

**OFFICE OF THE PRINCIPAL**  
**GOVERNMENT AUTONOMOUS COLLEGE, ANGUL, ODISHA-759143**  
 ସରକାରୀ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ, ଅନୁଗୋଳ, ଓଡ଼ିଶା: ୭୫୯୧୪୩  
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### COURSE OUTCOME : UG

The aim and objective of a Course Outcome is to disseminate detailed information to the students as to what they can expect from a particular course in the programme they pursue. There are a total of 20 UG Programmes across three different streams, i.e, Arts, Science and Commerce in this HEI.

- The Arts stream comprises 12 Programmes viz. Economics, Education, English, Geography, Hindi, History, Mathematics, Odia, Philosophy, Political Science, Sanskrit, and Sociology.
- The Science stream comprises 07 Programmes viz. Botany, Chemistry, Computer Science, Geology, Mathematics, Physics and Zoology.
- In addition to the above, there is also the Commerce Stream.

**No. of UG Programmes Offered in this HEI: 20**

1. Arts-12
2. Commerce-01
3. Science-07

**No. of Courses across all the 20 programmes: 444**

1. Arts- 260
2. Commerce-22
3. Science-146
4. AECC-I (EVS) for All – 01
5. AECC-II (Odia, English, Hindi) for All – 03
6. SECC for All – 02
7. Ethics and Value (for all) – 06
8. NCC-04

#### New Courses Introduced: 44

Sl.No	Programme	Name of Course	No of Courses newly Introduced	Year
01	All UG Programmes	AECC	04	2019
02	All UG Programmes	SECC	02	2019
03	All UG Programmes	Ethics and Values	06	2021
04	Hindi	Core-1 to 14, DSE-I to IV	18	2022

05	Geology	Core-1 to 14, DSE-I to IV	18	2022
06	All UG Programmes	NCC	04	2023

### COLOR CODE USED FOR

- **New Courses-Red**
- **Local-Purple**
- **Regional-Orange**
- **National-Blue**
- **Global-Green**

## Programme: ECONOMICS

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Introductory Microeconomics	<ul style="list-style-type: none"> <li>• To expose the students to basic principles of micro economic theory</li> <li>• To think like an economist</li> <li>• How to apply micro economic concepts to real life situations</li> </ul>	<ul style="list-style-type: none"> <li>• Learn basic principles of micro economics</li> <li>• Interaction of Demand and Supply</li> <li>• Characteristics of perfect and Imperfect Markets</li> <li>• Can take decision as a consumer/producer</li> </ul>	Global
2	Core-2	Mathematical Economics for Economics-I	<ul style="list-style-type: none"> <li>• To Expose the students to the fundamental mathematical concepts used in Economics</li> <li>• To apply mathematical concepts for through understanding microeconomics</li> </ul>	<ul style="list-style-type: none"> <li>• Upgrading Mathematical knowledge and skills acquired in schools</li> <li>• Helps in preparing the student for 2<sup>nd</sup> semester Mathematical Methods for Economics-II</li> <li>• Learn optimization technique which helps in analysis and business decision making</li> <li>• Student can get job as analyst in corporate houses</li> </ul>	Global
3	Core-3	Introductory Macroeconomics	<ul style="list-style-type: none"> <li>• To understand basic macroeconomic concepts</li> <li>• To know the determination of aggregate macro-economic variables like GDP,</li> <li>• Saving, Investment, money, inflation and Balance of</li> </ul>	<ul style="list-style-type: none"> <li>• Can understand real economic issues like inflation, money supply, GDP and their interlink ages.</li> <li>• Critically evaluate macroeconomic policies</li> </ul>	Global

			payment.		
4	Core-4	Mathematical Economics for Economics-II	<ul style="list-style-type: none"> <li>To Expose the students to fundamental mathematical concepts used in Economics</li> <li>To apply mathematical concepts for thorough understanding of microeconomics</li> </ul>	<ul style="list-style-type: none"> <li>Upgrading Mathematical knowledge and skills acquired in schools</li> <li>Helps in preparing the student for 2<sup>nd</sup> semester Mathematical Methods for Economics-II</li> <li>Learn optimization technique which helps in analysis and business decision making</li> <li>Student can get job as analyst in corporate houses</li> </ul>	Global
5	Core-5	Microeconomics-I	<ul style="list-style-type: none"> <li>To provide a sound training on microeconomic theory to formally analyse the behavior of individual agents</li> <li>To learn the behavior of consumer, producer and competitive firm</li> </ul>	<ul style="list-style-type: none"> <li>Students will know about consumers theory, production theory and functioning of competitive market</li> </ul>	Global
6	Core-6	Macroeconomics-I	<ul style="list-style-type: none"> <li>To introduce the student to formal modelling of macroeconomy in terms of analytical tools</li> <li>To teach alternative theories of output and employment in a closed economy</li> <li>Theoretical issues related to open economy</li> </ul>	<ul style="list-style-type: none"> <li>The students will analyze and interpret consumption theories, investment theories, demand and supply of money, IS-LM framework, inflation, unemployment, trade cycle etc.</li> </ul>	Global
7	Core-7	Statistical Methods for Economics	<ul style="list-style-type: none"> <li>To introduce the students the basic concepts and terminology which are fundamental to statistical analysis and inference</li> </ul>	<ul style="list-style-type: none"> <li>Students can analyse real economic data</li> <li>Can draw inferences using statistical tools like mean, standard deviation, correlation, index number, time series</li> </ul>	Global
8	Core-8	Microeconomics-II	<ul style="list-style-type: none"> <li>To give conceptual clarity to the student using</li> </ul>	<ul style="list-style-type: none"> <li>To understand efficiency of markets, market failure, market imperfections etc.</li> </ul>	Global

			mathematical tool and reasoning		
9	Core-9	Macroeconomics-II	<ul style="list-style-type: none"> <li>To introduce the students to long run issues like growth, technological progress, Research and Development, innovation, knowledge creation</li> </ul>	<ul style="list-style-type: none"> <li>Enable the students to combine their knowledge of working of macroeconomy with long run economic phenomenon like economic growth, the chronological progress, Research and Development, innovation</li> <li>Can understand business cycle and role of policies</li> </ul>	Global
10	Core-10	Research Methodology	<ul style="list-style-type: none"> <li>To introduce the student regarding the basic concepts of research i.e. meaning types, methodology, data analysis and presentation</li> <li>To know the ethics of research</li> </ul>	<ul style="list-style-type: none"> <li>Can write own research paper in a systematic manner</li> </ul>	Global
11	Core-11	Indian Economy-I	<ul style="list-style-type: none"> <li>Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points</li> </ul>	<ul style="list-style-type: none"> <li>a student should be able to understand the development paradigm adopted in India since independence and evaluate its impact on economic as well as social indicators of progress and well being</li> </ul>	National
12	Core-12	Development Economics-I	The course begins with a discussion of alternative conceptions of development and their justification. It then proceeds to aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models. The axiomatic basis for inequality measurement is used to develop measures of inequality and connections between growth and inequality are explored. The course ends by linking political institutions to growth and inequality by discussing	<ul style="list-style-type: none"> <li>This course introduces students to the basics of development economics, with in-depth discussions of the concepts of development, growth, poverty, inequality, as well as the underlying political institutions</li> </ul>	Global

			the role of the state in economic development and the informational and incentive problems that affect state governance		
13	Core 13	Indian Economy-II	This course examines sector-specific policies and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence	<ul style="list-style-type: none"> <li>At the end of the course, a student should be able to understand the role of economic policies in shaping and improving economic performance in agriculture, manufacturing and services</li> </ul>	National
14	Core 14	Development Economics-II	This is the second course of the economic development sequence. It begins with basic demographic concepts and their evolution during the process of development. The structure of markets and contracts is linked to the particular problems of enforcement experienced in poor countries. The governance of communities and organizations is studied and this is then linked to questions of sustainable growth. The course ends with reflections on the role of globalization and increased international dependence on the process of development	<ul style="list-style-type: none"> <li>This course teaches the student various aspects of the Indian economy, as well as important themes relating to the environment and sustainable development. It also introduces them to some issues of globalization</li> </ul>	Global
15	DSE I	Public Economics	Public economics is the study of government policy from the points of view of economic efficiency and equity. The paper deals with the nature of government intervention and its implications for allocation, distribution and stabilization. Inherently, this study involves a formal analysis of government taxation and expenditures. The subject encompasses a host of topics including public goods, market failures and externalities.	At the end of the course, a student should be able to understand the role of policies in economic efficiency and equity to analyze government taxation and expenditures.	Global
16	DSE II	Money, Banking and Financial Market	This course exposes students to the theory and functioning of the	The course teaches the role of financial markets and institutions, interest rates,	National

			monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control. Financial and banking sector reforms and monetary policy with special reference to India are also covered	monetary management and instruments of monetary control.	
17	DSE III	Environmental Economics	This course introduces the students to the basics of environmental economics to understand the fundamentals of environmental concerns and develop insights into valuation of environment.	At the end of the course, a student should be able to understand the fundamentals of environmental economics.	Global
18	DSE IV	Project Work			

