POs, PSOs and COs

Programme Outcomes

Choice Based Credit System - 2019 (A.Y. 2021-22)

FACULTY OF ARTS

B. A.

PO-1. To enrich communicational and interpretative skills of the students.

PO-2. To enrich students' understanding of local, national and other alien cultures.

PO-3.To Acquire knowledge with facts and figures related concerned with subjects such as History, Geography, Economics, Languages, etc

PO-4.To develop a non- prejudiced approach towards society, history, culture, literature, language etc.

PO-5.To Identify the basic concepts, fundamental principles, and various theories in the above mentioned subjects.

PO- 6. To instill the values preserved in Indian Constitution.

PO-7. To sensitize students to gender equality.

PO-8. To enable students to integrate the academic syllabi to adoptive the competencies that are required for today's job markets.

PO- 9. To develop soft skills of the students.

PO-10. To develop multicultural attitude among the students.

PO-11. To acquire holistic development of the students with respect to aesthetic, mental, moral, intellectual aspects that will lead to a healthy society.

PO-12. To understand the interdependence and interface of literature and social sciences have become able to think of the solutions to the existing social problems.

FACULTY OF COMMERCE

B. Com

PO-1 Developed management skills.

PO-2 Developed Entrepreneurial ability.

PO-3 Developed numerical ability.

PO-4 Well familiar with business regulatory framework.

PO-5 Having basic knowledge of important business laws, financial accounting and Management Accounting

Master of Commerce [M. Com]

PO-1To equip and train Post Graduate students to accept the challenges of business world by providing opportunities for study and analysis of advanced commercial and business methods and processes.

PO-2 To develop independent logical thinking and facilitate personality development.

PO-3 To equip the students to seek suitable careers in management and entrepreneurship.

PO-4 To acquaint students with significance of research in business.

PO-5 To impart skills regarding methods of data collection and their interpretations.

Faculty of Science

B.Sc.

PO-1: Conduct research relevant to a scientific issue, evaluate different sources of Information including secondary data, understanding that a source may lack detail or show bias.

PO–2: It helps to develop scientific temper and thus can prove to be more beneficial for the society as the scientific developments can make a nation to grow at a rapid pace.

PO-3: After the completion of this course students have the option to go for higher studies i.e. M.Sc. and then do some research for the welfare of mankind.

PO–4: After higher studies students can join as scientist and can even look for professional job oriented courses.

M.Sc. Analytical Chemistry

PO-1: Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry.

PO-2: Solve the problem and also think methodically, independently and draw a logical conclusion.

PO- 3: Create an awareness of the impact of Chemistry on the society, and development outside the scientific community.

PO-4: Become professionally trained in the area of Industry, material science, lasers and Nano-Technology.

PO-5: Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Chemistry experiments.

PO-6: To inculcate the scientific temperament in the students and outside the scientific community.

PO-7: Apply modern methods of analysis to chemical systems in a laboratory setting.

Programme Specific Outcomes [PSOs]

ARTS FACULTY

B. A.

DEPARTMENT OF MARATHI

PSO1.मराठी भाषा, साहित्य आणि मराठी संस्कृती विषयक जाणीव विकसित होते.

PSO2.साहित्य विषयक अभिरुचि विकसित होईल.

PSO3.भाषिक कौशल्य विकास होईल.

PSO4.मराठी भाषेची उपयोजनात्मक कौशल्ये विकसित होतील.

PSO5.साहित्याभ्यासातून जीवन विषयक समाज विकसित होईल.

PSO6.व्यावसायाभिमुख मराठी विषयासंबंधित अभ्यासक्रमातून नोकरीच्या संधि उपलब्ध होतील.

DEPARTMENT OF HINDI

बी.ए. हिंदी पाठ्यचर्या अध्ययन के पश्चात हिंदी का छात्र निम्नांकित विशिष्ट परिणाम प्राप्त कर सकेगा :

PSO1. साहित्य की विभिन्न विधाओं का परिचय प्राप्त होगा।

PSO2. साहित्यिक रूपों का दृष्टिकोण विकसित होगा।

PSO3. पठन, लेखन और संवाद कौशल का विकास होगा।

PSO4. हिंदी साहित्य के विभिन्न कालों के बारे में विशेष विशेषताओं के साथ जानकारी प्राप्त होगी।

PSO5. विद्वानों द्वारा रखी गई नींव के आधार पर साहित्यिक कार्यों जानकारी प्राप्त होगी।

PSO6. साहित्यिक सिद्धांतों के बारे में जानकारी प्राप्त होगी।

PSO7. हिंदी भाषाविज्ञान और व्याकरण की जानकारी प्राप्त होगी।

DEPARTMENT OF ENGLISH

PSO:1-Understand various genres of literature.

PSO:2-Develop the approach of literary forms.

PSO:3-Inculcate the human values for one's transformation of behavior.

PSO:4-Understand various periods of English literature with special characteristics.

PSO:5-Compare literary works of the great writers and philosophers by using their logic and literary competency.

PSO:6-Nurture themselves in soft skills and develop research aptitude.

DEPARTMENT OF ECONOMICS

PSO- 1. Understand basic concepts of Economics.

PSO- 2. Analyze Economic behavior in practice.

PSO- 3. Understand the Economic way of thinking.

PSO- 4. Analyze historical and content event from an economic perspective.

PSO- 5. Write clearly expressing an economic point of view.

PSO- 6. Find alternative approaches to economic problems through exposure to coursework in allied fields.

PSO- 7. Create student's ability to suggested solutions for various economic problems.

DEPARTMENT OF POLITICS

PSO- 1. Understand basic concepts of political science.

PSO-2. Analyze political behavior in practice.

PSO-3.Understand the political ways of thinking.

PSO4. Analyze historical and current events from political perspective.

PSO-5. Write clearly expressing political point of view.

PROGRAMME – SPECIFIC OUTCOMES

DEPARTMENT OF HISTORY

BACHELOR ARTS (B.A.) IN HISTORY

PSO 1 :- Unerstand the basic themes,Concepts,Chronology and the scope of Indian History.

PSO 2 :- Acquaint with range of issues related to Indian History that span distinct eras.

PSO 3:- Understand the history of countries other than India with compaerative approach.

PSO 4 :- Think and orgue historically and critically in writing and discussing.

PSO 5:- Prepare for various types of Competitive Examinations.

PSO 6:- Critically recongnise the Social,Political,Economic and Cultural aspects of History.

PSO 7:- The study of language and culture through ancient Historical Inscriptions,Stone Carvings and Pictures.

DEPARTMENT OF GEOGRAPHY

PSO-1. Exhibit detail knowledge about the basic concepts, principles and theories in various areas of Geography.

PSO-2. Understand the various processes in Physical and Human Geography.

PSO-3. Apply new techniques in learning geography.

PSO-4. Solve various socio-cultural and natural problems with the help of geographical knowledge.

PSO-5. Develop various skills related to Geographical practical.

COMMERCE FACULTY

PROGRAMME SPECIFIC OUTCOMES

DEARTMENT OF COMMERC [B. Com]

PSO-1. Developed management skills.

PSO-2. Developed Entrepreneurial ability.

PSO-3. Developed numerical ability.

PSO-4. Well familiar with business regulatory framework.

PSO-5. Basic knowledge of important business laws, financial accounting and Management Accounting.

MASTER OF COMMERCE [M. Com]

PSO-1. Students will demonstrate progressive affective domain development of values, the role of accounting in society and business.

PSO-2. Students will learn relevant financial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.

PSO-3. Students will learn relevant managerial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.

PSO-4. Leaners will gain thorough systematic and subject skills within various disciplines of commerce, business, accounting, economics, finance, auditing and marketing.

SCIENCE FACULTY

PROGRAMME SPECIFIC OUTCOMES [PSOs]

BSc-Chemistry

PSO-1. Learn about chemistry with both theory and practical.

PSO- 2. To explain chemical reaction names, stereochemistry, structures, reactivity, and mechanism.

PSO-3. Solve numerical problems by identifying chemical formulae.

PSO-4. Modern chemical tools, such as models, chem.-draw, charts, and equipment should be used.

PSO-5. Understand the link between structure and activity.

PSO-6. Know how to conduct yourself in a laboratory and how to keep yourself safe.

PSO-7. Improve your research skills.

PSO-8. Make you aware of the complex instruments/equipment and how to handle them.

M.Sc.-Analytical Chemistry

1. Learn about the potential uses of analytical industrial chemistry.

2. Carry out experiments in the area of organic analysis, estimation, a separation,

derivation process, conducts metric and potentiometric analysis.

3. Learn the classical status of thermodynamics.

4. Gathers attention about the physical aspects of atomic structure, various energy

transformation, molecular assembly in Nano level and significance of electrochemistry.

5. Understand good laboratory practices and safety.

6. Introduce advanced techniques and ideas required in developing area of Chemistry.

7. Make aware and handle the sophisticated instruments/equipments.

BSc- Botany

PSO-1. Students acquire fundamental Botanical knowledge through theory and practicals.

PSO-2. To explain basis plant of life, reproduction and their survival in nature.

PSO-3. Helped to understand role of living and fossil plants in our life. PSO-4. Understand good laboratory practices and safety.

PSO-5. To create awareness about cultivation, conservation and sustainable utilization of biodiversity

PSO-6. To know advance techniques in plant sciences like tissue culture, Phytoremediation, plant disease management, formulation of new herbal drugs etc.

PSO-7. Students able to start nursery, mushroom cultivation, biofertilizer production, fruit preservation and horticultural practices.

BSc-Physics

POS-1. Understanding of core knowledge on various papers of Physics. Clear the concepts which help them in understanding physical phenomenon in nature.

PSO-2. Demonstrate skills and competencies to conduct scientific experiments related to Physics.

PSO-3. Identify their areas of interest and further specialize in the Physics.

PSO-4. Analyze situations, search for truth and extract information, formulate and solve problems in a systematic and logical manner.

PSO-5. Possess advanced knowledge and skills in job market for various technical industries.

BSc- Zoology

PSO- 1. Analyze, plan and apply the Applied knowledge in Animal Sciences

PSO- 2. Apply knowledge of Animals, insects, Birds and reptiles for the benefits of society

3. To inculcate interest of the students in Animal sciences by giving direct exposure in the field

PSO- 4. To inculcate conceptual understanding in Animal sciences by field visits

PSO- 5. Development of appropriate practical skills with commercial approach

BSc- Mathematics

PSO- 1. Develop an understanding of basic underlying structures of mathematics e.g. Sets, relations, functions and be well trained in basic manipulative skills involving algebra, geometry, trigonometry, differential equations and calculus

PSO- 2. Be able to transmit mathematical statements, ideas and concepts clearly and effectively

both orally and in writing with appropriate use of mathematical terminologies, notations, precise language and accurate proof technique

PSO- 3. Get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning etc.

PSO- 4. Gain exposure to a variety of areas of mathematics and related fields such as computer science, the natural sciences, business and economics

PSO- 5. Be trained in using various computer algebra systems like maxima, sage and type setting software like latex.

AS PER SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE

COURSE OUTCOMES (COs)

DEPARTMENT OF MARATHI : 2021-22		
Class	**Course (Paper No., Code No. & Title)**	**Outcomes**
FYBA Marathi Gen (CBCS-2019) Sem. I	[CC-1A] 11021, Marathi Sahitya : Katha & Bhashik Koushalyavikas	CO1. विद्यार्थ्यांना मराठी साहित्य तसेच कथा या साहित्यप्रकाराची ओळख होते. CO2. मराठी कथेचे स्वरूप आणि वाटचाल लक्षात येते. CO3. समकालीन मराठी कथाकारांचा परिचय होतो. CO4. नैसर्गिक, अर्जित आणि प्रगत अशी भाषिक कौशल्य विकसित होतात.
FYBA Marathi Gen (CBCS-2019) Sem. II	[CC-1A] 12021, Marathi Sahitya : Akankika & Bhashik Koushalyavikas	CO1. विद्यार्थ्यांना एकांकिका या साहित्यप्रकाराचा परिचय होतो. CO2. एकांकिकेचे संहितामूल्य व प्रयोगमूल्य समजते. CO3. निवडक एकांकिकांचे अध्ययन होते. CO4. भाषा उपयोजनाची विविध आविष्कार रुपे परिचित होतात.
SYBA (CBCS-2020) Sem. III	MIL – 2, (23011) Marathi Bhashik Sandynapankaushalye	CO1. विद्यार्थ्यांना भाषा आणि व्यक्तिमत्व विकास यांचा सहसंबंध लक्षात येतो. .2CO विद्यार्थ्यांची प्रगत भाषिक कौशल्य क्षमता विकसित होते. .3CO लोकशाहीतील जीवनव्यवहार आणि प्रसारमाध्यमे यांचे परस्पर संबंध समजतात. CO4. प्रसारमाध्यमांसाठी लेखनक्षमता विकसित होते.
	S 1, [DSE-1A (3)] (23021), Adhunik Marathi Sahitya : Prakashvata	CO1. विद्यार्थ्यांना ललित गद्यातील अन्य साहित्यप्रकारच्या तुलनेत आत्मचरित्राचे वेगळेपण समजते. .2COमराठी आत्मचरित्राचे स्वरूप, संकल्पना लक्षात येते. .3COविद्यार्थ्यांना प्रकाशवाटा या आत्मचरित्राचे आकलन, आस्वाद आणि विश्लेषण करता येते.
	S-2, DSE-2A, (23022), Sahitya Vichar	CO1. विद्यार्थ्यांना साहित्याची संकल्पना, स्वरूप आणि प्रयोजन ज्ञात होते. CO 2. साहित्याची निर्मितीप्रक्रिया समजते. CO 3. साहित्याची भाषा आणि शैलीविचार यांचे आकलन होते.

