basics of Quantum SM (FD & BE stat) and some simple applications. Understanding blackbody radiation as a gas of photons (i.e statistical treatment- BE statistics).</p>
Quantum Mechanics	<p>Understanding that our world is inherently quantum and so the proper framework to understand it is Quantum Mechanics. “Establishing”/Understanding the basic framework of QM (Schrodinger’s equation, wavefunction and probabilistic interpretation, uncertainty relations etc.). Learning to solve the Schrodinger’s (time-independent) equation (various one and three dimensional problems). Understanding the various formulations of QM and their equivalence- Schrodinger, Heisenberg (Matrix) and Dirac formulations. Understanding symmetry in QM- Space and Time translation symmetries as well as Rotational symmetry (Angular momentum, Spin, Addition etc.) Understanding the various approximation methods to solve the Schrodinger’s equation (Perturbation, Variational method, WKB approximation) and application to different (stationary) state problems. Applying approximation methods to time dependent problems and treatment of radiation (emission and absorption) via such methods (Time dependent perturbation theory, Fermi’s Golden Rule, the Semiclassical theory of radiation etc.).</p>
Practical	<p>The various practicals included in the Physics syllabus of M.Sc. 2nd Semester are aimed at understanding (and measuring) the phenomenon/ quantities studied in the theory papers of various other semesters (e.g. Multivibrators, Interferometers, Fresnel’s Law, Magnetic susceptibility, Radiation laws etc.). The student should use and develop “hand-skills”, observation-skills, mathematical tools (analytical, numerical, graphical etc.) to gradually connect theory with experiments.</p>
Advanced Quantum Mechanics	<p>Understanding, applying and formulating QM at an even deeper level than done earlier (in the QM Course). Applying quantum ideas to understand the scattering of particles. Employing various (approximate) methods- Partial Wave Analysis and the Born approximation. Understanding notion of identical and indistinguishable. Realizing origin of the Pauli’s exclusion principle and related notions (Spin-Statistics connection, Permutation symmetry etc.) Formulation (along with the need) of the relativistic version of (NR)</p>

	<p>quantum mechanics. Working out in detail the two basic relativistic wave equations (Klein-Gordon and Dirac equations) and the various associated phenomenon/notions (Plane wave solutions, Negative Energies and Probabilities, Spin of electron and its magnetic moment, The Hole Concept, Particles and Antiparticles etc.)</p> <p>Understanding the need of relativistic quantum fields (towards Quantum Field Theory), Field formulations for the various wave equations via 2nd quantization.</p>
Nuclear Physics	<p>Understanding the atomic nucleus and its various properties along with the experimental tools and techniques of nuclear investigations.</p> <p>Understanding basic properties of the nucleus and the various nuclear models.</p> <p>Understanding the nature of the nuclear force along with experimental setup(s) to study them.</p> <p>Understanding radioactive decay and its various feature.</p> <p>Understanding nuclear reactions by applying (mainly) quantum ideas to them.</p>
Particle Physics	<p>Get a basic understanding of the fundamental constituents of our Universe (the “elementary” particles and the four fundamental interactions).</p> <p>Understanding the gauge principle and role of symmetry (along with ideas of unification).</p> <p>Understanding the common (mathematical) origin of (the various) conservation laws as a manifestation of (some) symmetry.</p> <p>A very basic understanding of the unification of the fundamental interactions- Electroweak and Grand Unifications.</p> <p>Understanding (hadronic) matter as composed of quarks and the “construction” schemes (i.e. various direct-product representation of SU(3)).</p> <p>An overview of the various properties of quarks (and also of the composite mesons and baryons).</p>
Electronics- A	<p>Acquire a basic understanding of electronic principles (analog and digital).</p> <p>Understanding of various oscillator circuits (including multivibrators).</p> <p>Understanding of logic gates (basic, universal and combinational) and the various technologies (RTL, TTL, CMOS, 7400 family etc.) used to implement them.</p> <p>Ability to “construct”, simplify and implement various logic functions/circuits (Adder/Sub tractors, Comparators, MUX and dMUX, Coders, Encoders, Decoders).</p> <p>Understanding memory elements (Flipflops- RS, JK, D, Master-Slave, Clocked vs. Unclocked etc.; Registers and Counters) as Sequential circuits.</p> <p>Understanding the various “memory devices” and IC-technologies.</p>
Practical	<p>The various practicals included in the Physics syllabus of M.Sc. 3rd Semester are aimed at understanding (and measuring) the phenomenon/ quantities studied in the theory papers of this semester (mainly Electronics e.g. IC-study (555, 723), Logic circuits (basic- AND/OR/NOT/NAND/XOR etc. to advanced- Adders/MUX/dMUX etc. and memory elements- RS, JK etc.), Microprocessor, SCR, DIAC, TRIAC, GM-counter etc.). The student should use and develop “hand-skills”, observation-skills, mathematical</p>