## Programme: EDUCATION

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1.	Core-1	Educational Philosophy	To state and analyze the meaning of education and form own concept on Education.	By studying this one can compare & contrast Indian and western philosophies of Education.	National
2.	Core-2	Educational Psychology	It can improve the understanding of students upon the classroom teaching and learner's behavior.	After completing this paper the students will be able to use educational psychology in their teaching learning tasks.	Global
3.	Core-3	Educational Sociology	To describe the relationship between education and sociology	Through this paper a student can justify the importance of education for social change.	National
4.	Core-4	Changing Pedagogical perspective	It can create a revolution in traditional teaching & learning methods and improvise the pedagogical knowledge.	By studying this paper a student can prepare a lesson plan in different designs by his/her own.	Regional
5.	Core-5	Educational Assessment and Evaluation	To know the importance and purpose of assessment for learning.	Students will be able to develop or construct a unit test on any school subject.	National
6.	Core-6	Educational Research	To understand research design and procedure of research in education.	Students will be able to develop procedure of collecting and analyzing data.	Global
7.	Core-7	Statistics in Education	To compute and use various statistical measures of average, variation and interpretation of	Students will be able to understand, organize and represent educational data in tabular and graphical form.	Global

			educational data.		
8.	Core-8	History of Education in India	To understand the development of education in India during ancient period, medieval period and pre independence period.	Students will be able to implement recommendation of different policies and committee's reports of education in India.	National
9.	Core-9	Curriculum Development	To analyze bases and sources of different curriculum from courses of study and textbooks.	Students will be able to make content analysis of any text book.	Global
10.	Core-10	Guidance and Counseling	To explain the role of school in organizing different guidance programmes.	Students will narrate the process, tools and techniques of guidance and counseling.	National
11.	Core-11	Development of Education in Odisha	To grasp the structure of educational system of Odisha.	To improve Quality of education resulting in enhanced intellectual, social and cultural learning.	Regional
12.	Core-12	Information and Communication Technology in Education	To identify, describe and apply emerging technologies in teaching and learning.	Students are expected to use computers, network, and internet.	Global
13.	Core 13	Contemporary trends and issues in Indian education	To understand the importance of emerging concerns in Indian education	Students will analyze various problems and issues for ensuring quality in Education	National
14.	Core 14	Educational Management and leadership	To the structure of Educational management at different levels from National to institution level	Students will develop the total quality management approach in Education	National
15.	DSE I	Pedagogy of language	To know the appropriate Pedagogical treatment for effective classroom transaction	Students will understand the different methods and strategies of teaching	Global
16.	DSE II	Pedagogy of social science	To identify methods and skills of teaching history and political science for transacting the contents	Students will develop their skills and competencies to formulate specific learning objectives for history and political science.	National
17.	DSE III	Policy and practices in school education in India	To analyze various policies on education for school.	Students will explore various policies and can implement the policies on school education.	National
18.	DSE IV	Research Project	To emphasize the needs to be achieved within the scope of research.	Students will learn how to develop a conceptual thesis and manage a research project.	

## Programme: ENGLISH

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
01	Core-1	British Poetry and Drama	14 <sup>th</sup> to 17 <sup>th</sup> centuries	# Read and explore seminal texts from the early modern period. # Ideas about Modern English Poetry strengthened. # Idea of Renaissance literature	Global

				garnered.	
02	Core-2	British Poetry and Drama	17 <sup>th</sup> and 18 <sup>th</sup> centuries	# Acquaint students with Jacobean and 18 <sup>th</sup> century British poetry and Drama. # Introduce to students the world of Comedy of Humours, Comedy of Manners, Satiric Poetry.	Global
03	Core-3	British Prose	18 <sup>th</sup> century	# Acquaint students with a new form of literature—the Essay. # Acquaint them with the shift from reason to emotion.	Global
04	Core-4	Indian Writing in English		# Introduce students to the field through a selection of representative poems, novels and plays.	National
05	Core-5	British Romantic Literature		# Study the works of representative writers. # Acquaint students with key ideas like return to nature, subjectivity, freedom, defiance of classicism	Global
06	Core-6	British Literature	19 <sup>th</sup> century	# Introduce students to 19 <sup>th</sup> century British literature through study of fiction and poetry.	Global
07	Core-7	British Literature	Early 20 <sup>th</sup> century	# Introduce students to modernist canon in poetry, novel, and literary criticism.	Global
08	Core-8	American Literature		# Introduce students to canonical authors from American literature in poetry and plays.	Global
09	Core-9	European Classical Literature	8 <sup>th</sup> cent. BC to 5 <sup>th</sup> AD	# Introduce students to European Classical Literature that began in Greece in 8 <sup>th</sup> cent BC and continued until the fall of Roman Empire in 5 <sup>th</sup> century AD. # Study of founding texts of the European canon.	Global
10	Core-10	Women's writing		# Acquaint students with works of women writers from different cultures and nations. # Discuss issues of patriarchy, gender, and relations of desire and power.	Global
11	Core-11	Modern European Drama		# Introduce students to the best of experimental and innovative dramatic literature of modern Europe.	Global
12	Core-12	Indian Classical Literature		# Create awareness among students of the rich and diverse literary and aesthetic culture of ancient India.	National
13	Core 13	Post-Colonial Literatures		# Ideas about European colonialism and empires in Asia, Africa, Middle East, the Pacific. # Study texts in terms of compliance, resistance, mimicry, subversion	Global



14	Core 14	Popular Literature		# Introduce students to genres like children's literature, detective fiction, campus fiction. # Examine why some of them have mass appeal.	
15	DSE I	Literary Theory		# Expose students to basic premises and issues of major theoretical approaches to literary texts.	
16	DSE II	World Literature		# Introduce students to the study of world literature. # Study translation of texts written in languages other than English.	Global
17	DSE III	Partition Literature		# Read significant writings on Indian Partition. # Issues of loss, trauma, communalism, alienation, displacement explored in these texts.	National
18	DSE IV	Writing for Mass Media/ Project		# Writing for Print Media— News stories, features, and editorials. # Writing for electronic Media— Advertisement caption writing and taglines. # Writing e-mails, blogs, social networking, internet journalism	
19	GE-1	Academic Writing and Composition		# Academic writing-- summarizing and paraphrasing. # Critical thinking—synthesis, analysis, and evaluation. # Editing, book and media review.	
20	GE-2	Nation, Culture, India		# Introduce students to basic ideas about Indian Cultural Ethos through study of literature.	National
21	SECC	English Communication		# Build up the four primary skills in students for academic use and use in offices. # Activity based, goal oriented, functional course. # Equip students with relevant skills of presentation and expression.	Global
22	AECC	Alternative English		# Boost learners' competence in expressive and comprehension skills. # Usage, vocabulary, and grammar for mastery in English Language.	Global

## Programme: GEOGRAPHY

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Relevance
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01	Core-1	Geomorphology	<ul style="list-style-type: none"> <li>• Study of landforms and its evolution</li> <li>• Understand the nature of geomorphology, process and form, history and Geomorphic system</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the evolution of landforms through various endogenic and exogenic forces</li> </ul>	Global
02	Core-2	Cartography	<ul style="list-style-type: none"> <li>• Study of map making its characteristics and scope</li> <li>• Concept and application of basic Geodesy and scale.</li> <li>• Study of map projection and geological maps.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the concept of map making, scale and basic Geodesy.</li> </ul>	Global
03	Core-3	Human Geography	<ul style="list-style-type: none"> <li>• Study the man nature relationship, various racial groups and their characteristics.</li> <li>• Study of global distribution of major racial groups, Language and Religion.</li> <li>• Study of Demographic characteristics of population, factors affecting population distribution and global population trends.</li> <li>• Study of different types and patterns of settlement, trend of world urbanization.</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the man nature relationship, demographic characteristic of population, global population trend, pattern and type of settlement, global urbanization trend.</li> </ul>	Global
04	Core-4	Climatology	<ul style="list-style-type: none"> <li>• Study the composition and structure of the atmosphere, various elements of weather and climate.</li> <li>• To understand atmospheric pressure and winds, concept of air mass and weather</li> </ul>	<ul style="list-style-type: none"> <li>• To understand various elements of weather and climate.</li> </ul>	Global

			forecasting.		
05	Core-5	Oceanography	<ul style="list-style-type: none"> <li>To study the bottom relief of the ocean.</li> <li>To study the origin of the ocean water, temperature and salinity distribution.</li> <li>Understand the movement of ocean water and various marine resources.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the various features of ocean bottom relief and various marine resources</li> <li>To understand the ocean water movement.</li> </ul>	Global
06	Core-6	Statistical Methods in Geography	<ul style="list-style-type: none"> <li>To study various aspects of data, its source and data measurements.</li> <li>To study and understand the descriptive statistics, Measures of Dispersion and Measures of Association.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the data source and methods of data measurements.</li> <li>To understand the descriptive statistics, Measures of Dispersion and Measures of Association.</li> </ul>	Global
07	Core-7	Geography of Odisha	<ul style="list-style-type: none"> <li>To study the Physiography of Odisha, its agriculture, minerals and power resources, Population distribution, and trends of Urbanization.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the physiography of Odisha and resource distribution.</li> </ul>	Regional
08	Core-8	Evolution of Geographical Thought	<ul style="list-style-type: none"> <li>To study the Concept of geography through the eras.</li> <li>To study the dichotomy in Geography, Modern Geographical Thought and recent trends in development of Geography</li> </ul>	<ul style="list-style-type: none"> <li>To understand the trend of development in the subject Geography</li> </ul>	Global
09	Core-9	Economic Geography	<ul style="list-style-type: none"> <li>To study the scope of economic geography , classification of</li> </ul>	<ul style="list-style-type: none"> <li>To understand the scope of economic geography and classification of various economic activities.</li> </ul>	Global

			economic activities		
10	Core-10	Environmental Geography	<ul style="list-style-type: none"> <li>To study the scope of Environmental Geography, Concept of Ecosystem, Concept of Biome.</li> <li>To study Environmental Degradation, its causes and consequences and its management</li> </ul>	<ul style="list-style-type: none"> <li>To understand the concept of environmental geography, its degradation and its management.</li> </ul>	Global
11	Core-11	Regional Planning and Development	<ul style="list-style-type: none"> <li>To study the concept and types of region.</li> <li>To study the delineation of planning regions, theories and Models for Regional Planning.</li> <li>To study the Policies and Programs for Rural and Regional Development.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the Concept of region and regional Planning through various theories and models.</li> <li>To understand the policies and programs for Rural and Regional Development.</li> </ul>	Global
12	Core-12	Remote Sensing and GIS	<ul style="list-style-type: none"> <li>To study the components of Remote sensing, Aerial Photography, principles of Stereo Vision</li> <li>To study the concept of GIS its components.</li> <li>To study the application of RS and GIS in mapping.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the components of RS and GIS.</li> <li>To understand the application of RS and GIS in mapping.</li> </ul>	Global
13	Core 13	Geography of India	To study the Physiography of India, its agriculture, minerals and power resources, Population distribution, and trends of Urbanization	To understand the physiography of India and resource distribution.	National
14	Core 14	Disaster Management	To study the concept of Hazards and Disasters. To study the disaster management cycle and role of various stake holders.	To understand the difference between hazards and disaster. To understand the disaster management cycle and role of stake holders in managing the disaster.	Global