	G-2, [CC-1C], (23023), Bhashik Kaushalyavikas Ani Adhunik Marathi Sahityaprakar : Kadambari	CO 1. विद्यार्थ्यांचा उपयोजित मराठी व भाषिक कौशल्यविकास होतो. CO 2. कादंबरी या साहित्यप्रकाराचे स्वरूप, घटक, प्रकार आणि वाटचाल समजते. CO 3. विद्यार्थी 'रारंग ढंग' या कादंबरीचे आकलन, आस्वाद आणि विश्लेषण करतात.
	SEC-2A, (23025) Prakashan Vyavahar Ani Sampadan	CO 1. विद्यार्थ्यांना प्रकाशनविश्वाची ओळख होते. CO 2. प्रकाशन व्यवहार आणि संपादन यासाठी आवश्यक असणारी कौशल्ये लक्षात येतात. CO 3. विद्यार्थी प्रकाशन संस्था आणि वितरण व्यवस्था यांना प्रत्यक्ष भेटी देऊन प्रशिक्षण घेतात. CO 4. मराठी शुद्धलेखन नियमावलीनुसार विद्यार्थी लेखन करतात.
SYBA (CBCS-2020) Sem. IV	MIL- 2 (2), 24011, Navamadhyame Ani Samajmadhyamansathi Marathi	CO1. विद्यार्थ्यांना संज्ञापनातील नवमाध्यमे आणि समाजमाध्यमांचे स्वरूपाचे आकलन होते. CO .2विद्यार्थ्यांमध्ये नवमाध्यमे आणि समाजमाध्यमांसाठी लेखनक्षमता विकसित होते. CO3. विद्यार्थ्यांमध्ये नवमाध्यमे आणि समाजमाध्यमांविषयी साक्षरता, वापर आणि परिणाम याविषयीची जाणीवजागृती होते.
	S-1-(DSE-1B) (24021) Madhyayugin Marathi Sahitya : Nivdak Madhyayugin Gadya-Padya	CO1. विद्यार्थ्यांना मध्ययुगीन गद्य-पद्य साहित्य प्रकारांची ओळख होते. CO .2विद्यार्थ्यांमध्ये गद्य-पद्याचे आकलन आणि आस्वाद करण्याची क्षमता प्राप्त होते. CO3. निवडक मध्ययुगीन गद्य, पद्य यांचे विश्लेषण करता येते.
	S-2, (24022) (DSE 2 B) (3) Sahitya Samiksha	CO 1. विद्यार्थ्यांना साहित्य समीक्षेची संकल्पना, स्वरूप यांचा परिचय होतो. CO 2. साहित्य आणि समीक्षा यांचे परस्पर संबंध लक्षात येतात. CO 3. ग्रंथ परिचय, परीक्षण व समीक्षण यातील फरक विद्यार्थ्यांना समजतो.
	G-2 [CC-1D (3)] (24023) Bhashik Kaushalyavikas	CO 1. विद्यार्थ्यांना सायबर संस्कृतीची ओळख होते. CO 2. ललित गद्य या साहित्यप्रकारचे स्वरूप, घटक समजतात.

	Ani Adhunik Marathi Sahityaprakar : Lalit Gadya	CO 3. विद्यार्थ्यांना 'साहित्यरंग' या ललित गद्याचे आकलन होते. CO 4. नेमलेल्या अभ्यासपुस्तकाचे विद्यार्थी आस्वाद आणि विश्लेषण करतात
	SEC- 2 B(2) 24025, Upayojit lekhankaushalye	CO 1. जाहिरात आणि मुलाखतलेखन याविषयीची आवश्यक कौशल्ये अवगत होतात. CO 2. विद्यार्थी माहितीपर नोंदी करावयास शिकतो. CO 3. विद्यार्थ्यांना उपयोजित लेखनकौशल्ये अवगत होतात.
TYBA (CBCS-2021) Sem. V	S-3, DSE-1D (35021), Madhyayugin MarathiVangamayacha Sthul Itihas : Prarambh Te A. D.	CO 1. विद्यार्थ्यांना वाङ्.मयाचा इतिहास, संकल्पना, स्वरूप, प्रेरणा, प्रवृत्ती समजतात. CO 2. मध्ययुगीन कालखंडाची सामाजिक, सांस्कृतिक पार्श्वभूमी लक्षात येते. CO 3. मराठी साहित्याचा कालखंडानुरूप इतिहास समजून येतो. CO 4. मराठी वाङ्.मयाचा स्थूल इतिहास अभ्यासल्यानंतर विद्यार्थी संशोधन प्रकल्पाचे लेखन करतो.
	S-4, DSE-2C, (35022) Varnatmak Bhashavidyan : Bhag-1	CO 1. विद्यार्थ्याला भाषेचे स्वरूप, वैशिष्ट्ये आणि कार्य समजते. CO 2. भाषा अभ्यासाच्या शाखा आणि विविध पद्धतींचा परिचय होतो. CO 3. विद्यार्थ्यांना मानवी वागिन्द्रियाची रचना आणि कार्य समजते. CO 4. विद्यार्थ्यांना मराठीची स्वनिम व्यवस्था समजते. CO 5. अभ्यास विषयाच्या अनुषंगाने विद्यार्थी संशोधनपर प्रकल्प लेखन करतात.
	G-3, CC-1E, (35023) Bhashik Kaushalyavikas Ani Adhunik Marathi Sahitya Prakar : Prav	CO 1. विद्यार्थी मुद्रित माध्यमांसाठी लेखन कौशल्ये आत्मसात करतो. CO 2. प्रवासवर्णन या साहित्य प्रकाराचे स्वरूप समजते. CO 3. 'तीन मुलांचे चार दिवस' या प्रवासवर्णनाचे विद्यार्थी विश्लेषण करतात.
	SEC- 2C (35025) Karyakram Sanyojanatil Bhashik Kaushalye : Bhag 1	CO 1. विद्यार्थ्यांना मराठी भाषेची संवाद कौशल्ये अवगत होतात. CO 2. विद्यार्थी कार्यक्रमांचे स्वरूप आणि प्रकार समजून घेतो. CO 3. विद्यार्थ्यांना कार्यक्रम संयोजनातील भाषिक कौशल्ये प्राप्त होतात.

		CO 4. अभ्यासक्रमाचे अध्ययन केल्यानंतर विद्यार्थी 'मराठी भाषा दिन' कार्यक्रमाचे संयोजन करतात.
TYBA (CBCS-2021) Sem. VI	S-3, DSE-1D, (36021), Madhyayugin MarathiVangamayacha Sthul Itihas : A.D. 1601	CO 1. विद्यार्थी काळानुरूप वाङ्. मयनिर्मितीचे आकलन करून मूल्यमापन करतात. CO 2. विद्यार्थी शिवकाल आणि पेशवेकाळातील सामाजिक, सांस्कृतिक पार्श्वभूमी अभ्यासतात. CO 3. विद्यार्थ्यांना बखर आणि गद्य वाङ्. मयनिर्मितीचे आकलन होते. CO 4. वारकरी पंथाचा अभ्यास करण्यासाठी विद्यार्थी क्षेत्र भेट देऊन संशोधनपर प्रकल्प लेखन करतात.
	S-4, DSE-2D, (36022) Varnatmak Bhashavidyan : Bhag-2	CO 1. रूपविन्यास आणि मराठीची रूपव्यवस्था लक्षात येते. CO 2. वाक्यविन्यास आणि वाक्यव्यवस्थेचा मराठी भाषेच्यासंदर्भात परिचय होतो. CO 3. विद्यार्थ्यांना अर्थविन्यास संकल्पना समजते. CO 4. अभ्यास विषयाच्या अनुषंगाने विद्यार्थी क्षेत्रकार्य विषयक प्रकल्प लेखन करतात.
	G-3, CC-1F, (36023) Bhashik Kaushalyavikas Ani Adhunik Marathi Sahitya Prakar : Kavi	CO 1. विद्यार्थ्यांना मराठी साहित्य, भाषिक कौशल्यविकास आणि शासनव्यवहार याची माहिती समजते. CO 2. कविता या साहित्यप्रकाराचे स्वरूप आकलन होते. CO 3. 'रूप :कवितेचे' या संपादित अभ्यासपुस्तकाचे विद्यार्थी आकलन, आस्वाद आणि विश्लेषण करतो.
	SEC- 2C (36025) Karyakram Sanyojanatil Bhashik Kaushalye : Bhag 2	CO 1. विद्यार्थी कार्यक्रम संयोजनातील लेखन कौशल्ये संपादन करतात. CO 2. आभासी कार्यक्रमांचे भाषिक कौशल्ये प्राप्त करतात. CO 3. विद्यार्थी कार्यक्रमाचे प्रभावी संयोजन आणि सूत्रसंचालन करतात.
FYBCom (CBCS-2019) Sem. I	117 B, Bhasha Sahity Ani Kayshalvikas :	CO 1. विद्यार्थी उत्स्फूर्तपणे निबंध लेखन करतात. CO 2. विद्यार्थ्यांना विविध क्षेत्रातील भाषा व्यवहाराचे स्वरूप समजते. CO 3. 'उत्कर्षवाटा' या अभ्यासपुस्तकाच्या माध्यमातून कर्तृत्ववान व्यक्तींच्या कार्याची व विचारांची ओळख होते.
	127B, Bhasha Ani Kaushalyavikas	CO 1. भाषा आणि कौशल्यविकास या माध्यमातून विद्यार्थी

FYBCom (CBCS-2019) Sem. II		व्यावहारिक मराठीचे उपयोजन करतो. CO 2. विद्यार्थी अर्जलेखन व पत्रलेखन अचूक करतो. CO 3. प्रशासनिक मराठीचे महत्त्व समजते. विद्यार्थ्याला जाहिरातशास्त्र समजून येते.
SYBSc (CBCS-2020) Sem. III	(AECC-2A) 33/ 23331, Upyojit Marathi	CO 1. विद्यार्थ्यांना भाषा आणि जीवनव्यवहार यांच्या परस्परसंबंधाची जाणीव होते. CO 2. मराठी भाषेचा परिभाषासापेक्ष आणि शैलीसापेक्ष विकास विद्यार्थ्यांच्या लक्षात येतो. CO 3. विद्यार्थ्यांची मराठी भाषेसंदर्भातील उपयोजनात्मक कौशल्ये विकसित होतात.
SYBSc (CBCS-2020) Sem. IV	(AECC-2B) 24331, Marathi Sahitya	CO 1. विद्यार्थ्यांमध्ये साहित्यविषयक अभिरुची निर्माण होते. CO 2. साहित्यविषयक अभ्यासातून जीवनविषयक समज विकसित होते. CO 3. विद्यार्थ्यांमध्ये विज्ञानसाहित्यविषयक आकलनक्षमता वाढते. CO 4. विद्यार्थी अचूक निबंधलेखन करतात.