	tools (analytical, numerical, graphical etc.) to gradually connect theory with experiments.
Computational Physics	<p>Acquiring the basic ability to solve physical problems (i.e. equations-algebraic, differential, matrix etc.) using numerical techniques.</p> <p>Learning the techniques/methods of numerical analysis (Interpolation methods, Differential equation solving, Matrix inversion, Integration, Roots of equations etc.)</p> <p>Learning computer programming (FORTRAN) and implementing numerical recipes/algorithms on the computer (usually using iterative methods) to solve problems (including physical problems- Kepler's problem).</p>
Environmental Physics	<p>Learning to understand over surroundings (atmosphere, radiation and environment in general) using the principles of physics.</p> <p>Understanding the atmosphere (its structure, thermodynamics, transport phenomenon, hydrostatic equilibrium, and green house effect).</p> <p>Understanding solar radiation receive on earth (Radiation laws, Matter-Light Interaction, Scattering, Ozone depletion etc.).</p> <p>Understanding water and air pollution (Fluid dynamics, Diffusion, Noise Pollution etc.).</p> <p>Understanding the world energy needs and ways to generate energy for our use (Renewable vs. Non-renewable, Environmental changes and climate due to anthropogenic activities).</p>
Laser & Fiber Optics	<p>Understanding the basic principles of a Laser (semi classical/quantum theory of radiation, Einstein's coefficients, Pumping, Population Inversion, Coherence- spatial and temporal).</p> <p>Knowledge of the various kind of lasers (3 and 4 level systems, He-Ne, Argon, Gas, Solid-state, Semiconductor, Ruby, Nd-YAG etc.) and their features.</p> <p>Getting a basic idea of non-linear optics (harmonic generations, phase matching, self-focusing etc.).</p> <p>Understanding use(s) of laser as an investigating tool (to investigate material properties)- Laser spectroscopy.</p>
Electronics- (Elective) B	<p>Understanding the basic electronic involved in communication electronics.</p> <p>Understanding modulation and demodulation (AM, FM, SSB, Phase- Various circuits to generate and detect).</p> <p>Understanding radio communication (ground and sky propagations, role of ionosphere, Appleton-Hartley theory, Radar and its workings).</p> <p>Understanding Transmission Line (basically EM Waves in conductors).</p> <p>Developing ability to solve related problems (Line parameters, TL-equations, Impedances, SWR, Reflection coefficient etc.).</p> <p>Understanding the various kind of antenna to broadcast and receive radio signals.</p>
Practical/ Dissertation/ Project	<p>The student has to complete a dissertation/project (theoretical and/or experimental) and submit a written report during this last semester. This gives the students some exposure to research and research methodology. Moreover the written report enables the students to write scientific communication. All this is aimed at nurturing them into (possible) future researchers who are capable of- (a) thinking and analyzing critically and clearly (b) adopting the scientific method and (c) working independently.</p>