15	DSE I	Population Geography	To study the nature and scope of population Geography. To study the population size, distribution and growth, determinants of population, population composition and characteristics	To understand the determinant, composition and size of population. To understand the scope and field of study of population Geography	Global
16	DSE II	Resource Geography	To study the concept, types and classification of resources. To study the problems of resource exploitation, its management and approach towards sustainable development.	To understand the concept and distribution of resources. To understand the problems of resource exploitation and its management. To understand the concept of sustainable development.	Global
17	DSE III	Urban Geography	To study the history of Urbanization, its trend and patterns globally. To study the various classification of cities through theories. To study the urban issues, problems and steps to curb it. To study few case studies with reference to city planning.	To understand the history of Urbanization, its global trend. To understand the function, classification of cities, urban problems and its management.	Global
18	DSE IV	Project Work		Students will learn how to prepare a project. They will gain idea about the ethics involved in research.	

### Programme: **HINDI**

#### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	The history Hindi literature part 1	Modern historical texts of Hindi literature and trends of Adikal, Bhaktikal and Ritikal	To provide the knowledge of the entire scenario of 1050-1900 Vikram Samvat (993AD – 1857AD) of social changes, reformation, culture and history of India.	National
2	Core-2	Hindi poetry of the Bhakti era	Nigrun and Ramabhakti poetic genres	To provide knowledge of philosophical, historical and literary importance of Nirgun and Ram Bhakti kavyadhara through important texts of prominent poets of Bhakti kavyadhara.	National

3	Core-3	The history of Hindi literature part 2	Background of modern period, its trends and development of Hindi prose literature.	To provide the knowledge about the changing scenario of Social, Cultural and Political aspects in Hindi literature.	National
4	Core-4	Krihna devotion and Ritikal poetry	Surdas and Raas Khan, chiefs of the Krishnabhakti sect, and Bihari and Ghannada, the chiefs of the Ritikal sect.	To provide the knowledge of Krishna Bhakti Poetry and its prominent poet Surdas, Raskhan, Meera Bai, Bihari and Ghananand.	National
5	Core-5	Principles of translation	Definition of translation process and its practice/use	In present days translation plays a major role in literature and all other subjects. To provide the knowledge of different dimensions and forms of translation.	National
6	Core-6	Hindi narrative literature-novels	Origin and development of Hindi novel and prominent novelists Premchand and Bhagwati Charan Verma.	To provide the knowledge about the origin and development of Hindi Novel and its impact in Indian society and environment. To provide the knowledge about the 'Upanyas Samrat' Premchand and women Hindi Novelist.	National
7	Core-7	Hindi narrative literature-story	Major Hindi story writers and their stories	To provide the knowledge of popular Hindi stories in Hindi literature. To provide the knowledge of language and literature skills simultaneously the historical and cultural aspects of India through these given stories.	National
8	Core-8	Non-fiction prose literature	Tradition of writing autobiography and rekhachitra and essay in Hindi	Non-fiction can help to develop critical thinking and analytical skills, improve language skills and explore the beginnings of Indian non-fiction.	National
9	Core-9	Modern Hindi poetry part 1	Among the prominent poets, poems of Maithili Sharan Gupta, Jaishankar Prasad, Nirala, Panta and MahadeviVerma.	To provide the knowledge about Hindi poetry of Maithili sharan Gupt. Also to provide the knowledge about Chhayavadi poet; Prasad, Nirala, Pant and Mahadevi Verma.	National
10	Core-10	Linguistics and Hindi language	Scope of language and linguistics	To provide the knowledge about Hindi language and Linguistics.	National

			development of Hindi language	Also to provide the knowledge of different aspects of Hindi language, its origin and development of Devnagri Script. To provide the knowledge about different forms of Hindi language.	
11	Core-11	Hindi drama theater	Major Hindi playwrights and their plays	To provide knowledge of the history and evolution of Hindi drama and theatre, improve proficiency in spoken and written Hindi, enhance creativity through this topic.	National
12	Core-12	Indian poetics	Indian poetics and its principles	To provide the knowledge about ancient rules of poetry writings, its various aspects and also the knowledge about different types of Rasa, Alankar and Chhand. To provide the knowledge about definitions and forms of Rasa Siddhant and Riti Siddhant.	National
13	Core 13	Modern Hindi poetry part-2	Among modern Hindi poets, poems of Dinkar, Bachchan Anggya, Bhabani Prasad Mishra, Dharamveer Bharti, Nagarjuna, Dhumil, and Raghuvveer Sahay.	To provide the knowledge about the different forms of Modern Hindi Poetry and various poets of Modern Era i.e. Rashtra Kavi Dinkar, Halavadi Kavi Bachhan, Prayogvadi Kavi Agyen etc.	National
14	Core 14	Western poetics	Western poetics and its principles	To provide the knowledge of Western Philosopher and their views on Literature i.e aims and objectives of literature, tools for the literature etc. Also to provide the knowledge about various 'ism' and its usage in Western Literature.	National
15	DSE I	Hindi critic and criticism	Major critics and criticisms of Hindi	To provide knowledge of major Hindi literary critics such as Acharya Ramchandra Shukla, Hajari Prasad Dwivedi, Ramvilas Sharma, Nagendra and Namvar Singh and their contribution Hindi literary work.	National
16	DSE II	Tulsidas	Major works and books of Tulsidas in Hindi literature	To provide the knowledge about medieval period of Bhakti sahitya and the great poet Tulsidas. Also to provide the knowledge of Bhakti and philosophy of Tulsidas and about the Mahakavya 'Ramcharitmanas'. To provide	National

				the knowledge about the role of Tulsidas as a social reformer.	
17	DSE III	Premchand	Premchand's contribution to Hindi novel and his major novels	To provide knowledge through Premchand's literature contribution of people in freedom struggle, social and family struggle before independence.	National
18	DSE IV	Ramdhari Singh Dinkar	Contribution of Ramdhari Singh Dinkar to Hindi literature and critical study / Criticism	To provide knowledge of patriotism and national pride, awareness of social justice through the literature of Dinkar.	National
19	AECC	MIL (HINDI)	Poet Of Bhakti Kal and adhunikata, nibandh of adhunik kal writer and hindi grammer.	To provide knowledge of Bhakti kalin hindi poems and adhunik poem.	National

## Programme: HISTORY

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Relevance
01	Core-1	History of India-I	Pre history of India	Familiarizes with prehistory of India	National
02	Core-2	Social Formations and Cultural Patterns of the Ancient World	Prehistory of Ancient Civilizations	Knowledge on major ancient civilizations	Global
03	Core-3	History of India –II (350BCE-750CE)	Ancient history of India	Familiarizes with early history of India	National
04	Core-4	Social Formations and Cultural Patterns of the Medieval World	Ancient history of Rome and Cultural life of Medieval Europe	Religious and Cultural developments in Medieval Europe	Global
05	Core-5	History of India – III(750-1206CE)	Early Medieval history of India	Familiarizes with early medieval history of India	National
06	Core-6	Rise of the Modern West-I	Culture & Economy of Medieval Europe	Transition In Europe – religion and Economy	Global
07	Core-7	History of India-IV(1206-1526CE)	Cultural Life of Early Medieval India	Familiarizes r with early medieval history of India	National
08	Core-8	Rise of the Modern West - II	Emergence of new political & economic order in Europe	Developments in science and economy of Europe	Global
09	Core-9	History of India –V (1526-1750CE)	Cultural & economic life in later medieval period	Familiarizes with the culture and economy of the relevant period	National
10	Core-10	Historical Theories and Methods	Development in the writing of history	Trends in historical writing	National
11	Core-11	History of Modern Europe I (1780-1880)	Growth of nationalist and democratic ideas in Europe	Familiarizes with the concept of nationalism and democracy	Global
12	Core-12	History of India –VII (1750-1857)	Consolidation of British power & resistance to it	Understanding the early phase of British colonialism in India	National
13	Core 13	History of India – VIII (1857-1950)	Nationalism and Freedom movement in India	Idea on the freedom movement in India	National
14	Core 14	History of Modern Europe II(1880-1950)	Marxism, Socialism and Two World Wars	Familiarizes with the major historical developments of the	Global



				period	
15	DSE I	History and Culture of Odisha-I	Early history of Odisha	To gain knowledge on the geography and early history of Odisha	Regional
16	DSE II	History and Culture of Odisha-II	Political development in Odisha in medieval and modern period	Idea on political developments in Odisha during the medieval and modern period	Regional
17	DSE III	History and Culture of Odisha-III	Culture and religion in ancient Odisha	Knowledge on the culture of Odisha	Regional
18	DSE IV	Project Work		Students will learn how to prepare a project. They will gain idea about the ethics involved in research.	