DEPARTMENT OF HINDI - 2021-22

Class	Course	Outcomes
FYBA Hindi Gen (CBCS-2019) Semester –I & II	वैकल्पिक हिंदी (11091-1- A)	CO1. छात्रों को हिंदी साहित्य के काव्य तथा कहानियों का परिचय प्राप्त होगा।
		CO2. हिंदी भाषा में संप्रेषण कौशल विकसित होगा।
		CO3. मौलिक लेखन की ओर रुझान बढेगा ।
		CO4. हिंदी कंप्यूटिंग का सामान्य परिचय होगा ।
		CO5. राष्ट्रप्रेम, सामाजिक प्रतिबद्धता की भावना विकसित होती हैं।
	वैकल्पिक हिंदी (12092 1- B)	CO1. छात्र हिंदी काव्य तथा कहानी साहित्य से परिचित होते हैं।
		CO2. विज्ञापन, निबंध तथा स्ववृत्त लेखन कौशल विकसित होता है ।
		CO3. वाक्य शुद्धीकरण के कारण छात्र वर्तनीगत अशुद्धियों से परिचित होते हैं ।
		CO4. साहित्य की विभिन्न विधाएं निबंध, रेखाचित्र, यात्रावर्णन, व्यंग्य तथा एकांकी आदि से छात्र परिचित होते हैं ।
		CO5. राष्ट्रप्रेम, सामाजिक प्रतिबद्धता की भावना विकसित होती हैं।

SYBA (CBCS-2019)	हिंदी सामान्य पेपर २ (23093) (आधुनिक काव्य कहानी तथा व्यावहारिक हिंदी)	CO1. छात्र हिंदी के प्रतिनिधि कहानीकार और कवियों से परिचित होते है।
		CO2. छात्र हिंदी के प्रयोजनमूलक पक्ष से अवगत होते हैं।
		CO3. भाषा तंत्र का उपयोग एवं लेखन कौशल विकसित होता है ।
		CO4. साहित्य की विभिन्न विधाओं से परिचित हो जाते हैं और उनमें सर्जनात्मक कौशल का विकास होता है।
	हिंदी स्पेशल पेपर-1 काव्यशास्त्र सामान्य [23091] DSE-1A	CO1. भारतीय काव्यशास्त्र में रुचि पैदा होती है तथा आलोचनात्मक दृष्टि विकसित होती है ।
		CO2. छात्र साहित्य की विविध विधाओं से परिचित होते हैं।
		CO3. छात्र अपनी अभिव्यक्ति में शब्द शक्ति का प्रयोग करने लगते हैं ।
		CO4. छात्र महाकाव्य, खंडकाव्य और मुक्तक काव्य से परिचित होता है। साथ ही नाट्य अभिनय कला को आत्मसात करता है।
	उपन्यास, नाटक तथा मध्ययुगीन हिंदी काव्य 23092 DSE2 A	CO1. मध्ययुगीन प्रतिनिधि कवियों के योगदान तथा उनकी वैचारिक पृष्ठ्भूमि से छात्र परिचित होते हैं।
		CO2. छात्र हिंदी उपन्यास एवं नाटक की समीक्षा करते हैं। साथ ही हिंदी उपन्यास तथा नाटक के अध्ययन में रुचि निर्माण होती हैं ।
		CO3. साहित्य कृतियों के माध्यम से छात्र जीवनमूल्या को आत्मसात करना।
		CO4. विवेच्य साहित्य कृतियों के शिल्प तथा भाव पक्ष से परिचित होते है. साथ ही उनमें अभिनय कौशल विकसित होता है।
	SEC 2A (CBCS-2019) अनुवाद स्वरूप एवं व्यवहार (23096)	CO1. छात्र अनुवाद की आवश्यकता एवं महत्त्व समझते है और उनमे अनुवाद के माध्यम से रोजगार मिलने की आकांक्षा एवं रुची उत्पन्न होती है। CO2. छात्र अनुवाद के विविध क्षेत्रों से परिचित होते है। CO3. छात्र हिंदी - मराठी प्रत्यक्ष् अनुवाद कार्य विधि से परिचित होते हैं
	SEC 2A (CBCS-2019) माध्यम लेखन (24096)	CO1. छात्र विविध माध्यमों के लिए लेखन विधि से परिचित होता है। CO2. छात्र लेखन कौशल तंत्र से अवगत होता है। CO3. छात्र श्रव्य-दृश्य माध्यमों की भाषा से परिचित होता है।
TYBA Semester -V	Core Course -1E (G-3)	CO1. छात्र संस्मरण तथा रेखाचित्र विधा एवं साहित्य से परिचित होते हैं।

	कथेतर विधाएँ (35093)	CO2. छात्रों की समीक्षात्मक दृष्टि का विकास होता है।
		CO3. सभा, इतिवृत्त लेखन तथा वार्ता लेखन कौशल विकसित होता है ।
	Discipline Specific Elective DSE 1 C (S3) हिंदी साहित्य का इतिहास (35091) –(S-3)	CO1. छात्र विशेष प्रश्नपत्र के रूप में हिंदी साहित्य के इतिहास के कालविभाजन, नामकरण तथा अन्यान्य ऐतिहासिक पहलुओं के अध्ययन से परिचित होते हैं
		CO2. हिंदी साहित्य के आदिकाल, भक्तिकाल तथा रीतिकाल की पृष्ठभूमि, साहित्य, कवि एवं विशेषताओं से परिचित होते हैं।
		CO3. परियोजना कार्य के माध्यम से छात्र किसी विशिष्ट रचनाकार तथा क्षेत्रीय कार्य का अध्ययन करना सीखते हैं
	Discipline Specific Elective 2 C (S4) भाषा विज्ञान सामान्य परिचय (35092)	CO1. छात्र भाषा विज्ञान के स्वरूप एवं व्याप्ति से परिचित होते हैं ।
		CO2. भाषा विज्ञान की दिशाओं के परिचय को समझते हुए उसके अनुप्रयोगात्मक पक्ष को सीखते हैं ।
		CO3. साहित्य के अध्ययन में भाषा विज्ञान की उपयोगिता एवं आवश्यकता को छात्र समझते हैं ।
	Skill Enhancement Course 2 C (SEC) (35096) पटकथा लेखन	CO1. छात्र पटकथा लेखन कौशल से परिचित होते हैं।
		CO2. छात्र दृश्य-श्राव्य माध्यमों के लिए पटकथा लेखन की आवश्यकता को समझते हैं ।
		CO3. पटकथा लेखन के माध्यम से रोजगार मिल सकता है, यह विश्वास छात्रों में निर्माण होता है ।
TYBA Semester VI	Core Course -1F (G-3) गजल विधा और पत्राचार (36093)	CO1. छात्र गजल विधा से परिचित होते हैं और उनमें समीक्षात्मक दृष्टि का विकास होता है ।
		CO2. छात्र अन्यान्य गजलकारों के व्यक्तित्व से परिचित होते हैं ।
		CO3. छात्र सरकारी पत्रलेखन विधि से परिचित होते हैं और उसका उपयोग अपने जीवन में करते हैं ।
	Discipline Specific Elective 1 D (S3) हिंदी साहित्य का इतिहास (आधुनिक काल का सामान्य परिचय) (36091)	CO1. छात्र आधुनिक काल की पृष्ठभूमि से परिचित होते हैं।
		CO2. छात्र भारतेंदु युग, द्विवेदी युग तथा छायावादी काव्य की विशेषताओं से परिचित होते हैं ।
		CO3. हिंदी गद्य के उद्भव एवं विकास से परिचित होकर आधुनिक काल के प्रतिनिधि रचनाकार एवं रचनाओं से परिचित होते हैं ।
	Discipline Specific	CO1. छात्र भाषा की विभिन्न परिभाषाओं तथा विविध रूपों से परिचित

	Elective 2 D (S4) हिंदी भाषा और उसका विकास (36092)	होते हैं । CO2. छात्र नागरी लिपि के उद्भव और विकास तथा विशेषताओं से परिचित होते हैं । CO3. परियोजना कार्य के माध्यम से छात्र भाषा के वर्तमान रूपों से परिचित होते हैं ।
	Skill Enhancement Course SEC 2 D साहित्य और फिल्मांतरण-(36096)	CO1. छात्र सिनेमा के स्वरूप से बारिकी से परिचित होते हैं । CO2. छात्र हिंदी साहित्य एवं सिनेमा के अंतसंबंधों से परिचित होते हैं। CO3. साहित्य और फिल्मांतरण को समझते हुए हिंदी उपन्यास तथा कहानियों पर आधारित फिल्मों से परिचित होते हैं।
FYBCOM	हिंदी ऐच्छिक पेपर	CO1. साहित्य और वाणिज्य का परस्पर सबंध प्रतिपादित होगा। CO2. वाणिज्य और साहित्य के बीच पुल बांधा जाएगा। CO3. वाणिज्य हेतु संवाद कौशल विकसित होगा।
SYBSc	हिंदी ऐच्छिक पेपर (23095) AECC-2 A & B हिंदी काव्य तथा कहानी साहित्य	CO1. छात्र साहित्य और विज्ञान के कार्यकारण भाव से परिचित होते हैं. CO2. छात्र कहानी तथा काव्य रचनाओं से परिचित होंगे और उनके भाव् एवं विचार प्रज्वलित होंगे. CO3. व्यवहारिक हिंदी भाषा की जानकारी प्राप्त होगी। CO4. काव्य एवं कहानी लेखन कौशल विकसित होकर साहित्यालोचन की दृष्टि विकसित होती है.

DEPARTMENT OF ENGLISH

Class	Course	Outcomes (COs)
F.Y. BCom **(CBCS-2019)** Semester-I &II [111/121]	Compulsory English	CO1. The students are able to use English Language efficiently. CO2. Communicative skills are enhanced CO3.The verbal and non-verbal skills of communication are developed. CO4. The students learn the soft skills.
FYBA **(CBCS-2019)** Semester-I &II [11011/11012]	Compulsory English	CO1. The students gain communicative competence required for everyday communication CO2. The students start vocabulary building for effective communication. CO3. The students get introduced to soft skills.

		CO4. He students could express themselves in oral and written communicative situations CO5. Students use the values learnt through literary works.
FYBA **(CBCS-2019)** Semester-I &II [13331/13332]	Optional English	CO1. Students use the values learnt through literary works. CO2. The students gain linguistic & communicative competence CO3. The students get introduced to the sounds of English. CO4. Development of the comprehensive ability of students CO5. Inculcation of moral and human values among students. CO6. The students develop literary sensibility. CO7. Understanding of the basic forms of literature.
SYBA **(CBCS-2019)** Semester-III &IV [23001/24001]	Compulsory English	CO1. The students learned to appreciate literature CO2. Oral and written communication improved. CO3. Vocabulary is enhanced CO4. The students learned to make proper use of grammar CO5. The students learned to use English efficiently.
SYBA Semester-III &IV [23333/24333]	Skill Enhancement Course-SEC-1A - Advanced Study of English Language and Literature	CO1. They understood the difference between literary and ordinary language CO2. They became aware of fiction and short story CO3. The students were introduced to linguistics. CO4.The students can appreciate literature critically.
SYBA Semester-III &IV [23331/24331]	Discipline Specific Course-DSC: 1A Appreciating Drama	CO1. The Students learned performing arts CO2. The students became aware of the genre of drama CO3. The students learned the moralities of human life CO4. They learned value education through literature
SYBA Semester-III &IV [23332/24332]	Discipline Specific Course-DSC: Appreciating Poetry	CO1. The syllabus can implement the values of literature in life. CO2. The students develop approaches to appreciate

		literary works.
SYBA Semester-III &IV [23334/24334]	SEC: A Certificate Course in Skill Development	CO1. Students develop communication skills. CO2. Students acquaint with the verbal and non-verbal communication. CO3. Students are able to express their ideas, views, thoughts in English.
TYBA Semester-V &VI [35001/36001]	Compulsory English	CO1. Students develop interpretative ability to study poetry. CO2. Students exercise communication skills effectively. CO3. Students develop literary abilities. CO4. Students learn about profession-specific soft skills CO5. Students understand the basic concept of literary genre, poem, prose and stories
TYBA Semester-V &VI [35333/36333]	SEC: Enhancing Employability Skills Aspirations: English for Careers	CO1. The students develop analytical competence to study language & literature. CO2. The students develop the ability use language appropriately
TYBA Semester-V &VI [35331/36331]	DSE: Appreciating Novel	CO1. The students are exposed to Indian writing in English and American literature. CO2. The students are exposed to social, political and cultural background. CO3. The students develop the critical understanding literature.
TYBA Semester-V &VI [35332/36332]	DSE: Introduction to Literary Criticism	CO1. The students developed interpretative abilities. CO2. The students leaned to analyze, interpret and evaluate literature. CO3. The students became aware of different critical approaches
TYBA Semester-V &VI [35334/36334]	SEC: Mastering Life Skills and Life Values	CO1. Students develop communication skills. CO2. Students acquaint with the verbal and non-verbal communication. CO3. Students are able to express their ideas, views,

		thoughts in English.