APB GOVERNMENT PG COLLEGE AGASTYAMUNI

DEPARTMENT OF POLITICAL SCIENCE

PROGRAMME AND COURSE OUTCOME (2021-2022)

Undergraduate:

B.A. Ist year

Paper 1- Political theory

Course Outcome- This course on political theory aims to provide students a sound understanding of political science, including various approaches, ideological perspectives and relationship with other Social Sciences. Students will be able to describe and comprehend various key concepts related to the discipline and develop their own understanding of politics. They will understand what power is and how it functions in society and politics. They will learn to comprehend and explain various theories and contemporary debates in democracy, liberty, equality.

Paper 2 : Comparative Government and politics

To familiarize students with the constitution of other countries as well so that they can acquire analytical skills to compare our constitution with that of other countries

B.A. 2nd Year

Paper 1 Representative political thinkers

Through this we can examine the views of some of the most prominent western political philosophers both Western and Indian and how their responses to political issues profoundly affected the subsequent political thought.

Paper 2 Indian government and politics

The course conveys the whole body of knowledge to the students about Indian Government and Politics. This encourages the students to think and analyse about the politics of our nation. And in addition to it it is very useful as a vast majority of questions in government competitive exams comes from this section

Ba 3rd year

Paper 1- International Politics and relations

Inculcates knowledge of various concepts of International Relations for example Collective

Security, Balance of Power etc. It also helps to understand various process of International Relation.

It enables the students to understand about the various issues of International Relations like global terrorism, issues between India and different neighboring countries like Pakistan, Bangladesh and China. It also gives knowledge about various other aspects like New International /Economic Order and Studies about Global Organizations like WTO, Regional organisations like ASEAN , Oau etc .It helps the students to analyze all the issues which the current world is dealing with.

Paper 2: Elements of public administration

This paper helps in understanding varing processes involved in public policy making and administration. It is also helpful for civil service exam perpration.

Programme outcome:

PO1-Understanding the inter relationship between policy decisions and its effects on society. This is achieved through a comprehensive teaching of the practice of public administration in India.

PO2- Critical thinking skills- This programme in political science helps in enhancing critical skilla of students by making them aware of conceptual topics which they deal on everyday basis like justice , Equality, Liberty etc

PO3 - Effective citizenship: the course curriculum inculcates among students a basic understanding of the rights and duties of citizenship and thereby to act as responsible citizens by studing constitution deeply and upholding its values both in letter and spirits.

PO4 - Gaining knowledge of both national as well as international political issues and analysing it in unbaised way.

M.a. in political science(4 semester)

Semester 1 -

Paper 1 :Western Ancient and Mediavel Political Thought

Understanding text-context relationship of political thought and of the contemporary relevance of key philosophical ideas.This helps in contextualizing the concepts and ideas as well as philosophical connections with more specialized domains of Political Science.

Paper 2 : Comparative Politics

: Helps in acquiring skills to compare the politics among nations .And applying the knowledge gained in understanding the politics of different nations and the political trends.

Paper 3 : Indian Political System

Helps in meaningfully participating in political debates and the ability to critically analyze the major issues in Indian politics.

To understand and form objective opinions about the issues in Indian politics.

Paper 4: Local Self Government in India

Helps in understanding the key problems at grass root level and making students aware of local level issue and politics.

Semester 2 -

Paper 1: Western Modern Political Thought

Gaining different perspective about key concept of different thinkers.

Paper 2: Modern Political Systems

Helps in gaining knowledge about political system across world. This in turn helps in comparing our own country's constitution with that of world.

Paper 3: India's Foreign Policy

Helps in gaining the ability to understand the objectives, goals and foreign policy trends at bilateral and multilateral levels.

And to apply the knowledge and predicting outcome as well as evaluating foreign policy decisions and strategies.

Paper 4: Research Methodology

Gaining knowledge in doing research in Political Science.