## Programme: MATHEMATICS

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Relevance
1	Core-1	Calculus	The primary objective of this course is to introduce the basic tools of calculus and geometric properties of different conic sections which are helpful in understanding their applications in planetary motion, design of telescope and to the real-world problems. Also, to carry out the hand on sessions in computer lab to have a deep conceptual understanding of the above tools to widen the horizon of students' self-experience. .	This course will enable the students to: <ul style="list-style-type: none"> <li>• Sketch curves in a plane using its mathematical properties in the different coordinate systems of reference.</li> <li>• Apply derivatives in Optimization, Social sciences, Physics and Life sciences etc.</li> <li>• Compute area of surfaces of revolution and the volume of solids by integrating over cross-sectional areas.</li> </ul>	Global
2	Core-2	Discrete Mathematics	This is a preliminary course for the basic courses in mathematics and all its applications. The objective is to acquaint students with basic counting principles, set theory and logic, matrix theory and graph theory.	This course will enable the students to: <ul style="list-style-type: none"> <li>• Do simple mathematical modeling.</li> <li>• They can study advance courses in mathematical modeling, computer science, statistics, physics, chemistry etc.</li> <li>• Graphs, their types and its applications in study of shortest path algorithms.</li> </ul>	Global
3	Core-3	Real Analysis	The course will develop a deep and rigorous understanding of real line $\mathbb{R}$ and of defining terms to prove the results about convergence and	This course will enable the students to: <ul style="list-style-type: none"> <li>• Understand many properties of the real line and learn to define sequence in terms of functions from <math>\mathbb{N}</math> to a subset</li> </ul>	Global

			divergence of sequences and series of real numbers. These concepts have wide range of applications in real life scenario.	<p>of <math>\mathbb{R}</math></p> <ul style="list-style-type: none"> <li>Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.</li> <li>Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.</li> <li>To have a rigorous understanding of the concept of limit of a function.</li> <li>The geometrical properties of continuous functions on closed and bounded intervals.</li> </ul>	
4	Core-4	Differential Equations	The main objectives of this course are to introduce the students to the exciting world of Differential Equations, Mathematical Modeling and their applications.	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> <li>Formulate Differential Equations for various Mathematical models.</li> <li>Solve first order non-linear differential equation and linear differential equations of higher order using various techniques.</li> <li>Apply these techniques to solve and analyze various mathematical models.</li> </ul>	
5	Core-5	Theory of Real functions	The objective of the course is to have knowledge on limit theorems on functions, limits of functions, continuity of functions and its properties, uniform continuity, differentiability of functions, algebra of functions and Taylor's theorem and, its applications. The student how to deal with real functions and understand uniform continuity, mean value theorems.	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> <li>Students will have working knowledge on the concepts and theorems of the elementary calculus of functions of one real variable.</li> <li>workout problems involving derivatives of function and their applications.</li> <li>Some of the families and properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.</li> <li>Beta and Gamma functions and their properties.</li> </ul>	Global
6	Core-6	Group Theory-I	Group theory is one of the building blocks of modern algebra. Objective of this	<p>The course will enable the students to:</p> <ul style="list-style-type: none"> <li>Recognize the mathematical</li> </ul>	Global

			course is to introduce students to basic concepts of group theory and examples of groups and their properties. This course will lead to future basic courses in advanced mathematics, such as Group theory-II and ring theory.	<p>objects that are groups, and classify them as abelian, cyclic and permutation groups, etc;</p> <ul style="list-style-type: none"> <li>• Link the fundamental concepts of Groups and symmetrical figures;</li> <li>• Analyze the subgroups of cyclic groups;</li> <li>• Explain the significance of the notion of cosets, normal subgroups, and factor groups.</li> </ul>	
7	Core-7	Partial differential equations and system of ODEs	The objective of this course is to understand basic methods for solving Partial Differential Equations of first order and second order. In the process, students will be exposed to Charpit's Method, Jacobi Method and solve wave equation, heat equation, Laplace Equation etc. They will also learn classification of Partial Differential Equations and system of ordinary differential equations.	<p>The course will enable the students to:</p> <ul style="list-style-type: none"> <li>• Formulate, classify and transform partial differential equations into canonical form.</li> <li>• Solve linear and non-linear partial differential equations using various methods; and apply these methods in solving some physical problems.</li> </ul>	Global
8	Core-8	Numerical Methods and Scientific Computing	Calculation of error and approximation is a necessity in all real life, industrial and Scientific computing. The objective of this course is to acquaint students with various numerical methods of finding solution of different type of problems, which arises in different branches of science such as locating roots of equations, finding solution of systems of linear equations and differential equations, interpolation, differentiation, evaluating integration.	<p>The course will enable the students to learn the following:</p> <ul style="list-style-type: none"> <li>• Some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision.</li> <li>• Interpolation techniques to compute the values for a tabulated function at points not in the table.</li> <li>• Applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.</li> </ul>	Global
9	Core-9	Topology of Metric spaces	This is an introductory course in topology of metric spaces. The objective of this course is to impart knowledge on open sets, closed sets, continuous functions, connectedness and compactness in metric spaces.	<p>The course will enable the students to:</p> <ul style="list-style-type: none"> <li>• Understand the basic concepts of metric spaces;</li> <li>• Correlate these concepts to their counter parts in real analysis;</li> <li>• Appreciate the abstractness of the concepts such as open balls, closed balls,</li> </ul>	Global

				compactness, connectedness etc. beyond their geometrical imaginations.	
10	Core-10	Ring Theory	This is a second course in modern algebra which deals with ring theory. Some basics of ring theory like rings, subrings, ideals, ring homomorphisms and their properties and. This course is an integral part of any course on Modern algebra the others being Group theory and Field Theory.	The course will enable the students to learn about: <ul style="list-style-type: none"> <li>• The fundamental concept of Rings, Fields, subrings, integral domains and the corresponding morphisms.</li> <li>• Appreciate the significance of unique factorization in rings and integral domains.</li> </ul>	Global
11	Core-11	Multivariable Calculus	The objective of this course to introduce functions of several variable to a student after he has taken a course in one variable calculus. The course will introduce partial derivatives and several of its consequences and will introduce double and triple integrals along with line Integrals which are fundamental to all streams where calculus can be used.	The course will enable the students to learn about: <ul style="list-style-type: none"> <li>• to calculate partial derivatives, directional derivatives, extremum values</li> <li>• to calculate double, triple and line integrals. He will have idea of basic vector calculus including green's theorem, divergence theorem. and stokes theorem.</li> <li>• To take courses in calculus on manifolds, Differential geometry and can help in numerical computations involving several variables.</li> </ul>	Global
12	Core-12	Linear Algebra	Linear algebra is a basic course in almost all branches of science. A full course in undergraduate program will help students in finding real life applications later. The objective of this course is to introduce a student the basics of linear algebra and some of its application	The course will enable the students to learn about: <ul style="list-style-type: none"> <li>• The concept of linear independence of vectors over a field, the idea of a finite dimensional vector space, basis of a vector space and the dimension of a vector space.</li> <li>• Basic concepts of linear transformations, the Rank-Nullity Theorem, matrix of a linear transformation, algebra of transformations and the change of basis.</li> <li>• It has applications in computer science, finance mathematics, industrial mathematics, bio mathematics and what not.</li> </ul>	Global
13	Core 13	Complex Analysis	The objective of the course is to provide an introduction to the theories for functions of a complex variable. The concepts of analyticity and complex	The course will enable the students to learn about: <ul style="list-style-type: none"> <li>• Understand the significance of differentiability of complex functions leading to the understanding of</li> </ul>	Global

			integration are presented. The Cauchy's theorem and its applications, the calculus of residues and its applications are discussed in detail.	<p>Cauchy-Riemann equations.</p> <ul style="list-style-type: none"> <li>Evaluate the contour integrals and understand the role of Cauchy-Goursat theorem and the Cauchy integral formula.</li> <li>Expand some simple functions as their Taylor and Laurent series, classify the nature of singularities, find residues and apply Cauchy Residue theorem to evaluate integrals.</li> </ul>	
14	Core 14	Group Theory-II	The objective of this course is to be exposed to more advanced results in group theory after completing a basic course. The course introduces results on auto morphism, commutator subgroup, group action Sylow theorems etc.	<p>The course shall enable students to learn about:</p> <ul style="list-style-type: none"> <li>Automorphisms for constructing new groups from the given group.</li> <li>Group actions, Sylow theorems and their applications to check non simplicity.</li> <li>Students can learn on direct products, group actions, class equations and their applications with proof of all results.</li> </ul>	Global
15	DSE I	Linear Programming	The objective of this course is to familiarize industrial problems to students with various methods of solving Linear Programming Problems, Transportation Problems, Assignment Problems and their applications. Also, students will know the application of linear Programming method in Game Theory.	<p>This course will enable the students to learn:</p> <ul style="list-style-type: none"> <li>Analyze and solve linear programming models of real life situations.</li> <li>The relationships between the primal and dual problems and their solutions with applications to transportation, assignment and two-person zero-sum game problem.</li> <li>This is also prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory etc.</li> </ul>	Global
16	DSE II	Probability and Statistics	The objective of the course is to expertise the student to the extensive role of statistics in everyday life and computation, which has made this course a core course in all branches of mathematical and engineering sciences.	<p>This course will enable the students to learn:</p> <ul style="list-style-type: none"> <li>Distributions to study the joint behavior of two random variables.</li> <li>To establish a formulation helping to predict one variable in terms of the other, i.e., correlation and linear regression.</li> <li>Central limit theorem, which helps to understand the remarkable fact that: the empirical frequencies of so</li> </ul>	Global