DEPARTMENT OF ECONOMICS

Class	Course	Outcomes
F.Y.B. A. SEM-I & II	**Indian economic enviournment-11151/11152**	CO-1.To familiarize the students with the recent developments in the Indian Economy CO-2. To provide the students with the background of the Indian Economy with focus on contemporary issues like economic environment. CO-3. To help the students to prepare for varied competitive examinations CO-4. To enable students to understand and comprehend the current business scenario, agricultural scenario and other sectorial growth in the Indian context. To make the student aware of the developments such as MSMEs, Digital Economy, E-Banking, BPO & KPO, etc.
S.Y.B. A. SEM-III & IV	**Financial System** (G2)	CO-1. To understands fundamentals of modern financial system. CO-2. To understand the recent trends and developments in banking system. CO-3. To understand the role of the Reserve Bank of India in Indian financial system. CO-4. To provide the knowledge of various financial and non-financial institutions. CO-5. To provide the students the intricacies of Indian financial system for better Financial decision making.
S.Y. B. A. SEM-III & IV	**Micro Economics (S-1)**	CO-1. To develop an understanding about subject matter of Economics. CO-2. To impart knowledge of microeconomics. CO-3. To clarify micro economic concepts CO-4.To analyze and interpret charts, graphs and figures CO-5. To develop an understanding of basic theories of micro economics and their Application. CO-6. To demonstrate that the theories discussed in class will usually be applied to Real-life situations. CO-7. To help the students to prepare for varied competitive

		examinations
S.Y. B. A SEM-III & IV	**Macro Economics (S2)**	CO-1. To introduce students to the historical background of the emergence of Macroeconomics. CO-2. To familiarize students with the differences between microeconomics and macroeconomics. CO-3. To familiarize students with various concepts of national income. CO-4. To familiarize students with Keynesian macroeconomic theoretical framework of consumption and investment functions. CO-5. To introduce students to the role of money in an economy. CO-6. To introduce students to the conceptual and theoretical frameworks of Inflation, deflation and stagflation, Business Cycle. To familiarize students with the conceptual and theoretical framework of business cycles. CO-7. To introduce students to the role of monetary and fiscal policies in fulfilling the macroeconomic objectives of stability, full employment and growth. CO-8. To introduce students to the various instruments of monetary and fiscal policies
T.Y.B.A. SEM-V/VI	G-3: Indian Economic Development	CO-1. The Study of Economic Development has gained importance because of stained interest of the developing countries in uplifting their economic conditions restructuring their economics to acquire greater diversity, efficiency and equity in Consonance with their priorities. CO-2. While few success stories can be counted, many have grappled with chronic problems of narrow economic Base, inefficiency and low standard of living. For this and other reasons, there have been many Approaches to economic development. CO-3. In recent times, besides hard core economic prescriptions to development, concern hitherto relegated to background, like education, health, sanitation and infrastructural development, have found place of pride in

		explaining the preference of various
T.Y.B.A. SEM-V/VI	S-3: International Economics	CO-1. This course provides the students a thorough understanding and deep knowledge about the basic principles that tend to govern the free flow of trade in goods and services at the global level. CO-2. The contents of the Paper spread over various modules, lay stress both on theory and Applied nature of the subject that have registered rapid changes during the last decade. CO-3.the students to know the impact of free trade and tariffs on the different sectors of the economy as well as at the macro level. CO-4. The students would also be well trained about the rationale of recent changes in the export import policies of India.
T.Y.B.A. SEM-V/VI	S-4: Public Finance	CO-1. Role and functions of the Government in an economy has been changing with the Passas of CO-2. There is vast array of fiscal institutions -tax systems,

DEPARTMENT OF POLITICS

Class	Course	Course outcomes
FYBA (G-I) SEM-I & II	**Introduction to Indian Constitution (1167)**	CO1. Students enable to understand the philosophy of Indian constitutions. CO2. Students enable to understand the basic doctrine of Indian Constitution. CO3. Students enable to understand the various Government of Indian acts their provision and reforms. CO4. Students enable to appreciate the fundamental rights and duties and the directive principle of state policy CO5. Students enable to evaluate the evolution, functioning and consequences of political parties in India. CO6. Students enable to identify how electoral rules and procedure in India effect election outcomes.
SYBA (G-2)	**Political Theory (2167)**	CO 1. Students enable to appreciate the procedure of different theoretical ideas in political theory.

SEM-III & IV		CO2. Students enable to appreciate the procedure of different theoretical ideas in political theory. CO3. Students enable to understand the various traditional and modern theories of political science. CO4. Students enable to evaluate the theories of origin of the state.
TYBA (G-III) SEM-V & VI	**Local Self Government in Maharashtra**	CO1. Students enable to understand the nature of Ideology. CO 2. Students enable to understand the contributions of various ideologies in practices in the World. CO3. Students enable to describe the role and impact of different Political Ideologies in Politics. CO4.Students enable to describe the significance of Ideologies.

DEPARTMENT OF HISTORY

Class	Course	Course outcomes
FYBA (G-I) SEM-I & II	Early India: From Prehistory to the Age of the Mauryas	CO-1. Understand the history of early India. CO-2. Know the rise, growth and spread of civilization and culture of India along with the dynastic history. CO-3. Understand the contribution of Early Indians to polity, art, literature, philosophy, religion and science and technology. CO-4. Develop the spirit of enquiry among the students by studying the major developments in Indian history.
SYBA (G-2) SEM-III SEM-IV	CC-1(3) History of the Marathas: (1630-1707) CC-2(3) History of the Marathas: (1707-1818)	CO -1. Develop the ability to analyse sources for Maratha History. CO-2. Learn significance of regional history and political foundation of the region. CO-3. Enhance their perception of 17th century Maharashtra and India in context of Maratha history. CO-4. Appreciate the skills of leadership and the administrative system of the Marathas.

TYBA (G-III) SEM-V & VI	CC- 3(3) Indian National Movement (1885-1947) CC- 4(3) India After Independence- (1947-1991)	CO-1. Enable students to develop an overall understanding of Modern India. CO-2. Increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students. CO-3. Understand various aspects of the Indian Independence Movement and the creation of Modern India. CO-4. Understand various aspects of India's domestic and foreign policies that shaped Post-Independence India

DEPARTMENT OF GEOGRAPHY

Class	Course	Outcomes
F.Y.B.A. 2019 Credit Pattern	Physical Geography Gg110 A	CO-1. Students have become able to conceptualize the elements of physical features and basic concepts in Physical Geography CO-2. Students have become able to imagine and recognize the major topographical, geological, soil and natural vegetation regions of local and global level. CO-3. Students have applied their subject knowledge with help of GIS based open source software in the day today life. CO-4. Students have become able to examine the various issues, problems and challenges associated with the physical regions. CO-5. Students have developed life-long learning skill and keep them engaged in updating geography related knowledge.
	Human Geography Gg110 B	CO-1. The Students have understood demographic composition CO-2. Students have imagined and recognize urbanization, population density and literacy. CO-3. Students have identified and describe social, cultural, economic and population dynamics of

		society. CO-4. Students have able to understand patterns and processes of population growth and its implications
S.Y.B.A. 2019 Credit Pattern	Environmental Geography-I	CO-1 Student will be familiar with the dynamic nature of the environment CO-2 Students will be get acquainted with the fundamental concepts of Environmental Geography for development in different areas CO-3 They will be integrating various factors of Environment and dynamic aspect of Environmental Geography CO-4 Student will be aware of the problems of environment, utilization and conservation of resources in view of sustainable development
	Environmental Geography -II	CO-1 Students will be aware about the dynamic environment CO-2 Students will get acquainted with the fundamental concepts of Environmental Geography CO-3 Students will get acquainted with the past, present and future utility and potentials of natural resources CO-4 Students will aware about the problems of environment and they will know the concept of sustainable development
	Population Geography-I	CO-1 Students will understand the history of population CO-2 They will know the basic concepts in Population Geography CO-3 They will know the types and sources of population data
	Population Geography-II	CO-1 Students will know the population policy of India and China CO-2 They will know the health indicators of India CO-3 Students will be get acquainted with the concept of urbanization in Population Geography CO-4 They will understand the Population theories
	Practical Geography-	CO-1 Students will know the basic concepts in Population

	I (Scale and Map Projection)	Geography CO-2 Students will be enabled to use various scales and projection techniques in Geography CO-3 Students will use various projections for map making CO-4 They will be familiar with the elementary and essential principles of practical work in Geography
	Practical Geography-II (Cartographic Techniques, Surveying and Excursion /Village/ Project Report)	CO-1 Students will know the basic and contemporary concepts in Cartography CO-2 Students will get acquainted with the utility and applications of various cartographic techniques CO-3 Students will know the latest concepts regarding the modern cartography in the field of Geography CO-4 Students will know the elementary and essential principles of practical work in Geography
T.Y.B.A. 2019 Credit Pattern	Geography of Tourism I and II	CO-1 Students will understand the history of tourism CO-2 They will know the basic concepts in tourism Geography CO-3 They will know the types of tourism CO-4 They will obtain the knowledge about different aspects of Tourism Geography
	Geography of India I and II	CO-1 Students will be familiar with the Geography of India CO-2 They will be aware of the magnitude of problems and prospects of national level issues CO-3 Students will understand the interrelationship between the subject and the society CO-4 Students will understand the recent trends in regional India
	Practical Geography (Techniques of Spatial Analysis) I and II	CO-1 Students will get familiar with the basic concepts and techniques of Geographical Analysis CO-2 They will read the SOI Toposheet and acquire knowledge of its interpretation CO-3 They know the weather maps and acquire the knowledge of its interpretation CO-4 Students will be introduced with the aerial photographs and satellite images and acquires knowledge to interpret it.

		CO-5 Students will get acquainted with the spatial and structural characteristics of Practical Geography CO-6 They will obtain the knowledge about elementary and essential principles on field of practical work

DEPARTMENT OF COMMERCE

Class	Course	Outcomes
F. Y. B. Com [2019 [Pattern] SEM-I & II	**Marketing and Salesmanship**	CO-1. Created awareness about market and marketing. CO-2. Established link between commerce/ Business and marketing. CO-3. Understood the basic concept of marketing. CO-4. Understood marketing philosophy.
	Computer Concepts and Application	CO-1. Familiar with Computer Environment. CO-2. Familiar with the basics of Operating System and business communication tools. CO-4. Understood the basics of Network, Internet and related concepts.
	Banking and Finance	CO-1. To provide knowledge of fundamentals of Banking. CO-2. To create awareness about various banking concepts. CO-3. To conceptualize banking operations.
	Business Economics	CO-1. To impart knowledge of business economics. CO-2. To clarify micro economic concepts. CO-3. To analyze and interpret charts and graphs. CO-4. To understand basic theories, concepts of micro economics and their application.
	Financial Accounting	CO-1. To impart knowledge of basic accounting concepts. CO-2. To create awareness about application of these concepts in business world. CO-3. To impart skills regarding Computerized Accounting. CO-4. To impart knowledge regarding finalization of accounts of various establishments.
S.Y.B. Com	**Corporate Accounting**	CO-1. To acquaint the student with knowledge about various Concepts, Objectives and applicability of