Also helps in NTA NET PAPER 1 and in Phd.

Paper 5: Viva-Voce

Helps students in presentation skills as viva is taken by external examiner.

Semester 3 -

Paper 1 : Indian Political Thought

Helps in understanding and contextualizing the ideas to contemporary realities.

And Developing the ability to critically assess and form opinions on philosophical and ideological issues relevant to contemporary India.

Paper 2: International Relations

students will develop theoretical insights on international relations and global politics. This will help them in undertaking academic assignments and research projects related with international issues which are becoming very salient in today's globalized world.

Paper 3: Public Administration

To apply the knowledge gained in understanding the role of administration. Ability to use knowledge in administrative careers and in the field of policy science.

Paper 4: International Organization

Understanding the contemporary relevance of the UN and its relationship with other International Organization.

Semester 4-

Paper 1: Theories of International Politics

The students gain knowledge about different issues and perspectives of global politics.

Paper 2: International Law

Helps in understanding the concepts and subjects of International Law and To have an understanding of the nuances of International Law.

Paper 3: Political Philosophy of Mahatma Gandhi

Helps learn Gandhian ideas and helps in understanding its relevance in the current era.

Paper 4: Human Rights

Helps in application of the knowledge of human rights issues and violations.

Paper 5: Dissertation / Viva

Students have an option of preparing dissertation or viva.

Dissertation helps students in enhancing research and questioning skills of students. It will further help students during their PhD or if they want to join a research project or to conduct their own research.

Programme outcomes-

1- This post graduate programme in political science helps in gaining in depth knowledge of the subject.

2. New course like human rights, philosophy of Mahatma Gandhi, International Law has been included in which is very relevant in current time.

3. This programme will equip students with critical and analytical skills which will not only be good

for their academics but will make them a well informed citizen.

4. This programme will provide learners with knowledge and skills needed to prepare for a professional career as a teacher, administrator, political scientists, lawyers etc. It also provides basic knowledge about the basics of political education. It trains students about the politics and government at local, state, national and global levels.

5. A major chunk of syllabus has been covered which will help students prepare for NET exam , civil services optional as well as general studies plus other group C exam.

Year -2022-2023

Department of sociology

1-Program Outcomes-

Program outcome Sociology learning provides initial knowledge about society. Social life and social interactions. It prepares an individual to social life by inculcating values, morals, and manners. It gives knowledge about communities in which he interacts like rural urban and tribal communities.

3- Program Specific Outcomes-

Sociology seeks to understand all aspects of human social behavior, including the behavior of individuals as well as the social dynamics of small Group, large organizations, commonalities, institution, and entire societies. Sociology provides an intellectual background for students considering careers in the professions or business. An Graduate student of sociology should able to develop:

Course Outcomes- B.A 1 semester

Core paper- Introductory to sociology.

The course is intended to introduce the students to a sociological way of thinking. It provides an understanding of the discipline of Sociology and sociological perspective. It also provides foundation for other more detailed and specialized courses in sociology. Students will be able to Define Sociology and demonstrate nature, scope and subject-matter of Sociology. • Demonstrate how Sociology differ from and similar to other social sciences and their • areas of interdependence. Acquaint themselves with the basic concepts of Sociology like society, community, •

association, culture, social change, social stratification etc. Know the basic social institutions like family, marriage, kinship in a scientific way. • Understand and demonstrate how self develops through various process of interaction. • Demonstrate how societal and structural

factors influence individual behaviour. Explain social change and the factors affecting social change. Realize the importance of • cultural lag to understand social change.

B.A 2nd year

paper 1st Process of social change and social change india.