				many natural populations, exhibit a bell shaped curve.	
17	DSE III	Differential Geometry	After learning methods on curve tracing and Analytic Geometry, the objective of this course is to teach Differential geometry of curves and surfaces which trains a student using tools in calculus to derive intrinsic properties of plain curves and space curves.	This course will enable the students to learn: <ul style="list-style-type: none"> <li>• Serret-Frenet formulae, relation between tangent, normal and binormals,</li> <li>• First and second fundamental forms and ideas on various curvatures.</li> <li>• He has scope to take more advanced courses in surface theory and geometry.</li> </ul>	Global
18	DSE IV	Project	<ul style="list-style-type: none"> <li>• How to prepare a project.</li> </ul>	<ul style="list-style-type: none"> <li>• Ethical considerations to be taken into account while preparing a project.</li> </ul>	
19	Generic Elective -1	Calculus and Differential Equations	Calculus invented by Newton and Leibnitz is powerful analytical tool to solve mathematical problems which arise in all branches of science and engineering. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of a mathematical nature as well as practical problems using calculus and differential equation. The aim should be to expose the students to basic ideas quickly without much theoretical emphasis with importance on applications.	This course will enable the students to: <ul style="list-style-type: none"> <li>• Apply knowledge of calculus and differential equations in the areas of their own interest.</li> <li>• Draw the graph of functions in polar coordinates</li> <li>• Visualize cross sections of various 3D objects like sphere, ellipsoid etc.</li> <li>• Analyze real-world scenarios to recognize when ordinary (or systems of) or partial differential equations are appropriate for creating an appropriate model.</li> </ul>	Global
20	Generic Elective - II	Algebra	This is a preliminary course for the basic courses in mathematics like, abstract algebra and linear algebra. The objective is to acquaint students with the properties of natural numbers i.e. Euclidean algorithm, congruence relation, fundamental theorem of arithmetic, etc. The basics of linear algebra i.e. vector spaces matrices are introduced here.	This course will enable the students to: <ul style="list-style-type: none"> <li>• Study further courses in mathematics like, group theory, ring theory and field theory and linear algebra.</li> <li>• It has applications not only in higher mathematics but also in other sciences subjects like computer science, statistics, physics, chemistry etc.</li> <li>• To learn the techniques of proving mathematical theorems.</li> </ul>	Global
21	SECC-II	Quantitative and logical thinking (special course)	<ul style="list-style-type: none"> <li>• To engage the students for more creatively to improve their critical thinking skill</li> <li>• To strengthen the</li> </ul>	This course will enable the students to learn: <ul style="list-style-type: none"> <li>• Students can able to appear competitive examination</li> </ul>	Global

			quantitative and logical thinking of Undergraduate students		
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## Programme: ODIA

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
01	Core-1	History of Ancient Odia Literature	9 <sup>th</sup> to 15 <sup>th</sup> Century Odia literature	<ul style="list-style-type: none"> <li>• Introduction to 9<sup>th</sup> to 15<sup>th</sup> Century Odia literature</li> </ul>	Regional
02	Core-2	Medieval Odia Literature	Medieval Odia literary trend and Cultural aspects.	<ul style="list-style-type: none"> <li>• Knowledge on medieval Odia literary trend and Cultural aspects.</li> </ul>	Regional
03	Core-3	Modern Odia Literature	Renaissance and Modern Odia literature	<ul style="list-style-type: none"> <li>• Renaissance and Modern Odia literature.</li> <li>• Nationalist and Progressive trend in Odia Literature</li> </ul>	Regional
04	Core-4	Post-modern Odia literature	Post-modern trend in Odia literature	<ul style="list-style-type: none"> <li>• Trend in Odia poetry in Post-independent time.</li> <li>• Post-modern trend in Biography, Autobiography</li> </ul>	Regional
05	Core-5	Evolution of Odia Language and Scripts	History of Odia Language	<ul style="list-style-type: none"> <li>• Origin and Development of Odia Language.</li> <li>• Evolution of Odia script, Inscriptions and Odia Language.</li> </ul>	Regional
06	Core-6	Meaning and Scope of Language, Importance and different aspects of Odia language.	Language, Origin of Language and important aspects of Odia language	<ul style="list-style-type: none"> <li>• Definition and Scope of Language.</li> <li>• Origin Theory of Language.</li> <li>• Influence on Odia language.</li> </ul>	Global
07	Core-7	Applied Odia Grammar	Syntax, Inflection, Lexicon	<ul style="list-style-type: none"> <li>• Odia Alphabets, Type of sentences.</li> <li>• Derivation and study of words.</li> </ul>	Regional
08	Core-8	Odia Folk Culture and Folklore	Folk Culture and Folklore	<ul style="list-style-type: none"> <li>• Theory of Folk Literature</li> <li>• Types and different aspects of Folk Literature.</li> </ul>	Regional
09	Core-9	Literary Theory (Eastern and Western)	Literary Theory	<ul style="list-style-type: none"> <li>• Introduction to Eastern Literary Theory.</li> <li>• Introduction to western Literary Theory.</li> </ul>	Global
10	Core-10	Odia Poetry(Ancient and Modern)	Sarala Das, Jagannath Das, Dinakrushna Das, UpendraBhanja, Radhanath Roy, GangadharMeher, Gopabandhu Das, Sachi Routray	<ul style="list-style-type: none"> <li>• Knowledge on Classical Odia Poetry.</li> <li>• Knowledge on notable Modern poetry.</li> </ul>	Regional

11	Core-11	Odia Drama and One-act-Play	Modern Drama	<ul style="list-style-type: none"> <li>• Introduction to the pioneer drama and dramatist.</li> <li>• Experimental Odia one-act-play.</li> </ul>	Regional
12	Core-12	Odia Fiction	Modern Fiction	<ul style="list-style-type: none"> <li>• Origin and Development of modern Odia fiction.</li> <li>• Trendsetting important Odia fictions.</li> </ul>	Regional
13	Core 13	Odia Prose Literature	Biography, Autobiography, Travelogue, Essays	<ul style="list-style-type: none"> <li>• Meaning and scope of Autobiography, travelogue and criticism.</li> <li>• Important Odia travelogue and autobiography.</li> </ul>	Regional
14	Core 14	Applications of Odia Language	Speech, Interview, News Editing ,Reporting, Feature writing, Advertisement Writing, Official writing, noting and Drafting, Computerization of Odia language, Internet, Social websites etc.	<ul style="list-style-type: none"> <li>• Application of Odia language in various fields.</li> <li>• Implementation of Odia language in Official work.</li> <li>• Computerization of Odia Language.</li> <li>• Odia Language in Social website.</li> </ul>	Regional
15	DSE I	Cultural History of Odisha and Odia Literature	History, Culture, Rituals of Odia People	<ul style="list-style-type: none"> <li>• Brief history of Odisha.</li> <li>• Cultural aspects and popular festivals of Odisha.</li> </ul>	Regional
16	DSE II	Odia Children Literature and Popular Science Literature	Children's and Science Literature	<ul style="list-style-type: none"> <li>• Introduction to Children's literature of Odisha.</li> <li>• Introduction to popular science based literature.</li> </ul>	Regional
17	DSE III	Odia Poetry	Medieval and Modern Poetry	<ul style="list-style-type: none"> <li>• Important classic poetry.</li> <li>• Important short stories.</li> </ul>	Regional
18	DSE IV	Project	Project writing and presentation	<ul style="list-style-type: none"> <li>• Introduction to project writing and oral presentation.</li> </ul>	Regional
19	GE-I	Mass Media and Advertisement	Various aspects of Media	<ul style="list-style-type: none"> <li>• Meaning and scope of mass media.</li> <li>• Column, feature and application writing skill.</li> </ul>	Regional
20	GE-II	Ancient, Medieval and Modern Literature	Important ancient stories and writers	<ul style="list-style-type: none"> <li>• Important stories from ancient and medieval classics.</li> <li>• Introduction to modern writers and writings.</li> </ul>	Regional
21	AECC	Mode and means of Communication,	News, Interview and Odia language	<ul style="list-style-type: none"> <li>• Introduction to communicative Odia Language.</li> <li>• News editing, Interview and speech technique.</li> <li>• Introduction to Odia vocabulary.</li> </ul>	Global

### Programme: PHILOSOPHY



## Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
01	Core-1	General Philosophy	Students are introduced to Philosophy as a discipline, its nature, scope and method.	Philosophy in general	
02	Core-2	Logic and Scientific Method	Students will know about the science of Logic, rules of valid arguments, fallacies arising out of violation of the rules. This will develop in the students the skill of reasoning and testing the validity of arguments.	Logic – Deductive and Inductive reasoning	Global
03	Core-3	Systems of Indian Philosophy-1	Students are introduced to and taught about the systems of Indian philosophy, their scope and method.	Indian Epistemology and Metaphysics	Global
04	Core-4	Symbolic Logic	Students will learn about the modern developments in Symbolic Logic.	Mathematical logic	Global
05	Core-5	Ethics	Students will learn the different theories of Ethics, Theories of Punishment. This will give them an overall critical idea of the ethical schools available in the Philosophical tradition.	Moral Philosophy	Global
06	Core-6	History of Greek Philosophy	Students will learn about history and development of Greek philosophy.	Greek Philosophy	Global
07	Core-7	Systems of Indian Philosophy- ii	Students will learn about the systems of Indian Philosophy.	Indian Metaphysics and Epistemology	Global
08	Core-8	Contemporary Indian Philosophy	Students will learn about the modern developments in Indian philosophical thought and their practical impact on Indian society and culture.	20 <sup>th</sup> century Indian Philosophical thoughts	Global
09	Core-9	History of Modern European Philosophy	Students will learn about the schools of Modern European Philosophy. This will enable them to compare and contrast the European systems with Indian systems.	Modern European Philosophical schools – Epistemology and Metaphysics	Global
10	Core-10	Philosophy of Language	Students will know the various uses of languages, the logic and semantics of language and learn about the logical analysis of language.	Linguistic Philosophy	Global
11	Core-11	Western Classics: Meditations of Rene	Students will have a firsthand reading of an	Philosophical Classic	Global