[2019 [Pattern] SEM-III & IV		accounting standards associated with to corporate accounting. CO-2. To develop understanding among the students on the difference between commencement and incorporation of a company and the accounting treatment for transactions during the two phases. CO-3. To update the students with knowledge for preparation of final accounts of a company as per Schedule III of the Companies Act 2013 CO-4. To empower to students with skills to interpret the financial statements in simple and summarized manner for effective decision making process. CO-5. To acquaint the student with knowledge about various Concepts, Objectives and applicability of some important accounting standards associated with to corporate accounting. CO-6. To develop understanding among the students on the difference between commencement and incorporation of a company and the accounting treatment for transactions during the two phases.
	Business Communication	CO-1. To understand the concept, process and importance of communication. CO-2. To acquire and develop good communication skills requisite for business correspondence. CO-3. To develop awareness regarding new trends in business communication. CO-4. To provide knowledge of various media of communication. CO-5. To develop business communication skills through the application and exercises.
	Corporate Law	CO-1. To develop general awareness of Elements of Company Law among the students. CO-2. To understand the Companies, Act 2013 and its provisions. CO-3. To have a comprehensive understanding about the

		existing law on formation of new company in India. CO-4. To create awareness among the students about legal environment relating to the company law. CO-5. To acquaint the students on e-commerce, E governance and e-filling mechanism relating to Companies. CO6. To enhance capacity of learners to seek the career opportunity in corporate sector
	Business Economics	CO-1. To familiarize the students to the basic theories and concepts of Macro Economics and their application. CO-2. To study the relationship amongst broad aggregates. CO-3. To impart knowledge of business economics. CO-4. To understand macroeconomic concepts. CO-5. To introduce the various concepts of National Income.
	Business Management	CO-1. To provide basic knowledge and understanding about various concepts of Business Management. CO-2. To help the students to develop cognizance of the importance of management principles. CO-3. To provide an understanding about various functions of management. CO-4. To provide them tools and techniques to be used in the performance of the managerial job.
	Business Administration - I	CO-1. To provide basic knowledge about various forms of business organizations CO-2. To acquaint the students about business environment and its implications thereon. CO-3. To make them aware about the recent trends in business. CO-4. To understand the concept of Business To understand the various perspectives to business CO-5. To know the various functions of Business Administration
	Marketing Management -	CO-1. To orient the student's recent trends in marketing management

	I	CO-2. To create awareness about marketing of eco-friendly products in the society through students CO-3. To inculcate knowledge of various aspects of marketing management through practical approach CO-4. To acquaint the students with the use of E-Commerce in competitive environment.
TYB COM [2019 [Pattern] SEM-V & VI	**Auditing and Taxation**	CO-1. To acquaint themselves about the concept and principles of Auditing, Audit process, Assurance Standards, Tax Audit, and Audit of computerized Systems. CO-2. To get knowledge about preparation of Audit report. CO-3. To understand the basic concepts and to acquire knowledge about Computation of Income, Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection Authorities under the Income Tax Act, 1961..
	Business Regulatory Framework	CO-1. To acquaint students with the basic concepts, terms & provisions of Mercantile and Business Laws. CO-2. To develop the awareness among the students regarding these laws affecting business, trade and commerce.
	Advance Accounting	CO-1. To impart the knowledge of various accounting concepts CO-2. To instill the knowledge about accounting procedures, methods and techniques. CO-3. To acquaint them with practical approach to accounts writing by using software package
	Indian Global Economics	CO-1. To expose students to a new approach to the study of the Indian Economy. CO-2. To help the students in analyzing the present status of the Indian Economy. CO-3. To enable students to understand the process of integration of the Indian Economy with other economics of the world. CO-4. To acquaint students with the emerging issues in

		policies of India's foreign trade.
	Business Administration - II	CO-1. To acquaint the students with basic concepts & functions of HRD and nature of Marketing functions of a business enterprise. Concept and Importance. CO-2. Performance Appraisal Process. CO-3. Methods and Techniques. CO-4. Merits and limitations of performance appraisal
	Business Administration - III	CO-1. To acquaint the students with the basic concepts in finance and production functions of a business enterprise. CO-2. Shares, Debentures, Public Deposits, Ploughing back of profits, Loans from Bank and Financial Institutions, Trade creditors, Installment credit etc.
	Marketing Management - II	CO-1. To understand the concept and functioning of marketing planning and sales management CO-2. To know marketing strategies and organization CO-3. To inform various facets of marketing with regulatory aspects CO-4. To understand marketing in globalize scenario
	Marketing Management - III	CO-1. To know detailing of Marketing Research CO-2. To understand the role Brand and Distribution Management in marketing CO-3. To inform about Marketing and Economic Development CO-4. To Know of the importance of control on marketing activities

MCom- I

(Specialization in Business Administration and Advance Marketing)

Class	Course	Course Outcomes
[2019 [Pattern] SEM-I & II	Management Account (Course Code -: 101)	CO-1. To enable students to acquire sound Knowledge of concepts, methods and techniques of management accounting. CO-2. To make the students develop competence with their usage in managerial decision making and control.

M.com I	Strategic Management (Course Code -: 102)	CO-1. To enable students to understand the nature and Scope of Strategic Management. CO-2. To understand Strategy Formulation and Strategic Analysis. CO-3. To know Strategic Planning, Choices/Options, Strategy Implementation, Functional Strategy and Strategic Review.
	Production and Operations Management (Course Code -: 113)	Co-1. The objective of the course is to enable students to understand the Introduction to Production & Operations Management. CO-2. To clear the concepts of Product Design and Development, Production Planning & Control, Quality Management and Productivity.
	Financial Management (Course Code -: 114)	CO-1. To offer relevant, systematic, efficient and actual knowledge of financial management. CO-3. To apply in practice with making financial decisions and resolving financial problems. CO-4. To understand financial management.
	Marketing Techniques (Course Code -: 117)	CO-1. To study and critically analyze the basic concepts & techniques of Marketing. CO-2. To understand Marketing, Marketing Organization. CO-3. To know the concepts of Environment, Product Mix, Price and Place Mix, Promotion Mix/ Marketing Communication, People Process and Physical Evidence.
	Consumer Behavior (Course Code -: 118)	CO-1. To impart knowledge regarding marketing management techniques and process. CO-2. To develop understanding of the marketing functions techniques and strategies. CO-3. To study the Introduction to Consumer Behaviour and Market Segmentation. CO-4. To define the Perception, Elements of Perception, Consumer Learning and Memory.
	Financial Analysis &	CO-1. To enable students to acquire sound knowledge of concepts, methods and techniques of management

	Control (Course Code -: 201)	accounting. CO-2. To develop competence with their usage in managerial decision making and control. CO-3. To study the Long Term Investment Decisions, Cost of Capital and Marginal Costing.
	Industrial Economics (Course Code -: 202 – A)	CO-1. To study the basic concepts of Industrial Economics. CO-2. To study the significance and problems of Industrialization. CO-3. To study the impact of Industrialization on Indian Economy. CO-4. To study the Introduction of Industrial Economics, Industrial Location, Industrial and Productivity.
	Business Ethics and Professional Values (Course Code -: 213)	CO-1. To enable students to Business Ethics and Professional Values. CO-2. To impart Gandhian Approach in Management and Trusteeship. CO-3. To review new values in Indian Industries after economic reforms of 1991.
	Elements of Knowledge Management (Course Code -: 214)	CO-1. To enable students to study the Introduction to Knowledge Management Process. CO-2.To impart organizational learning, management tools management culture.
	Customer Relationship Management & Retailing (Course Code -: 217)	CO-1. To impart knowledge regarding customer relationship management, & retailing techniques, process and tools. CO-2. To understand of the CRM & retailing functions techniques and strategies. CO-3. To Study the CRM An Introduction, Emerging CRM, CRM and I.T.
	Services Marketing (Course Code -: 218)	CO-1. To impart knowledge regarding services marketing, process and tolls. CO-2. To develop understanding of the services marketing functions techniques and strategies.
	Business Finance	CO-1. To enable students to acquire sound knowledge of

		concepts, nature and structure of business finance CO-2. To familiar with the characteristics of short term finance.
M.com II Semester – III and VI	Research Methodology for Business	CO-1. To acquaint the students with the areas of Business Research Activities. CO-2. To enhance capabilities of students to conduct the research in the field of business and social sciences. CO-3. To enable students, in developing the most appropriate methodology for their research studies. CO-4. To make them familiar with the art of using different research methods and techniques.
	Human Resource Management	CO-1. To acquaint the students with in-depth knowledge of HRM. CO-2. To inculcate various practices followed by HR managers. CO-3. To create understanding about recent trends in HRM.
	Organizational Behavior	CO-1. To make the students understand various concepts of organization behavior. CO-2. To provide in depth knowledge about process of formation of group behavior in an organization set up.
	International Marketing	CO-1. To become more familiar with the nature and practices of international marketing. CO-2. To be able to distinguish international marketing mechanics from the domestic marketing models and approaches. CO-3. To equip to design and participate in designing an international marketing strategy. CO-4. To develop right attitude, inject enthusiasm and hone their interactive ability as they address the issues and challenges of operating in the international markets.
	Marketing Research	CO-1. To explain Scope & Significance Marketing Decision Support System (MDSS). CO-2. To inculcate objective and subjective methods for

		Market and Sales Analysis, Sales forecasting.
	Capital Market and Financial Services	CO-1. To enable students to acquire sound knowledge, concept and structure of capital market and financial services.
	Industrial Economic Environment	CO-1. To study the basic concepts of Industrial Finance. CO-2. To study the effects of New Economic Policy. CO-3. To study the impact of Labor reforms on Industries
	Recent Advance in Business Administration	CO-1. To familiarize the students with the recent advancements in business administration CO-2. To develop an understanding about tools and their application in the business.
	Project Work in Business Administration	CO-1. To develop research attitude of the students. CO-2. To enrich the ability of research work among the students.
	Recent Advantages in Marketing	CO-1. To define process of creating marketing strategy. CO-2. To explain Global v/ s Local Marketing Strategy. CO-3. Importance of Single Brand Retail and Multi Brand Retail. CO-4. History of FDI in Single Brand retail in India.
	Project Work in advance Marketing	CO-1. To develop research attitude of the students. CO-2. To enrich the ability of research work among the students.

FACULTY OF SCIENCE

COURSE OUTCOMES [COs]

BSc-Chemistry

Course	Course Outcomes F.Y. B. Sc. Chemistry
	Semester-I
CH-101 Physical Chemistry	CO-1. Students will be able to apply thermodynamic principles to physical and chemical process CO-2. Understand the relation between Free energy and equilibrium and factors affecting on equilibrium constant and exergonic and endergonic reaction. CO-3. Understand the Concept to ionization process occurred in acids, bases and pH scale and related concepts such as Common ion effect hydrolysis constant, ionic product, solubility product CO-4. Degree of hydrolysis and pH for different salts , buffer solutions
CH-102 Organic Chemistry	CO-1. The students are expected to understand the fundamentals, principles, and recent developments in the subject area CO-2. To develop awareness of organic chemistry in day to day life. CO-3. To understand basic fundamental aspects of pharmaceutical and medicinal chemistry CO-4. To familiarize with current and recent developments in Chemistry.
	Semester-II
CH-201 Inorganic Chemistry	CO-1. Understand the various theories and principles applied to revel atomic structure Origin of quantum mechanics and its need to understand structure of hydrogen atom CO-2. Understand the rules for filling electrons in various orbitals- Aufbau's principle, Pauli exclusion principle, Hund's rule of maximum multiplicity.

	CO-3. To understand and describe Block, group, modern periodic law and periodicity. CO-4. Write name, symbol, electronic configuration, trends and properties.
CH-202 Analytical Chemistry	CO-1. Calculations of mole, molar concentrations and various units of concentrations which will be helpful for preparation of solution. CO-2. Units such as parts per million, parts per billion, parts per thousand, solution-dilatant volume ratio, function density and specific gravity of solutions. CO-3. Basics of type determination, characteristic tests and classifications, reactions of different functional groups. CO-4. Basics of chromatography and types of chromatography.
CH-103, 203 : Chemistry Practical	CO-1. Importance of chemical safety and Lab safety while performing experiments in laboratory. CO-2. Determination of thermochemical parameters and related concepts and techniques of pH measurements. CO-3. Preparation of buffer solutions, elemental analysis of organic compounds (non- instrumental) CO-4. Chromatographic Techniques for separation of constituents of mixtures. CO-5. Inorganic Estimations using volumetric analysis CO-6. Synthesis of Inorganic compounds CO-7. Analysis of commercial products CO-8. Purification of organic compounds
Course	**Course Outcomes S.Y. B. Sc. Chemistry** **Semester-III**
CH-301 Physical and Analytical Chemistry	CO-1: Explain / discuss / derive integrated rate laws, characteristics, expression for half-life and examples of zero order, first order, and second order reactions. CO-2: Derivations of collision theory and transition state theory of bimolecular reaction and comparison. CO-3: Explain adsorption, classification of give processes into physical and chemical adsorption.