Sociology of Social Change-this course aims at providing a theoretical knowledge on social change and development. It will enable the students to understand the processes of change and development in society. This course is expected to clarify and broaden the structure of Indian society and changing aspects with the process. Social change has central concern of sociological study. Change has its pattern which is spelt out by various factors. This paper also provides a whole idea to the students about the process, theories and factors of social change. They can relate their experience with theoretical explanation. After completing the course, students can - Derive knowledge about the meaning, nature, forms and patterns of change. - Get an idea about the theories and factors of social change. - Learn about development programmes in India and also analyse its success and failures. - Learn about development issues of ecology and environment

Paper 2nd Social research and techniques of data collection and statistical analysis.

The course is an introductory course on how research is actually done. With emphasis on formulating research design, methods of data collection, and data analysis, it will provide students with some elementary knowledge on how to conduct both, quantitative and qualitative research. Field work is an applied part of social research methods. This paper aims to acquaint students with empirical field data collection, analysis and writing analytical and standard dissertation or research report in sociology. From the course students will be able to learn about Meaning, scope, types and significance of Social Research. • Importance of research design in Social Research and how to formulate it. •

B.A 3rd year

1st Paper

Classical and Indian sociological thought)

This course provides an understanding of the different sociological thoughts and the students will be able to - Understand of founding father of sociology like Auguste Comte and his different

contributions on thoughts like law of three stages, social statics, social dynamics, cybernetic hierarchy of sciences, positivism. - Understand Herbert The course aims to provide a general introduction to development of sociological thought in and influence of ancient, medieval, western on sociological development in India; pre independence, post independence and contemporary sociological thought in India. In the completion of this course the student will be able to: - Understand important contributions on Indian social thought from Swami Vivekananda, M.K. Gandhi, Radhakamal Mukherjee, G.S. Ghurye, Louis Dumont. - Understand structural and functional perspective of M.N. Srinivas, S.C Dube, D. P. Mukherji, A.R. Desai, Ramkrishna Mukherjee.

2nd Paper

Rural sociology and Indian Rural social Problem

The course explores substantive issues in Rural Sociology. It gives attention to Indian themes. Studying the course students will be able to Define Rural Sociology and demonstrate nature, subject-matter and importance of

- studying Rural Sociology. Understand and analyze social, economic and political aspects of rural society.
- Demonstrate how caste system operates and its importance in rural society.
- Define and demonstrate democratic decentralization of power and importance of
- Panchayati Raj Institution in bringing about changes in rural society. Understand the changes that are taking place in rural society with reference to agrarian
- reforms and rural development program.

OUTCOME OF SYLLABUS

DEPARTMENT OF ZOOLOGY

UG LEVEL (New Education Policy –2020)

Animal Physiology and Biochemistry

The outcomes of syllabus such as Physiology and Biochemistry for first semester students may vary depending on the course objectives, content, and assessment methods of different institutions. However, some general outcomes that can be expected are:

- Students will be able to explain the basic concepts and principles of physiology and biochemistry, such as the structure and function of biomolecules, cells, tissues, organs, and systems, and the metabolic pathways and regulatory mechanisms that maintain homeostasis in living organisms.
- Students will be able to apply their knowledge of physiology and biochemistry to solve problems and analyse data related to various aspects of human health and disease, such as nutrition, metabolism, endocrinology, immunology, pharmacology, and genetics.
- Students will be able to perform laboratory experiments and techniques in physiology and biochemistry, such as pH measurement, solution preparation, enzyme kinetics,

spectrophotometry, chromatography, electrophoresis, and PCR, and interpret and report the results using appropriate scientific methods and communication skills.

- Students will be able to demonstrate critical thinking, research, and lifelong learning skills by reviewing and evaluating scientific literature and information sources in physiology and biochemistry, and by engaging in collaborative and independent learning activities.