		Descartes	original western classic and learn the skills of interpretation of a Philosophical text.		
12	Core-12	Indian text: Isa Upanishad	Students will have the scope of reading and understanding the original Upanisadic text and learn the skills of interpretation.	Philosophical Classic	Global
13	Core 13	Social and Political Philosophy	Students will learn about the various social and political ideas and ideals and their practical impact on the society.	Social and Political Philosophy	Global
14	Core 14	Applied Ethics	Students will be introduced to a modern development in the field of Ethics which has a high practical relevance.	Practical Ethics	Global
15	DSE I	Philosophy of Bhagavad-Gita	Students will have the privilege of learning about the philosophy of Bhagavad-Gita, study it from a critical and philosophical angle.	Philosophy of the Bhagavadgita	Global
16	DSE II	Philosophy of Religion	Students will learn how to critically analyze the fundamental concepts involved in theology and try to understand their logic and semantics.	Linguistic philosophy specially applied to theological concepts and theories.	Global
17	DSE III	Gandhi an Studies	Students will study in detail the various aspects of the philosophy of Gandhi, their practical application and relevance to the modern world	Philosophy of Gandhi	Global
18	DSE IV	Recent Western Philosophy	Students will be introduced to the trends in German, French and American philosophy	Western philosophy	Global

## Programme: POLITICAL SCIENCE

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
01	Core-1	Understanding Political Theory	To help students to acquire the idea of political theory, ideas and practice related to democracy	After completion of the Core-1, Students are known about history and approaches along with trends of political theory.	Global
02	Core-2	Constitutional Govt. & Democracy in India	To acquaint the students with basic concept of the constitution design of the State structure, institution and their actual working.	The Students are known about the Constitutional design, its provisions, State structure and institution and their actual working in India	National

03	Core-3	Political Theory concepts & debates	To impart the basic knowledge of the theoretical concept of political science.	The Students are familiarized with the basic normative concepts of political theory, critical & reflexive analysis and interpretation of social practice.	National
04	Core-4	Political Process in India	This core focuses on the challenges faced by India Democracy, political parties of India and the election Commission.	The Students are able to know about actual politics in India, Political Process, actual working at the Indian State.	National
05	Core-5	Introduction to cooperative Govt. & politics	To provide the basic knowledge of comparative politics.	The Students familiarized the basic concept approaches to the study of cooperative politics and various themes of cooperative analysis in developed and developing countries.	Global
06	Core-6	Introduction to Public Administration	This course provides an introduction to the discipline of public administration, some recent trends including feminism and ecological conversations.	The Students are known about historical & context of Public Administration, classical & contemporary theories, ecological conservatism.	Global
07	Core-7	Perspective on International Relations	To help students to acquire the idea of theoretical approaches for studying international relations , major political development in 20th century including world wars and cold wars.	The Students are known about historical evolution of International Relations, World wars, collapse of USSR, Euro-centrism & Global South.	Global
08	Core-8	Political process and Institutions in comparative perspective	To impart the students about comparative methods to study in politics , state its evolution on European context , democracy and federation	The Students are known about the application comparative methods to study of politics, nation State System, Federalism.	Global
09	Core-9	Public policy & Administration in India	This course focuses on the interface between public policy and administration in India and social welfare administration.	The Students are known about Interface Public Policy & Administration, Budget, Social welfare policy, Urban local Government & Redressal of public Grievances.	National
10	Core-10	Global Politics	To help students to know about key debates of globalisation , ecology issues , international terrorism, global economy, nuclear proliferation and migration	The Students are known about the Globalization and its impacts, climate change, International terrorism, migration & human security.	Global
11	Core-11	Western Political Philosophy	This course provides the knowledge about ancient as well as modern thinkers and their philosophy	The Students familiarized Western ancient political philosophers along with modern political philosophers like Plato, Aristotle, Hobbes, Locks.	Global
12	Core-12	Traditions of pre-colonial Indian Political Thought	To impart the basic knowledge of pre-colonial political thoughts , Buddhist thought and	The Students know about various modern India thinkers, Indians and their ideas, various social, economic political	National

			mediaeval political thoughts of India	reforms.	
13	Core 13	Contemporary Political Philosophy	This course gives knowledge about politics and philosophy closely intertwined and contemporary political philosophy and their debates .	The Students are able to know the modern philosophers like Lenin, Marx, Gramsci, Rawls and their philosophy.	Global
14	Core 14	Modern Indian Political Thought	To provide the knowledge about modern Indian thinkers and their contributions	The Students knew about various modern India thinkers, Indians and their ideas, various social, economic political reforms.	National
15	DSE I	Introduction to Human Rights	This course gives knowledge about human rights of India , South Africa , International Refugee law and International humanitarian law .	The Students knew about the Human Rights, Refugee law and Rights of South Africa & India.	National
16	DSE II	Development process and Social Movements in Contemporary India	To acquaint the students with various social movements , land reforms, green revolution, women's movements .	The Students knew about merits and demerits of Globalization, Tribal Movement, Dalit Movement, Women's Movement etc.	National
17	DSE III	India's Foreign Policy in Changing World	This objective of this course is to teach students the domestic sources and the structural constraints on the genesis, evolution and practice of India's foreign policy	The Students knew about evolution of foreign policy, India's relation with super power during cold war, bargaining strategy, India's role as a Global power after Independence,	National
18	DSE IV	Project Work			
19	GE 1 & 3	Gandhi and the Contemporary World	This course gives knowledge about Gandhi as a global frame , dispersed about Gandhi and thought and examine its practical implications.	The Students knew about Gandhian thought and Philosophy and its influence all over the World.	National
20	GE 2 & 4	United Nations & Global Conflict	The course focuses on UNO and its organs measure global conflict since sending world war and reforms of UNO	The Students knew about the International Organization (UNO) and its organs, its reforms and major Global conflicts.	Global

## Programme: SANSKRIT

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
01	Core-1	Moral teachings and basics of Sanskrit	# To impart moral lessons to students # To give the students an idea of Shavdarupa and		Global

			Dhaturupa		
02	Core-2	Drama-1 and History of Sanskrit Literature	# To introduce the students to seminal texts in Sanskrit literature # To create awareness about the History of Sanskrit Literature		
03	Core-3	Drama-2 and Dramaturgy	# to teach seminal texts in Sanskrit # To teach students the theory and practice of dramatic composition		
04	Core-4	An introduction to the techniques of Paninian Grammar and Prosody	# To teach Paninian grammar and related concepts		
05	Core-5	Poetry and History of Sanskrit Literature	# To introduce students to the classical texts in Sanskrit # To teach students the history of Sanskrit literature		
06	Core-6	Meta-rules of Paninian grammar, poetics, and Figures of Speech	# To increase knowledge of Paninian grammar # To impart knowledge of figures of speech that are like ornaments to the language		
07	Core-7	Cases and Case endings in Paninian Grammar and translation	# Thorough discussion of Paninian grammar # Provide practical knowledge to students by translating sentences from Sanskrit to Odia and English		National
08	Core-8	Upanishad, Ramayan, and Bhagavadgita	# To discuss with students the canonical texts in Sanskrit literature # Study of Ramayan and Bhagavadgita		Global
09	Core-9	Case and case endings of Paninian Grammar, Translation-II and Lexicon	# To strengthen the knowledge of Paninian Grammar # To provide practical knowledge by promoting translation from Sanskrit to Odia and English		Regional
10	Core-10	Ornate prose in classical Sanskrit	# Expose students to ornate prose style # Discuss the features of ornate prose		
11	Core-11	Ornate poetry in classical Sanskrit	# Expose students to ornate poetry style # Discuss the features of ornate prose		
12	Core-12	Veda, Vedic grammar, and History of Vedic literature	# Expose students to the Vedic Shuktas # To teach them the History of Vedic Literature		

13	Core 13	Ayurveda and Vrksayurveda	# To expose students to Charakasamhita And Vrksayurveda		Global
14	Core 14	Technical literature in Sanskrit	# To teach students the importance of Jyotisha and Vastu as technical literature		Global
15	DSE I	Socio-political thought in Ancient India	# To teach students some seminal concepts of Arthashastra and Dharmashastra		Global
16	DSE II	Ethical Literature in Sanskrit	# Contribute to creation of moral and ethical human beings by the teaching of Canakyaniti and Nitisataka of Bhartrhari		Global
17	DSE III	Translation, Editing and Writing Skill	# Provide practical training to students		
18	DSE IV	Project Work			
19	GE-1	Khandakavya and Darsana-kavya	# Create an interest in Sanskrit literature # Bhagavadgita chapter XV talks about the yoga of the Supreme person		
20	GE-2	Moral teaching and the Basics of Sanskrit	# Aims at creating morally upright human beings by teaching Hitapodesha, Yaksaprasna # Basic concepts of Sanskrit like Savdarupa and Dhaturupa		Global

## Programme: SOCIOLOGY

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Introduction to sociology -1	Get to know the convergence and divergence of sociology with other social science disciplines in terms of the subject matter, nature and Scope and generate ideas about the social processes and social institutions man encounters as the members of the society.	This paper is expected to clarify and broaden the students' notion about the subject, the basic concepts used and some universal societal processes.	Global
2	Core-2	Introduction to Sociology -2	Develop knowledge about individual and society. and generate ideas about the social processes and social institutions.	Clarify and broaden the students' notion about the subject and some universal societal processes.	Global
3	Core-3	India Society	Get to know about the basic composition of	To bring familiarity among the students. It is hoped that the	National