	CO-4: Apply adsorption process to real life problem. CO-5: Apply statistical methods to express his / her analytical results in
CH-302 Inorganic & Organic Chemistry	CO-1. Understand the terms related to molecular orbital theory (AO, MO, sigma bond, pi bond, bond order, magnetic property of molecules. CO-2. Understand and explain and apply LCAO principle for the formation of MO's from AO's. CO-3. Terms related to the coordination chemistry (double salt, coordination compounds, coordinate bond, ligand, central metal ion, complex ion, coordination number, magnetic moment, crystal field stabilization energy, types of ligand, chelate effected.) CO-4. Werner's theory of coordination compounds. CO-5. Identify, draw the structures, from structure name can be assign, synthesis, mechanism of reactions of aromatic hydrocarbons. CO-6. Identify and draw the structures alkyl / aryl halides, synthesis of alkyl / aryl halides, mechanism of Nucleophilic Substitution (SN^1, SN^2 and SNi) reactions alkyl / aryl halides. CO-7. Identify and draw the structures alcohols / phenols from their names or from structure name can be assigned, differentiate between alcohols and phenols.
	Semester-IV
CH-401 Physical and Analytical Chemistry	CO-1. Understand the terms in phase equilibria such as-system, phase in system, components in system, degree of freedom, one two component system, phase rule, etc. CO-2. Apply solvent extraction to separate the components of from mixture interest. CO-3. Apply conduct metric methods of analysis to real problem in analytical laboratory. CO-4. Apply colorimetric methods of analysis to real

	problem in analytical laboratory. CO-5. Apply column chromatographic process for real analysis in analytical laboratory.
CH-402 Inorganic & Organic Chemistry	CO-1. Isomerism in coordination complexes different types of isomerism in coordination complexes. CO-2. Apply principles of VBT to explain bonding in coordination compound of different geometries. Correlate no of unpaired electrons and orbitals used for bonding, Identify /explain/discuss inner and outer orbital complexes. CO-3. Principle of CF, apply crystal field theory to different type of complexes (Td, Oh, Sq. Pl complexes), strong field and weak field ligand approach in Oh complexes. CO-4. Identify and draw the structures aldehydes and ketones from their names or from structure name can be assigned, synthesis, the mechanism reactions aldehydes and ketones. CO-5. Structures carboxylic acids and their derivatives from their names or from structure name can be assigned, synthesis of carboxylic acids and their derivatives, CO-6. Identify and draw the structures amines from their names or from structure name can be assign, synthesis of carboxylic amines, mechanism reactions carboxylic amines, diazonium salt from amines and reactions of diazonium salt.
CH-303, 403 Practical Chemistry-III, IV	CO-1. Verify theoretical principles experimentally CO-2. Interpret the experimental data on the basis of theoretical principles CO-3. Correlate the theory to the experiments. Understand / verify theoretical principles by experiment or explain practical output with the help of theory and perform organic and inorganic synthesis and able to follow the progress of the chemical reaction.

	CO-4. Set up the apparatus properly for the designed experiments. CO-5. Systematic working skill in laboratory will be imparted in student.
Course Outcomes T.Y.B. Sc. Chemistry **Semester-V**	
Course **B.Sc. Chemistry**	**Outcomes** After completion of these courses students should be able to;
CH-331 Physical Chemistry	CO-1. To understand and write an expression for rate constant K for third order reaction CO-2. Solve the numerical problems based on Rate constant. CO-3 Understand the term specific volume, molar volume and molar refraction. CO-4. Know the meaning of phase, component and degree of freedom CO-5. Derive the expression for rotational spectra for the transition from J to J+1.
CH-332 Inorganic Chemistry	CO-1. Know the meaning of various terms involved in co-ordination chemistry CO-2. To understand Werner's formulation of complexes and identify the types of valences CO-3. Know the limitations of VBT CO-4. Know the shapes of d-orbitals and degeneracy of d-orbitals CO-5. Draw the geometrical and optical isomerism of complexes
CH-333 Organic Chemistry	CO-1. Define organic acids and bases. CO-2. Distinguish between geometrical and optical isomerism. CO-3. Discuss kinetics, mechanism and stereochemistry of SN^1 and SN^2 reactions. CO-4. Compare between E_1 and E_2 reactions. CO-5. Understand the evidences, reactivity and mechanism of various elimination and substitution reactions.

CH-334 Analytical Chemistry	CO-1. Know the principles of common ion effect and solubility product. CO-2. Study the methods of thermo-gravimetric analysis. CO-3. Understand the principles of Spectro-photometric analysis and properties of electromagnetic radiations. CO-4. Study the Voltammetry and Polarography as an analytical tool. CO-5. Measure the absorbance of atoms by AAS.
CH-335 Industrial Chemistry	CO-1. Know the importance of chemical industry. CO-2. Classify various insecticides. CO-3. Study the nutritive aspects of food constituents. CO-4. Understand the characteristics of some food starches. CO-5. Study the manufacture of cement, dyes, Glass, Soap and Detergents by modern methods.
CH-336-D Environmental and Green Chemistry	CO-1. Know the importance and conservation of environment CO-2. Understand the segments of atmosphere, hazards of flue gasses ozone depletion and ecological changes due to the hazardous gases. CO-3. Know the different water resourses, quality of potable water and quality measures. CO-4. Understand the need of green technology, principles of green chemistry and its advantages. CO-5. Know the importance of catalytic route for sustainable development using green chemistry approach.
	Course Outcomes B.Sc. Chemistry **Semester-VI**
CH-341 Physical Chemistry	CO-1. Understand Mechanics of system particles. CO-2. Know the Redox reaction. CO-3 Study the Crystal Field Theory. CO-4. Solve the cell reaction and calculate EMF. CO-5. Calculate interlunar distance. CO-6. Understand De-Broglie hypothesis and Uncertainty principle CO-7. Derive Schrodinger's time dependent and independent

	equations CO-8. Know the nuclear reaction and its application
CH-342 Inorganic Chemistry	CO-1 Study the electronic configuration of lanthanides and actinides. CO-2. Get knowledge of Crystalline solid. CO-3. Understand different operation in stoichiometric molecule. CO-4. Study the Bio-inorganic chemistry.
CH-343 Organic Chemistry	CO-1. To study UV, IR and NMR spectroscopy. CO-2. Discuss different types of rearrangement reactions. CO-3. Determine structure of compound by spectroscopic methods. CO-4. Understand the difference between carbocation and carbanion. CO-5.To study alkaloids, Ephedrine, citral molecule with their properties and application.
CH-344 Analytical Chemistry	CO-1. Know the different analytical techniques. CO-2. To understand different types of separation techniques. CO-3. To study principle, construction and working of GC and HPLC. CO-4. To give an extended knowledge about chromatographic techniques used for separation of amino acids. CO-5. Discuss the problem based on distribution coefficient and extraction techniques
CH-345 Industrial Chemistry	CO-1. Know the various pharmaceutical drugs, their application and synthesis. CO-2. To study the waste management. CO-3. To understand the function of dyes, paints and pigments. CO-4. To study the various type of surfactants. CO-5. To know about molasses and bagasse. CO-6. To study the different types of polymer.
CH-346-D Environmental	CO-1. Know methods of water purification, waste water treatment process and its advantages

and Green Chemistry	CO-2. Study of types of soil its components and types of solid waste and their disposal. CO-3. Study the techniques used to monitored hazardous materials present in the environment. CO-4. Understand the global warming climate change and greenhouse gasses and their effects. CO-5. Study of importance of water as green solvent, natural resources of energy, conventional and non-conventional source and utilization of solar and wind energy.
CH-347 Physical Chemistry Practical	CO-1. Calculate molar and normal solution of various concentrations. CO-2. Determine specific rotations and percentage of two optically active substances by polar metrically. CO-3. Study the energy of activation and second order reaction. CO-4. Study the stability of complex ion and stranded free energy change and equilibrium constant by potentiometry. CO-5. Find out the acidity, Basicity and PKa Value on pH meter.
CH-348 Inorganic Chemistry Practical	CO-1. Study the gravimetric and volumetric analysis of ores and alloy. CO-2. Prepare a various inorganic complexes and determine its % purity. CO-3. To study binary mixture with removal of borate and phosphate. CO-4. To understand the chromatographic techniques.
CH-349 Organic Chemistry Practical	CO-1. Perform the Binary mixtures. CO-2. Preparation of organic compounds, their purifications and run TLC. CO-3. Determination of physical constant: Melting point, Boiling point. CO-4. Different separation techniques.

MSc - Analytical Chemistry

	Course Outcomes Semester-I
M. Sc. Analytical Chemistry	After completion of these courses students should be able to;
CCTP-1 **CHP-110-** Physical Chemistry-I **CCTP-Core Compulsory Theory Paper**	CO-1. Realize the terms State function, path function, exact differential and inexact differential, internal energy and enthalpy, CO-2. Know the Helmholtz and Gibbs function, Entropy and entropy change in an ideal gas with temperature and pressure CO-3. Learn Partial molar quantities, methods for determination of molar quantities, ideal solutions CO-4. Understand the Raoult's, Henry's law, Gibbs function, colligative properties, Elevation in boiling point, depression. CO-5. Recognized the Chemical Kinetics and Reaction Dynamics. CO-6. Learn Valence bond theory, molecular orbital theory for di and tri atomic molecule,
CCTP-2 **CHI-130-** Inorganic Chemistry-I	CO-1. To understand the concept of symmetry and able to pass various symmetry elements through the molecule. CO-2. Understand the concept and point group and apply it to molecules CO-3. Known the Projection operators and their use of construct SALC CO-4. To understand the Application of Group theory to Infrared Spectroscopy. CO-5. Understand the detail chemistry of S and P block elements w.r.t. their compounds, their reactions CO-6. To learn the advance chemistry of boranes, fullerene, zeolites, polymers etc. CO-7. Learn Organometallic chemistry of some important elements from the main groups and their applications.
CCTP-3 **CHO-150-**	CO-1. To understand some fundamental aspects of organic chemistry, to learn the concept aromaticity, to

Organic Chemistry-I	understand the various types of aromaticity CO-2. To study heterocyclic compound containing one and two hetero atoms with their structure, synthesis and reactions CO-3. Learn the concept stereochemistry and its importance; their rules and the concept of chirality CO-4. Understand the role of various reaction intermediates like carbocation, carbanion, carbines, radicals, and nitrates in organic reactions; CO-5. Able to describe mechanism of different rearrangement reactions. CO-6. Understand the chemistry of Ylides. CO-7. To understands the basis of redox reaction; acquire knowledge about the reagents which causes selective oxidation / reduction in various learn the basic mechanism of oxidation/ reduction in organic comp
CBOP-1 **CHG-190** -General Chemistry-I **CBOP-Choice Based Optional Paper**	CO-1. Students will be able to explore new areas of research in both Chemistry and allied fields of science and technology. CO-2. Understand the Students will be able to function as a member of an interdisciplinary problem solving team. CO-3. Understand to impart the students thorough idea in the chemistry of carbohydrates, amino acids, proteins and nucleic acids etc. CO-4. Develop skills to critically read the literature an effectively communicate research in a peer setting. CO-5. Understand the Practical of Inorganic Material Analysis, Synthesis and Applications.

M. Sc. Analytical Chemistry

SEMESTER-II

Course Outcomes	
CCTP-4	CO-1. Understand of the principle of Microwave, IR, Raman, Electronic, NMR, ESR and Mossbauer spectroscopy CO-2. Draw of the schematic Microwave, IR and Raman

CHP-210- Physical Chemistry-II	spectrum of di and triatomic molecules based on the selection rules. CO-3: Understand of decay kinetics and measurement of radioactivity CO-4: Get knowledge of types of nuclear react CO-5: Study the applications of radioactivity, understand radiolysis and radicals
CCTP-5 **CHI-230-** Inorganic Chemistry-II	CO-1. Understand to find out the no of microstates and meaningful term symbols, construction of microstate table for various configuration CO-2. Understand to draw correlations diagram for various configurations in Tdh Oh ligand field. CO-3. Study the basic d-d transition, d-p mixing, charge transfer spectra CO-4. Understand the various terms involved in magneto chemistry. Co-5. Understand the various Quenching of orbital angular momentum CO-6. Understand the importance of bioinorganic chemistry. CO-7. Understand the importance and transport of metal ions and Mechanism for active transport of Na^+ and K^+ CO-8. Understand the importance and function of Ca, Fe and Mg in metalloproteinase and Catalytic role of Mn in photosynthesis.
CCTP-6 **CHO-250-** Organic Chemistry -II	CO-1. MOT and will be able to extend this in predicting reaction mechanism and stereochemistry of electro cyclic reactions. CO-2. The concepts in free radical reactions, mechanism and the stereo chemical outcomes. CO-3. The basic principle of spectroscopic methods and their applications in structure elucidation of organic compounds using given spectroscopic data or spectra. CO-4. Understand the factors affecting UV-absorption spectra, Interpret IR-spectra on basic values of IR-frequencies.