Cell Biology and Genetics

- The outcomes of the syllabus Cell Biology and Genetics for the 2nd Sem. students may vary depending on the course objectives, content, and assessment methods of different institutions. However, some general outcomes that can be expected are:
 - Students will be able to understand the structure and function of cells and their organelles, and the molecular basis of inheritance and gene expression.
 - Students will be able to apply the principles of Mendelian and non-mendelian genetics to analyze patterns of inheritance, variation, and evolution in living organisms.
 - Students will be able to perform laboratory techniques and experiments in cell biology and genetics, such as microscopy,

staining, cell culture, DNA extraction, PCR, gel electrophoresis, and gene mapping.

- Students will be able to demonstrate critical thinking, research, and communication skills by reviewing and evaluating scientific literature and information sources in cell biology and genetics, and by presenting and reporting their findings using appropriate formats and conventions.

Molecular Biology, Histology and Toxicology

The outcomes of the syllabus Molecular Biology, Histology and Toxicology for 3rd semester students may vary depending on the course objectives, content, and assessment methods of different institutions. However, some general outcomes that can be expected are:

Students will be able to understand the molecular mechanisms of gene expression, regulation, and manipulation, and the applications of molecular biology techniques in biotechnology, medicine, and agriculture.

Students will be able to identify the structure and function of different types of cells, tissues, and organs, and the methods of preparation, staining, and observation of histological specimens using microscopy.

Students will be able to describe the sources, effects, and mechanisms of action of various toxic substances on living systems, and the methods of detection, prevention, and treatment of toxicity and poisoning.

Students will be able to perform laboratory experiments and techniques in molecular biology, histology, and toxicology, such as DNA isolation, PCR, gel electrophoresis, tissue processing, histopathology, and toxicological assays.

Students will be able to demonstrate critical thinking, research, and communication skills by reviewing and evaluating scientific literature and information sources in molecular biology, histology, and toxicology, and by presenting and reporting their findings using appropriate formats and conventions.

Microbiology and Animal Behaviour

The outcomes of the syllabus Microbiology and Animal Behaviour for 4th semester students may vary depending on the course objectives, content, and assessment methods of different institutions. However, some general outcomes that can be expected are:

Students will be able to understand the diversity, structure, function, and interactions of microorganisms in various

environments, and the applications of microbiology in biotechnology, medicine, and agriculture.

Students will be able to understand the principles, methods, and theories of animal behaviour, and the evolutionary, ecological, and physiological factors that influence the behaviour of animals in different contexts.

Students will be able to perform laboratory experiments and techniques in microbiology and animal behaviour, such as microbial culture, staining, identification, isolation, and enumeration, and behavioural observation, measurement, and analysis.

Students will be able to demonstrate critical thinking, research, and communication skills by reviewing and evaluating scientific literature and information sources in microbiology and animal behaviour, and by presenting and reporting their findings using appropriate formats and conventions.

Public health and hygiene– Skill/Vocational

The outcomes of skill/vocational syllabus public health and hygiene for future endeavour may vary depending on the course objectives, content, and assessment methods of different institutions. However, some general outcomes that can be expected are:

- Students will be able to understand the importance of sanitation, health, and hygiene for preventing and controlling diseases and promoting well-being.
- Students will be able to apply the principles and practices of public health and hygiene in various settings, such as municipal corporations, trade fairs, public health sanitation, water supply, food safety, waste management, and disaster management.
- Students will be able to perform the duties and responsibilities of a sanitary inspector, such as inspecting, monitoring, reporting, and enforcing the health and hygiene standards and regulations in their assigned areas.
- Students will be able to demonstrate professional skills, knowledge, and employability skills, such as communication, teamwork, problem-solving, research, and lifelong learning, while performing their jobs.