			Indian society, its historical moorings, basic philosophical foundations of the society and the institution.	structure and processes operative in the society, the change agents operating in Indian society.	
4	Core-4	Sociology of Environment	Derive knowledge about the close interaction between society and environment, Accumulate ideas about the ideological currents, issues that drive environment movements. and get aware about the global and national efforts to conserve environment.	The very aim of this paper is to disseminate knowledge about the significance of environment for society, to change the practices that can protect and preserve the environment and to make the students participate in the mission to preserve, protect and promote the cause of environment.	Global
5	Core-5	Classical Sociological thinkers	Gain understanding of some of the classical contribution in sociology and their contemporary relevance	This paper is expected to clarify and broaden the students knowledge about the theoretical and methodological contributions of the classical contributors	Global
6	Core-6	Social Change and Development	Derive knowledge about the meaning, nature, forms and patterns of change, and get an impression about the factors that propel change in the society.	This paper is expected to provide a wholesome idea to the students about the process of social change.	Global
7	Core-7	Sociology of Gender	Note the difference in gender roles, responsibilities, rights and relations. And assess the initiatives undertaken for gender development with the paradigm shift from time to time.	Generate ideas and sensitivity about gender in a student can put practices in daily life which will prevent biases and gender practices and create a gender neutral social world where both men and women can enjoy their rights.	Global
8	Core-8	Rural sociology	Generate an idea about the typicality of rural society and the institutions operating therein and their dynamics and derive ideas about rural social problems of the country.	Students can have a grip on the grassroots of Indian society.	National
9	Core-9	Globalization and Society	To get the nature of global world, it's positive and negative dimensions of globalization.	This paper is expected to acquaint the students with the ongoing social processes which can bring tremendous changes in the nations.	Global
10	Core-10	Marriage, family and kinship	Understand the three institutions that are the foundations of the society. Get to know the rules governing these institutions and estimate the changes coming over these institutions with the process of social change.	Expected to instill knowledge about the foundational institutions, their governing principles and the continuity and change features of these institutions.	National
11	Core-11	Research methodology	Have a grip over the basic steps involved in social	This paper is designed to acquaint the students with the	Global

			research and the types of social research with their applicability. 2. Develop an insight into the need and types of research design and the use of sampling method for attending objectivity and scientific study.	scientific ways of studying social phenomena. This provides them with research insight that will enable them to capture the most relevant data in an objective manner.	
12	Core-12	Social movements in India	To introduce the students to the role of social movements in social transformation. 2. Understand the various approaches to the study of social movements.	The very aim is to disseminate knowledge about the concept of social movements and its process and change making role in the society.	National
13	Core 13	Population and Society	Understand the various facets of population studies and the theories that depict population change, Develop specific idea on Indian population structure, policies adopted and programmes and launched in the country to check population. Assess the role of various agencies in population control	The very aim of this paper is to acquaint the students with a perennial problem of the Indian society that is population growth and the measures introduced to control it.	National
14	Core 14	Social Disorganization and Deviance	To Understand the meaning, causes, consequences and forms of social disorganization. 1. Learn about the theories explaining the disorganization situations. 2. Comprehend the concept of crime and the existing theories of punishment	This paper is designed with an expectation to impress upon a student on the concept of deviant behavior leading to social disorganization, forms, theoretical foundations and criminal activities which he encounters in real life situations	National
15	DSE I	Sociology of health	Can get an insight on socio- cultural dimensions in the construction of illness and medical knowledge. 2 . Gain knowledge on medical pluralism for treatment of disease.	Can learn about the contemporary trend of Sociology of Health.	Global
16	DSE II	Sociology of education	1.understand relationship between education and Society. 2. Get insights on role of education in nation building. 3. Gain knowledge on constitutional provision and various education	Students are expected to learn various perspectives on education. Knowledge on education policies and constitution provisions can prepare the students for the development of their own higher education.	Global



			policies		
17	DSE III	Urban sociology	1. Develop knowledge about urban social institution and problems. 2. Gain insights into urban development plans, programmes and efforts.	Get insights into the basic features of an urban areas, major problems that encounter urban population	Global
18	DSE IV	Tribes of India	To provide a fair stock of knowledge to the students on the tribes and tribal life. To enable the students to understand the problems faced by the tribes, To give impression and knowledge on the tribal development plans, policies and programmes.	After going through this paper it is expected that the students will gain fair idea about the Indian tribes, their demography and distribution. They will be sensitized about tribal situations and the challenges faced by them today. Finally, they can get an account of the safeguards created for them through the Constitution, legislations and programmes and the changes noted in the tribal society of the country today	National

## Programme: Commerce

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Financial Accounting	To help students to acquire conceptual knowledge of financial accounting and to impart skills for recording various kinds of business transactions.	The course structure of this paper would equip the students to get in-depth knowledge of financial accounting along with its practical application thereby giving an opportunity to gain easy access to this competitive business world.	Global
2	Core-2	Business Law	To impart basic knowledge of the important business laws along with relevant case laws.	The students would be able to deal with the legal aspect of different business situations.	National
3	Core-3	Cost Accounting	To acquaint the students with basic concepts used in cost accounting, various methods involved in cost ascertainment.	After the completion of this paper, the students will be able to have confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.	Global
4	Core-4	Corporate Laws	to impart basic knowledge of the provisions of the Companies Act, 2013 and the Depositories Act, 1996. Case studies involving issues	Students would acquire knowledge about the legal framework and the ways and means to deal with the legal aspect of different situations of corporate sector.	National

			incorporate laws are required to be discussed.		
5	Core-5	Corporate Accounting	To help the students to acquire the conceptual knowledge of the corporate accounting and to learn the techniques of preparing the financial statements.	This paper can provide conceptual clarity about the techniques to prepare financial statements of companies along with accounting treatment of various situations viz. floating of shares, amalgamation and liquidation of companies.	Global
6	Core-6	Income tax Law and Practice	To provide basic knowledge and equip students with the application of principles and provisions of Income Tax Act 1961.	This paper would provide the understanding of various provisions of Income Tax Act as well as equip the students to make practical applications of the provisions for taxation purpose.	National
7	Core-7	Management Principles & Applications	To provide the student with an understanding of basic management concepts, principles and practices.	Students would be able to make use of different management principles in the course of decision making in different forms of business organizations.	Global
8	Core-8	GST & Indirect Tax	To equip students with the principles and provisions of Goods and Services Tax (GST), which is implemented from 2017 under the notion of One Nation One Tax and One Market and to acquaint students with basic provisions of GST Law and basic working knowledge?		National
9	Core-9	Fundamentals of data Management	To equip students with PPT, Ms Office, DBMS, HTML	After completion, the students will be able to use Ms office, apply DBMS in accounting areas	Global
10	Core-10	Management Accounting	To acquaint the students with basic concepts of management accounting, and basic understanding of tools and techniques used for managerial decision making.	After the completion of this paper, the students will be able to have confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.	Global
11	Core-11	Computerized accounting & E-filing of TAX returns	To provide knowledge regarding preparation and submission of ITR online/offline of individuals and designing computerized accounting	After completion, students are able to prepare and file ITR for individuals, design computerized accounting system using DBMS	Global
12	Core-12	Fundamentals of	To familiarize the	After the completion of this	Global

		Financial Management	students with the principles and practices of financial management.	paper, students will be able to understand finance in a better way along with giving them insight to practical management of long and short finance for real business houses.	
13	Core 13	Auditing and corporate governance	To provide knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards and to give an overview of the principles of Corporate Governance and Corporate Social Responsibility	At the end of the paper student will have detail knowledge about principles and techniques of audit in accordance with current legal requirement and as per the guidelines of different statutory authorities.	Global
14	Core 14	Business Mathematics	To familiarize the students with the basic mathematical tools with emphasis on applications to business and economic situations.	After reading this subject the students will be able to understand basic concepts in the areas of business calculus and financial mathematics and to connect acquired knowledge with practical problems in economic practice.	Global
15	DSE I	Indian banking and insurance system	To enable students to acquire knowledge about basics of banking and insurance.	After the completion of this paper, the student will acquired practical knowledge of working mechanism of banking and insurance industries in India.	Global
16	DSE II	Merchant banking and financial services	To enable students to understand the basic knowledge about the financial services available in India.	After the completion of this course, the student will be able to understand the structure and function of mercantile banking and various financial services available in the present business world.	Global
17	DSE III	Banking & Insurance Fundamentals of Investment	To familiarize the students with different investment alternatives, introduce them to the framework of their analysis and valuation and highlight the role of investor protection.	After completion of this paper, this paper will educate the students about various aspect of investment in detail along with understandability of stock market operation, focusing on need for common investor protection.	Global
18	DSE IV	Business Research Methods and Project	This course aims at providing the	After completion of this	Global

		Work	general understanding of business research and the methods of business research. The course will impart learning about how to collect, analyze, present and interpret data.	paper, the students will be able to assess and apply arrange of research method on a practical project.	
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There are number of 07 number of UG Programmes in Science Stream, i.e, **Botany, Chemistry, Computer Science, Geology, Mathematics, Physics & Zoology**