CBOP-2 **CHG-290-** GeneralChemistry-II	CO-1**.** To impart the students thorough idea in the chemistry of carbohydrates, amino acids, proteins and nucleic acids etc. CO-2. Students will be able to function as a member of an interdisciplinary problem solving team. CO-3. Develop skills to critically read the literature and effectively communicate research in a peer setting. CO-4. Understand the importance of chemical biology research and Interdisciplinary work. CO-5.Understand the Practical of potentiometric and polarography
CCPP-1 **CHP-107-** Practical Course –I **CCPP -Core Compulsory Practical Paper**	CO-1. Calculate molar and normal solution of various concentrations. CO-2. Determine specific rotations and percentage of two optically active substances by polar metrically. CO-3. Study the energy of activation and second order reaction. CO-4. Understand the colorimetry and spectrophotometric technique CO-5. Study of Laboratory Safety, MSDS sheet, Handling of glassware's and care to be taken, handling of organic flammable as well as toxic solvents in laboratory CO-6- Understand the purification techniques and perform the green synthesis of organic compounds.
CCPP-2 **CHP-227-**Practical Course-II	CO-1. Study of synthesis of coordination complexes CO-2. Understand the structural determination of metal complexes by conduct metric measurement. CO-3. Understand the inorganic characterization techniques, Inorganic Kinetics and Ion – Exchange Chromatography**,** CO-4. Students are trained to different purification techniques in organic chemistry like recrystallization, distillation, steam distillation CO-5. Students are made aware of carrying out different types of reactions and their workup methods. CO-6. Make student aware of green chemistry and role of green chemistry in pollution reduction.

	Semester-III
CHA-390 Electro analytical and radio analytical methods of analysis	CO-1. Study of colorimeter, Faraday 1st law, Faraday 2nd law. CO-2. Study of voltammetry and paleographic method of analysis CO-3. Study of amperometry and their applications CO-4. Learn radio analytical methods of analysis, activation analysis,
CHA-391 Pharmaceutical analysis.	CO-1. Study of apparatus for test and assay, cleaning of glassware, role of FDA in pharmaceutical industry. CO-2. Learn biological test and assay, microbiological test and assay, physical test, determination, limit test sterilization. CO-3. Analysis of vegetable drug, sources of impurities in pharmaceutical row materials and finished products. CO-4. Learn standardization and quality control of different row materials.
CHA-392 Advanced analytical techniques	CO-1. Study the classical approach for aqueous extraction, solid phase extraction, micro extraction and SFE. CO-2. Learn: AAS, FES, ICPAES, and DCP. CO-3. Study atomic fluorescence, resonant ionization and LASER based enhanced ionization. CO-4. Study of different detectors and their applications.
CHA-380 Geochemical and alloy analysis and analytical method development and validation.	CO-1. To understand assay validation and inter laboratory transfer. CO-2. Study the statistical analysis and analytical figure. CO-3. Learn the analysis of geological materials and alloys. CO-4.Study the analysis of soil, sampling, chemical analysis as a measure of soil fertility
	Semester-IV
CHA-490 Analytical spectroscopy	CO-1. Study of ESCA, Detectors and their applications. CO-2. Learn X-ray method of analysis, numerical problems. CO-3. Understand an introduction to microscopy, its applications. CO-4. Study of chemiluminescence's, Fluorescence and phosphorescence. CO-5. Study of NMR spectroscopy.

CHA-491 Analytical methods for analysis of fertilizer detergent, water and polymer,	CO-1. Study of analysis of fertilizer, sampling and sample preparation, Kendal's method. CO-2. Understand the analysis of soap and detergents, UV-spectroscopic analysis of detergent. CO-3. Study of water pollution and analysis of polluted water. CO-4. Learn the polymer chemistry, analysis and testing of polymer, measurement of molecular weight and size. CO-5. Understand paint and pigment
CHA-492 Pollution monitoring and control and analysis of body fluid.	CO-1. Study of pollution monitoring, removal of heavy toxic metals Cr, Hg, CO-2. Learn the removal of particulate matters, SO_2And NOx. CO-3. Study the collection of specimen blood, urine, faces. CO-4. Learn the analysis of blood and urine, Vitamin in body fluid. CO-5. Study the liver function and kidney function test.
CHA-481 Analytical toxicology and food analysis**..**	CO-1. Study of acute poisoning, clinical toxicology. CO-2. Learn the isolation, identification and determination of narcotics, CO-3. Study the classification function, analysis of carbohydrate, Protein, CO-4. Study the food preservatives, identification determination, and composition.
CHA-387 Analysis of materials	CO-1. Study the gravimetric and volumetric analysis of ores and alloy. CO-2. Prepare a various inorganic complexes and determine its % purity. CO-3. Preparation of nonmaterial. CO-4. To understand the chromatographic techniques. CO-5. Estimation of Iron By Various methods.
CHA-487 Instrumental Analysis.	CO-1. Spectral analysis best on instrumental techniques CO-2. Photometric determination. CO-3. Study of Conduct meter, FES, Polarography. CO-4. Analysis of riboflavin byphotoflurometry. CO-5. To Study the spectroscopic techniques

	CO-6. To study the turbidometry and Nephelometry.
CHA-488 Organic Chemistry Practical	CO-1. Study the dissolution of tablet. CO-2. Learn the spectroscopic techniques. CO-3. Study Volumetric and gravimetric estimation. CO-4. Analysis of Quinine sulphate by photoclinometry. CO-5. Study of folin Wu method.

BSc- Botany

Course Outcomes: F. Y. B. Sc. Botany	
Course **F. Y. B. Sc. Botany**	**Outcomes** After completion of these courses students should be able to;
Paper-I. Sem.-I: Plant Life and Utilization -I	CO-1. Students get awareness about Algal Fungal, Licens, Brayophytes, Pteridophytes diversity, systematic position and morphology. CO-2. Students know about their life cycle pattern as well as botanical sources, characteristics and utilities of Plants/ plant products.
Paper-II, Sem-I: Plant Life and Utilization-II	CO-1. Students know about Pteridophytes, Gymnosperms and Angiosperms with reference to vascular plants. CO-2. Utilization and economic importance of Pteridophytes, Gymnosperms and Angiosperms
Paper-III, Sem-I: Practical Course based on Paper I & Paper II	CO-1. Students will learn about Life Cycle of Spirogyra, Agaricus. Riccia, Lichens, Mushroom Cultivation, Inflorescence, Flowers and Fruits
Paper-I, Sem-II: Plant Morphology and Anatomy	CO-1. Students will understand about the habit of the angiosperm plant body. CO-2. They will know the vegetative characteristics of the plant. CO-3. Learn about the reproductive characteristics of the plant as well as they understand the plant morphology. CO-4. Understand the scope & importance of Anatomy. CO-5. They get knowledge about various tissue systems.
Paper-II, Sem.-II: Principles of lant Science	CO-1. Students will learn about scope of plant physiology. CO-2. Different concepts in plant physiology i. e. Diffusion, Imbibitions, Osmosis Plasmolysis, Plant growth, Plant cell

	and Cell cycle. CO-3. They aware about introduction and scope of molecular biology, central dogma, Structure of DNA, Types of chromosomes. Structure and types of RNA, DNA replication and types.
Paper-III, Sem-II: Practical Course based on Paper I & Paper II	CO-1. To make aware the students about the study of life cycle of Nephrolepis, Cycas, Bentham and Hooker's system of classification, Comparative account of Dicotyledonous and Monocotyledonous plants, Utilization and economic importance of Angiosperms, Plant cell, Staining of suitable nuclear material by Basic Fuchsine, CO-2. Study of mitosis, meiosis preparation of slides using onion root tips ,Estimation of chlorophyll-a and chlorophyll-b, Osmosis- curling experiment and DPD
Course Outcomes: S. Y. B. Sc. Botany	
Course **S. Y. B. Sc. Botany** **[2019 [Pattern]** **SEM-III & IV**	**Outcomes** After completion of these courses students should be able to;
BO 231: Paper I-Taxonomy of Angiosperm and Plant community	CO-1. Students will learn about the scope, importance, classification and nomenclature of plant taxonomy. CO-2. Learn about artificial, natural and phylogenetic system. CO-2. Understand the taxonomic literature. CO-3. Students will learn about sources of data for systematic CO-4. The students know about botanical nomenclature and different plant families. They learn use of computer in plant classification. CO-5. The student know about ecology and ecological grouping.
BO 232: Paper II- Plant Physiology	CO-1. Understand scope and application of plant physiology. CO-2. Students will able to know the movement of sap and absorption of water. Understand the plant cell in relation to water CO-3. Understand the process of transpiration.

	CO-4. Students will learn about the nitrogen metabolism and its importance. CO-5. Learn about the seed dormancy and germination. CO-6. Students know about the physiology of flowering and different concept related to it.
BO 241: Paper I- Plant Anatomy and Embryology	CO-1. Student will able to know about scope of plant anatomy and types of tissue. CO-2. Student will learn Epidermal, Machanial and Vascular tissue. System. CO-3. Learn about Normal and Anomalous secondary. CO-4. Learn about scope of Plant Embryology. CO-5. Understand the Microsporangium, Megasprangium, Male and Female gametophyte. CO-6. Understand the fertilization process in plants as well as about endosperm and embryo.
BO 242: Paper II- Plant Biotechnology	CO-1. Understand scope and importance of plant biotechnology CO-2. Understand the principle, basic technique, types and application of pant tissue culture. CO-3. Students will learn about concept, production and importance of single cell protein. Learn about the Genetic engineering CO-4. Understand the genes, genome as well as recombinant D.N.A. technology
Practical course	CO-1. Student will able to demonstrate proficiency in experimental techniques and methods of analysis. CO-2. Students learn to carry out practical work in the field and in the Laboratory.

Course Outcomes: T. Y. B. Sc. Botany **Semester-V**	
Course	**Outcomes** After completion of these courses students should be able to;

BO-331 **Cryptogamic Botany**	CO-1. Study of cryptogams to understand their Diversity. CO-2. Know the systematics, morphology and structure of algae, fungi, bryophytes, and Pteredophytes. CO- 3. Know life cycle pattern of cryptogams. CO-4. Know economic importance of cryptogams. CO-5.Know evolution of algae, fungi, bryophytes and Pteridophytes.
BO-332 **Cell and molecular biology**	CO-1. Gain knowledge about cell and its function. CO-2. Learn the scope and importance of molecular biology. CO-3. Understand ultra-structure of cell wall, plasma membrane and cell Organelles. CO-4. Understand the biochemistry of cell. CO-5. Understand the biochemical nature of nucleic acid and their role in living systems.
BO-333 **Genetics and evolution**	CO-1. Understand the Mendelian and neo Mendelian genetics. CO-2 Know about interaction of genes, multiple alleles and linkage and crossing over. CO-3. Know about sex linked inheritance, chromosomal aberrations. CO-4. Know the evolutionary sequence of various groups of plants.
BO-334 Spermatophytic and palaeobotany	CO-1. Systematic study of gymnosperms and angiosperms. CO-2. Understand the morphological and reproductive character of spermatophytic plants. CO-3. Understand economic importance of gymnosperms and angiosperms. CO-4. Understand the diversity among spermatophyte. CO-5. To bring investigation of palaeobotanical study in India. CO-6. Know, scope and application of Palaeobotany. CO-5.Know types of fossils, geological time scale.

BO-335 **Horticulture & floriculture**	CO-1. Understand economic importance of plant and plant product CO-2. Know the methods of plant propagation. CO-3. Understand the fruit & vegetables production technology. CO-4. Understand the scope & importance of floriculture. CO-5. Understand the methods of cultivation of different flowering plants.
BO-336 Computational botany	CO-1. Understand the scope & importance of biostatistics. CO-2. Understand the scope and some basic commonly used terms like sampling, data, dispersion, population, central tendency etc. CO-3. Knowledge to apply statistical analysis to biological data for testing different hypothesis.
Semester-VI	
BO-341 **Plant physiology & biochemistry**	CO-1. Know scope and importance of plant physiology. CO-2. Understand plant & water relation. CO-3. Understand process of photosynthesis, C_3, C4, CAM pathways. CO-4. Understand the process of respiration, growth and developmental process in plant. CO-5. Understand the biochemistry of cell. CO-6.Understand the different biochemical reaction of biomolecules in plant cell.
BO-342 **Plant ecology and biodiversity**	CO-1. Know the biotic and abiotic components of ecosystem. CO-2. Food chain & food web in ecosystem. CO-3. Understand diversity among various groups of plant kingdom. CO-4. Understand plant community & ecological adaptation in plants. CO-5. Scope , importance and management of biodiversity.