PG Level

Specialization in Environmental Science

- The outcomes of syllabus for M.Sc. specialization in environmental science may vary depending on the course objectives, content, and assessment methods of different institutions. However, some general outcomes that can be expected are:

- Students will be able to demonstrate advanced knowledge and understanding of the concepts, principles, and methods of environmental science, such as ecology, biodiversity, climate change, pollution, conservation, and sustainability.
- Students will be able to apply their skills and knowledge to conduct independent research and solve complex environmental problems using appropriate scientific methods, tools, and techniques, such as fieldwork, laboratory analysis, statistical analysis, GIS, and remote sensing.
- Students will be able to communicate effectively and ethically their research findings and recommendations to various audiences, such as peers, experts, policy makers, and the public, using oral, written, and visual formats.
- Students will be able to develop a critical and reflective attitude towards their own learning and professional development, and engage in lifelong learning and continuous improvement of their environmental science competencies.

Methods and techniques

The outcomes of syllabus for M.Sc methods and techniques include molecular biology, biostatistics, ecology may vary depending on the course objectives, content, and assessment methods of different institutions. However, some general outcomes that can be expected are:

- Students will be able to demonstrate advanced knowledge and understanding of the concepts, principles, and methods of molecular biology, biostatistics, and ecology, and their applications in various fields of life sciences.
- Students will be able to apply their skills and knowledge to design, conduct, analyze, and interpret experiments and data using various molecular, statistical, and ecological techniques, such as PCR, gel electrophoresis, DNA sequencing, hypothesis testing, ANOVA, regression, sampling, diversity, and population dynamics.
- Students will be able to communicate effectively and ethically their research findings and recommendations to various audiences, such as peers, experts, policy makers, and the public, using oral, written, and visual formats.
- Students will be able to develop a critical and reflective attitude towards their own learning and professional development, and engage in lifelong learning and continuous improvement of their methods and techniques competencies.

Immunology, Genetics, Endocrinology, Developmental Biology and Parasitology

The outcomes of syllabus for M.Sc. students in immunology, genetics, parasitology, developmental biology, and endocrinology may vary depending on the course objectives,

content, and assessment methods of different institutions. However, some general outcomes that can be expected are:

- Students will be able to demonstrate advanced knowledge and understanding of the concepts, principles, and methods of immunology, genetics, parasitology, developmental biology, and endocrinology, and their applications in various fields of life sciences.
- Students will be able to apply their skills and knowledge to design, conduct, analyze, and interpret experiments and data using various immunological, genetic, parasitological, developmental, and endocrinological techniques, such as ELISA, flow cytometry, PCR, gel electrophoresis, DNA sequencing, parasite culture, microscopy, histology, gene expression, and hormone assays.
- Students will be able to communicate effectively and ethically their research findings and recommendations to various audiences, such as peers, experts, policy makers, and the public, using oral, written, and visual formats.
- Students will be able to develop a critical and reflective attitude towards their own learning and professional development, and engage in lifelong learning and continuous improvement of their immunological, genetic, parasitological, developmental, and endocrinological competencies.

Laboratory Skills

Outcomes of various laboratory skills that students acquire during different types of experiments:

1. Immunology Experiments:

- **Skills Gained:** Students learn about the immune system, antibody–antigen interactions, and immune responses.
- **Outcomes:**
 - Understand the principles of immunology.
 - Perform techniques like ELISA (enzyme–linked immunosorbent assay) and Western blotting.
 - Analyze immune responses and interpret results.

2. Specimen Identification:

- **Skills Gained:** Students learn to identify and classify various biological specimens.
- **Outcomes:**
 - Develop observational skills.
 - Understand taxonomic classification.
 - Learn to use dichotomous keys and other identification tools.

3. Genetic Exercises:

- **Skills Gained:** Students explore genetic concepts and techniques.
- **Outcomes:**
 - Understand Mendelian genetics, inheritance patterns, and genetic variation.
 - Perform genetic crosses (e.g., Punnett squares).
 - Analyze data related to gene expression and inheritance.

4. Microorganism Studies:

- **Skills Gained:** Students work with microorganisms (bacteria, fungi, viruses).
- **Outcomes:**
 - Cultivate and isolate microorganisms.
 - Perform staining techniques (e.g., Gram staining).
 - Understand microbial growth, metabolism, and pathogenesis.

5. Ecological Investigations:

- **Skills Gained:** Students explore ecosystems and interactions between organisms and their environment.
- **Outcomes:**
 - Conduct fieldwork (e.g., sampling, biodiversity assessment).
 - Analyze ecological data.
 - Understand population dynamics, community structure, and ecosystem processes.

6. Molecular Demonstrations:

- **Skills Gained:** Students work with biomolecules (DNA, proteins, enzymes).
- **Outcomes:**
 - Perform DNA extraction, PCR (polymerase chain reaction), and gel electrophoresis.
 - Understand molecular biology techniques.
 - Interpret experimental results.

Thanks

Department of Zoology

Government Post Graduate College Agastyamuni

COURSE INTRODUCTION

The new curriculum of B.Sc. in Science (Botany) offers essential knowledge and technical skills to study plants in a holistic manner. Students would be trained in all areas of plant biology using a unique combination of core, elective and vocational papers with significant inter-disciplinary components. Students would be exposed to cutting-edge technologies that are currently being used in the study of plant life forms, their evolution and interactions with other organisms within the ecosystem. Students would also become aware of the social and environmental significance of plants and their relevance to the national economy.

B.Sc. Botany Programme covers academic activities within the classroom sessions along with practical concepts at laboratory sessions. Infield, outstation activities and projects would also be organized for real-life experience and learning. Candidates who have curiosity in plants kingdom, ecosystem, love exploring exotic places and wish to work as researchers or professions like Botanist, Conservationist, Ecologist, etc. can choose B.Sc. Botany course.

Programme outcomes (POs):

Transformed curriculum shall develop educated outcome-oriented candidature, fostered with discovery- learning, equipped with practice & skills to deal practical problems and versed with recent pedagogical trends in education including e-learning, flipped class and hybrid learning to develop into responsible citizen for nation-building and transforming the country towards the future with their knowledge gained in the field of plant science.

PO1	CBCS syllabus with a combination of general and specialized education shall introduce the concepts of breadth and depth in learning.
PO2	Shall produce competent plant biologists who can employ and implement their gained knowledge in basic and applied aspects that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare and environment to provide sustainable development.
PO3	Will increase the ability of critical thinking, development of scientific attitude, handling of problems and generating solutions, improve practical skills, enhance communication skill, social interaction, and increase awareness in judicious use of plant resources by recognizing the ethical value system.
PO4	The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET, UPSC Civil Services Examination, IFS, NSC, FCI, BSI, FRI etc.

Divya
10/08/21



PO5	Certificate and diploma courses are framed to generate self- entrepreneurship and self- employability, if multi exit option is opted.
PO6	Lifelong learning is achieved by drawing attention to the vast world of knowledge of plants and their domestication.

Programme specific objectives (PSOs): B.Sc. I Year Certificate Course in Basic Botany

- This certificate course will provide knowledge on various fields of basic Botany.
- The syllabus is prepared to enable students for competitive exams in frontier areas of plant sciences.
- Students will be able to know about habit, habitat, morphology, anatomy and reproduction of various plant groups.

Programme specific outcomes (PSOs): B.Sc. II Year/ Diploma Course in Developmental Botany

- This programme will provide knowledge on plant anatomy, embryology and cytogenetics.
- Laboratory sessions following theory will provide easy understanding of internal structure of various plant parts, structural organization, reproductive biology and genetics.
- This course will help students to become a plant morphologist.

Programme specific outcomes (PSOs): B.Sc. III Year/ Bachelor of Science

- The three year learning outcome of graduation will provide understanding of plant systematic, developmental biology, ecology, statistics, physiology, biochemistry, anatomy, and plant genetics.
- It will provide expertise in conservation biology and reproduction biology.
- After completing this course successfully students will be able to contribute in the field of plant sciences. The research project will help to develop research aptitude for higher education and scientific research.

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19/08/22

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