BO- 343 **Plant pathology**	CO-1. Understand scope and importance of plant pathology. CO-2. Know disease cycle and disease development. CO-3. Know the effect of plant diseases on economy of crops. CO-4. Know the methods of studying plant diseases. CO-5. They can identify the plant diseases like bacterial, nematode, and fungal. CO-6. Know the disease forecasting. CO-7. Know the prevention and control measures of plant diseases.
BO- 344 **Medical and Economic Botany**	CO-1. Understand scope and importance of pharmacognosy. CO-2. Know the cultivation, collection, processing & importance of various herbal drugs. CO-3. Understand the scope of economic botany. CO-4. Know the botanical resources like non wood forest products. CO-5.Understand the concept of Ayurvedic pharmacy.
BO-345 **Plant Biotechnology**	CO-1. Understand the fundamental of recombinant DNA technology. CO-2. Understand tissue culture techniques. CO-3. Role of microbes in agriculture, medicine & industry. CO-4. Know the fermentation technology. CO-5. Understand the concept of bioinformatics, genomics & proteomics. CO-6.Understand technical germplasm & cryopreservation.
BO. 346 **Plant breeding & seed technology.**	CO-1. Understand the scope & importance of plant breeding. CO-2. Know the technique of production of new superior crop varieties. CO-3. Know the about heterosis, hybrid vigor etc. CO-4. Know the process of hybrid variety, development &

	their release. CO-5.Know about seed germination, processing , production etc.

BSc-Zoology

F. Y. B.Sc. Course	Outcomes
ZO-111,121: Animal diversity I and II **[2019 [Pattern]** **SEM-I & II**	CO1: To understand the Animal diversity around us. CO2: To understand the underlying principles of classification of animals. CO3: To understand the terminology needed in classification. CO4: To understand the differences and similarities in the various aspects of classification. CO5: To classify invertebrates and to be able to understand the possible group of the invertebrate observed in nature.
ZO- 112: Animal Ecology:	CO1: The learners will be able to identify and critically evaluate their own beliefs actions in relation to professional and societal standards of ethics and it impact on ecosystem and biosphere. CO2: To understand anticipate, analyze and evaluate natural resource issues and act on a lifestyle that conserves nature. CO3: The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community. CO4: The working in nature to save environment will help development of leadership skills to promote betterment of environment.
ZO – 122: Cell Biology	CO1: Student will come to know the scope of cell biology. CO2: Identifications of the different structures of Prokaryotic, Eukaryotic. CO3: Knowledge of the structure of unit membranes and its different models. CO4: Understanding the different cell organelles. CO5: Comparison between meiosis and mitosis cell division CO6: Explanation of the cell cycle, cell ageing and cell death.

Practical Zoology -I	CO1: Recognize the live forms of vertebrates and invertebrates. CO2: Analyze and describe zoological concepts, including morphology and anatomy. CO3: Explain conservation and sustainable use of animals; CO5: Explain and demonstrate the impact that animals have on human society.
S. Y. B.Sc. Course [2019 [Pattern] SEM-III & IV	**Outcomes**
ZO 211, 221: Animal Systematic and Diversity	CO1- Knowledge of classification of Non-chordates along with studies on various physiological functions and interactions of non-chordate organisms with type specimens. CO2- Knowledge of classification of chordates along with studies on various physiological functions and comparative anatomy of organs of chordate with example.
ZO 212, 222: Applied Zoology I & II	CO1-Understands processes of fisheries, sericulture, along with crop pest management techniques. CO2-Students gain knowledge about various disease related vectors and their impact on human. CO3-Understands concepts of apiculture, poultry, dairy along with tissue and cell culture. techniques.
ZO 223: Practical course	CO1-First-hand knowledge about identification of non-chordate and chordate specimens (fresh and preserved) along with larval forms and study of endoskeleton of vertebrates. CO2: Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology. CO3: Analyze the relationships among animals, plants and microbes

BSc- Physics

Class	Course	Outcomes
F.Y. B. Sc. **[2019 [Pattern]** **SEM-I & II**	**PHY-111** **Mechanics and Properties of Matter**	**CO-1.** Demonstrate an understanding of Newton's laws and applying them in calculations of the motion of simple systems. **CO-2.** Use the free body diagrams to analyse the forces on the object. **CO-3.** Understand the concepts of energy, work, power, the concepts of conservation of energy and be able to perform calculations using them.

		CO-4. Understand the concepts of elasticity and be able to perform calculations using them. **CO-5.** Understand the concepts of surface tension and viscosity and be able to perform calculations using them. **CO-6.** Use of Bernoulli's theorem in real life problems. **CO-7.** Demonstrate quantitative problem-solving skills in all the topics covered.
F.Y.B. Sc.	**PHY-112 Physics Principles and Applications**	**CO-1.** To understand the general structure of atom, spectrum of hydrogen atom. **CO-2.** To understand the atomic excitation and LASER principles. **CO-3.** To understand the bonding mechanism and its different types. **CO-4.** To demonstrate an understanding of electromagnetic waves and its spectrum. **CO-5.** Understand the types and sources of electromagnetic waves and applications. **CO-6.** To demonstrate quantitative problem-solving skills in all the topics covered.
F.Y.B. Sc.	**PHY-113 Physics Laboratory 1A**	**CO-1.** Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. **CO-2.** Demonstrate an ability to collect data through observation and/or experimentation and interpreting data. **CO-3.** Demonstrate an understanding of laboratory procedures including safety, and scientific methods. **CO-4.** Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena. **CO-5.** Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.
F.Y.B. Sc.	**PHY-121**	**CO-1.** Describe the properties of and relationships

	Heat and Thermodynamics	between the thermodynamic properties of a pure substance. **CO-2.** Describe the ideal gas equation and its limitations. **CO-3.** Describe the real gas equation. **CO-4.** Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process. **CO-5.** Analyze the heat engines and calculate thermal efficiency. **CO-6.** Analyze the refrigerators, heat pumps and calculate coefficient of performance. **CO-7.** Understand property 'entropy' and derive some thermo dynamical relations using entropy concept. **CO-8.** Understand the types of thermometers and their usage.
F.Y.B. Sc.	**PHY-122 Electricity and Magnetism**	**CO-1.** To understand the concept of the electric force, electric field and electric potential for stationary charges. **CO-2.** Able to calculate electrostatic field and potential of charge distributions using Coulomb's law and Gauss's law. **CO-3.** To understand the dielectric phenomenon and effect of electric field on dielectric. **CO-4.** To Study magnetic field for steady currents using Biot-Savart and Ampere's Circuital laws. **CO-5.** To study magnetic materials and its properties. **CO-6.** Demonstrate quantitative problem-solving skills in all the topics covered.
F.Y.B. Sc.	**PHY-123 Physics Laboratory 1B**	**CO-1.** Acquire technical and manipulative skills in using laboratory equipment, tools, and materials. **CO-2.** Demonstrate an ability to collect data through observation and/or experimentation and interpreting data.

		CO-3. Demonstrate an understanding of laboratory procedures including safety, and scientific methods. **CO-4.** Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena. **CO-5.** Acquire the complementary skills of collaborative learning and teamwork in laboratory settings.
S.Y.B. Sc. [2019 [Pattern] SEM-III & IV	**PHY-231: Mathematical Methods in Physics-I**	**CO-1.** Understand the complex algebra useful in physics co **CO-2.** Understand the concept of partial differentiation. **CO-3.** Understand the role of partial differential equations in phy **CO-4.** Understand vector algebra useful in mathematics and phy. **CO-5.** Understand the concept of singular points of differential equations.
S.Y.B. Sc.	**PHY-232: Electronics (Optional I)**	**CO-1.** Apply different theorems and laws to electrical circuits. **CO-2.** Understand the relations in electricity. **CO-3.** Understand the parameters, characteristics and working of transistors. **CO-4.** Understand the functions of operational amplifiers. **CO-5.** Design circuits using transistors and applications of operational amplifiers. **CO-6.** Understand the Boolean algebra and logic circuits.
S.Y.B. Sc.	**PHY-232: Instrumentation (Optional II)**	**CO-1.** Understand the concept of measurement. **CO-2.** Understand the performance of measuring instruments. **CO-3.** Design experiments using sensors.
S.Y.B. Sc.	**PHY-233: Practical**	**CO-1.** Use various instruments and equipment. **CO-2.** Design experiments to test a hypothesis and/or

	Course (Laboratory 2A)	determine the value of an unknown quantity. • Investigate the theoretical background of an experiment. **CO-3.** Setup experimental equipment to implement an experimental approach. **CO-4.** Analyze the data, plot appropriate graphs and reach conclusions from data analysis. **CO-5.** Work in a group to plan, implement and report on a project/experiment. **CO-6.** Keep a well-maintained and instructive laboratory logbook.
S.Y.B. Sc.	**PHY-241: Oscillations, Waves, and Sound**	**CO-1.** To study underlying principles of oscillations and it's scope in development. **CO-2.** To understand and solve the equations / graphical representations of motion for simple harmonic, damped, forced oscillators and waves. **CO-3.** To explain oscillations in terms of energy exchange with various practical applications. **CO-4.** To solve numerical problems related to undamped, damped, forced oscillations and superposition of oscillations. **CO-5.** To study characteristics of sound, decibel scales and applications.
S.Y.B. Sc.	**PHY-242: Optics**	**CO-1.** Acquire the basic concept of wave optics. **CO-2.** Describe how light can constructively and destructively interfere. **CO-3.** Explain why a light beam spread out after passing through an aperture **CO-4.** Summarize the polarization characteristics of electromagnetic wave **CO-5.** Understand the operation of many modern optical devices that utilize wave optics **CO-6.** Understand optical phenomenon such polarization, diffraction and interference in terms of the wave model

		CO-7. Analyze simple example of interference and diffraction.
S.Y.B. Sc.	**PHY-243: Practical Course (Laboratory 2B)**	**CO-1.** Use various instruments and equipment. **CO-2.** Design experiments to test a hypothesis and/or determine the value of an unknown quantity. • Investigate the theoretical background of an experiment. **CO-3.** Setup experimental equipment to implement an experimental approach. **CO-4.** Analyze the data, plot appropriate graphs and reach conclusions from data analysis. **CO-5.** Work in a group to plan, implement and report on a project/experiment. **CO-6.** Keep a well-maintained and instructive laboratory logbook.

BSc- Mathematics

Course F. Y. B.Sc.	Outcomes
Algebra and Geometry **[2019 [Pattern]** **SEM-I & II**	CO-1. Solve various problems on properties of integers and use the basic concepts of divisibility, congruence and them applications in basic algebra. CO-2. Apply factor theorem, remainder theorem to solve problems on polynomials and by using given relations between roots he will find the roots of polynomials CO-3. Solve the system of homogeneous and non-homogeneous linear of equations variables. CO-4. Solve the problems of lines in three dimension, planes, spheres, and cylinders and how geometry is related to algebra by using their algebraic equations
Calculus and Differential Equations	CO-1. Identify algebraic and order properties of real numbers. CO-2. Identify and apply the function properties of real number system such as the completeness property CO-3. Verify the values of limit of a function at a point using the definition of alimit CO-4. Students will be familiar with the techniques of

	integration and differentiation of function with real variables.
Course	**Outcomes S. Y. B.Sc.**
Multivariable Calculus I [2019 [Pattern] SEM-III & IV	CO-1. Students learn analysis of multivariable functions, continuity, and differentiability. CO-2. learn the concepts of multiple integrals and their Application to area and volumes
Laplace Transformsand FourierSeries	CO-1. Learn the methods and properties of Laplace transform and Inverse Laplace Transform, apply them to solve CO-2. Apply the fundamental concepts of Fourier series, CO-3. Fourier Sine series, Fourier Cosine series to find series representation of irrational numbers.
Linear Algebra	CO-1. Use the concept of inner products paces to find norm of vectors, distance between vectors, check the orthogonality of vectors. CO-2. Apply the properties of linear transformations to linearity of transformations,
Numerical differention and integration	CO-1. Students develop knowledge in the error and solution of differential equation. CO-2. Students develop knowledge in the fitting of various curves and numerical diffraction and integration

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