### Programme: BOTANY

#### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Microbiology and phycology	To acquaint the students with the world of microbe and algae and their applications	To understand the microbial physiology & understand the distribution of ecology & potential uses of algal diversity	Global
2	Core-2	Biomolecules & Cell Biology	Discovering, modeling, understanding and ultimately engineering the dynamic relationships between biological molecules	Exploration of different types of biomolecules, basics of the cell & importance of cellular composition & functioning.	Global
3	Core-3	Mycology & Phytopathology	1. Teaching, research in the area of Mycology and Plant Pathology. To study the living, non-living and environmental causes of plant diseases, 2. to study the mechanisms of disease development by pathogens, 3. to study the interactions between the plants and the pathogen	Will have thorough knowledge on the science of plant pathology such as causal agents of plant diseases, symptoms and diagnoses, modes of infection and spread, effects of the environment on disease development, and methods of disease control.	Global
4	Core-4	Archegoniate	To motivate the students to undertake research in basic and applied thrust areas of archegoniates.	Enable the students to understand General characters, structure, reproduction in bryophytes, Pteridophytes and gymnosperm.	Global
5	Core-5	Anatomy of angiosperms	One must understand that anatomy of flowering plants is the study of the gross internal structure of plant organs as observed after	It introduces the internal structure and functional organisation of higher plants.	Global

			section cutting. Flowering plants constitute different kinds of tissues. Anatomy had been one of the foundations in our understanding of plant evolutionary trends between representatives of the major angiosperm clades.		
6	Core-6	Economic Botany	Interdisciplinary in scope, Economic Botany bridges the gap between pure and applied botany by focusing on the uses of plants by people. Economic Botany documents the rich relationship that has always existed between plants and people around the world, encompassing the past, present, and potential uses of plants. The issues contain original research articles, review articles, book reviews, annotated bibliographies, and notes on economic plants.	To explain the taxonomic diversity of useful plants. To understand the plant as a food source. To have Knowledge of plants and plant products which are used as human diet. To describe the cultivational practices of oil seeds, timber, fibres and drug yielding plants. To acquire an increased awareness and appreciation of legumes and millets	Global
7	Core-7	Genetics	Plant, Animal (non human), Microbial and Human Genetics and Genomics, Cell and Molecular Biology, Developmental Genetics,	Comprehensive and detailed understanding of genetic methodology and how quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms.  Understanding the role of genetic technologies in industries related to biotechnology, pharmaceuticals, energy, and other fields.	Global
8	Core-8	Molecular Biology	The field of molecular biology is focused especially on nucleic acids (e.g., DNA and RNA) and proteins— macromolecules that are essential to life processes— and how these molecules interact and behave within cells. understanding the three-dimensional structure of biological macromolecules through techniques such as X-ray diffraction and electron microscopy.	The student will gain a basic understanding on human genetics and hereditary. They learn about DNA, RNA and their replication, mutations, DNA repair mechanism and have a strong foundation on the functions of the cell. Mendelian genetics, their principles and gene interaction.	Global
9	Core-9	Plant Ecology & Phytogeography	To find out and record the distribution of plants in	This course will provide to understand the major factors	Global

			geographical regions of the world on the basis of latitudinal and longitudinal positions	influencing the geographic distribution of species. • Be able to understand the ecological context in which a particular species may have evolved, or a specific ecological process takes place.	
10	Core-10	Plant Systematics	Plant taxonomy is the science of discovering, identifying, describing, classifying, and naming plants. It is one of the most important branches of taxonomy (the science that finds, describes, classifies, and names living things).	It contributes to the determination of the total number of living things on the planet. Its goal is to categorise and organise biological organisms. It provides an overview of the local flora and fauna, which assists us in distinguishing between endemic and non-endemic species.	Global
11	Core-11	Reproductive Biology of angiosperms	To have knowledge of the flowering and fruiting, reproduction process, role of pollinators, ovule and seed development.	Induction of flowering and molecular and genetic aspects of flower development. Anther structure, pollen development, dispersal and pollination, Ovule, embryo sac development and fertilization, Endosperm development and its importance. Alternative pathways of reproduction and their importance. Student would be able to apply this knowledge for conservation of pollinators and fruit development	Global
12	Core-12	Plant Physiology	Plant Physiology is an integrative area of plant sciences that studies a wide array of physiological processes and environmental responses in plants at multiple scales, from molecules to pathways, from cells to tissues, from organisms to ecosystems.	explain the water, solute and sugar transport processes in plants. They explain the different mechanisms in plants used for water transport. They explain how plants achieve water balance.	Global
13	Core 13	Plant metabolism	Plant Metabolism and focuses on understanding metabolism at the molecular level in organisms spanning the evolutionary lineage of terrestrial and aquatic plants, and reaching back to the basal members of this branch of life. Balance between products of primary and secondary metabolism is best for a plant's optimal growth and development as well as for	A pervasive understanding on the kingdoms of biomolecules, metabolites and pathways that are the prerequisites and consequences of physiological phenomenon for further manipulations. Acquaintance with mechanistic view on the plant environment interactions. Development of integrative approach for visions in biological	Global

			its ...	problems.	
14	Core 14	Plant Biotechnology	Technological landscape for deciphering plant biology & tools of bio-engineering have undergone a paradigm shift. Emerging technologies including precise engineering tools, computational advances, data management, non-invasive imaging, nanosensors/nano-diagnostics, automation, machine learning, and artificial intelligence-assisted data integration and decision making can bring in transformative and sustainable change in Indian Agriculture by drastically improving input use efficiency and developing smart sensor plants.	To understand principles of animal culture, media preparation. To explain Invitro fertilization and embryo transfer technology. To describe meristem culture and clonal propagation of plants on a commercial scale. To get insight in applications or recombinant DNA technology in agriculture, production of therapeutic proteins. To describe commercial production of fuels, microbial enzymes. To explain the microbial degradation of pesticides, Bioremediation&Biofertilizers	Global
15	DSE I	Analytical Techniques in Plant Sciences	The objective of this course is to expose the students to different techniques which can be used biological fields basic research in science	Multivariate approaches in plant science	Global
16	DSE II	Natural Resource Management	Minimizing pressure on forest resources and prevention of forest fire. Exploration, harvesting, spring recharge and purification of water, air and land.	Natural resources provide fundamental life support, in the form of both consumptive and public-good services. Ecological processes maintain soil productivity, nutrient recycling, the cleansing of air and water, and climatic cycles.	Global
17	DSE III	Horticulture Practices	To increase the area, production and productivity of fruits, vegetable, spices, Medicinal and floriculture crops. Formulation and implementation of policies and programmes aimed at achieving rapid growth of horticultural sector.	Transfer knowledge of Agriculture/Horticulture in the field of agricultural research especially in horticulture including fruits, vegetables, flowers, spices, medicinal and aromatic plants and their management. Develop innovative agro- techniques to enhance the production and productivity of horticultural crops. Increase farmers' income through adopting hi-tech horticulture. Create job opportunities for the unemployed youths through teaching, research, training, extension etc., especially for the development of socially and economically depressed segment of society.	Global

				Establishment of models nurseries in rural areas for availability of quality planting materials. Conservation and exploitation of biological diversity through crop management.	
18	DSE IV	Project		Students will learn how to prepare a project. They will gain idea about the ethics involved in research.	Global
19	GE-1	Biodiversity	conservation of biological diversity, the sustainable use of its components	Biodiversity conservation for in-situ & ex-situ	Global
20	GE-2	Plant physiology & Metabolism	to increase knowledge on the biochemical and biophysical basis of plant. To illustrate knowledge of stress adaptations in biological systems. To deliver molecular understanding of primary and secondary metabolic process. To present perspectives of the current tools for application in biological system for biotechnological research. Demonstrate the concept using different activities for building capacity.	Acquire knowledge in various physiological and metabolic processes occur in plants	Global
21	GE-3	Plant Ecology & Taxonomy	study the history of plant taxonomy, with special emphasis on plant taxonomy in ancient India; and discuss aims, objectives and importance of taxonomy	To identify the systematic study and economic importance of plants belonging to the various families. To differentiate ecological adaptations of plants, Hydrophytes, Xerophytes and Mesophytes.	Global

## Programme: CHEMISTRY

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Inorganic Chemistry-I	<ul style="list-style-type: none"> <li>Know the discovery of electron, proton and neutron and their characteristics</li> <li>To understand the nature electromagnetic radiation and quantum theory.</li> </ul>	<ul style="list-style-type: none"> <li>Upon successful completion students should be able to apply the fundamental principles of measurement, matter, atomic theory, chemical periodicity, chemical bonding,</li> </ul>	Global



			<ul style="list-style-type: none"> <li>To understand the periodic law and significance of atomic no and electronic configuration as the basic for periodic classification.</li> <li>To classify elements into s, p, d and f blocks and learn their main characteristics</li> </ul>	<p>general chemical reactivity and solution chemistry to subsequent courses in science.</p>	
2	Core-2	Physical Chemistry-I	<ul style="list-style-type: none"> <li>To apply gas laws in various real-life situations. To explain the behaviour of real and ideal gas.</li> <li>To differentiate between gaseous state and vapour.</li> <li>To explain the kinetic theory of gases.</li> <li>Explain the properties of liquids &amp; solids.</li> <li>To describe condition required for liquefaction of gases.</li> <li>To write the expressions for equilibrium constants.</li> <li>To study the laws of equilibrium.</li> <li>To understand various types of colloids and its applications.</li> </ul>	<ul style="list-style-type: none"> <li>Apply the fundamental principles of measurement, matter, atomic theory, chemical periodicity, chemical bonding, general chemical reactivity and solution chemistry to subsequent courses in science.</li> </ul>	Global
3	Core-3	Organic Chemistry-I	<ul style="list-style-type: none"> <li>To introduce the undergraduates about the basic concepts of organic chemistry, stereochemistry &amp; organic reactions.</li> </ul>	<ul style="list-style-type: none"> <li>Apply their knowledge to solve problems related to electronic displacements, stereochemistry and organic reactions.</li> <li>Synthesize simple organic molecules using the studied reactions.</li> <li>Identify various functional groups through the studied experiments</li> </ul>	Global
4	Core-4	Physical	<ul style="list-style-type: none"> <li>To understand the</li> </ul>	<ul style="list-style-type: none"> <li>The application of</li> </ul>	Global

		Chemistry-II	<p>laws of thermodynamics.</p> <ul style="list-style-type: none"> <li>To know about the concept of equilibrium</li> <li>To know about solutions and colligative properties</li> </ul>	<p>mathematical tools to calculate thermodynamics.</p> <ul style="list-style-type: none"> <li>the relationship between microscopic properties of molecules with macroscopic thermodynamic observables the use of simple models for predictive understanding of physical phenomena associated to chemical thermodynamics.</li> <li>the limitations and uses of models for the solution of applied problems involving chemical thermodynamic. Students</li> <li>learn depth concepts about thermodynamic systems.</li> </ul>	
5	Core-5	Inorganic Chemistry-II	<ul style="list-style-type: none"> <li>To introduce general principles of metallurgy</li> <li>To apply concepts of acids and bases</li> <li>To study chemistry of s and p block elements, noble gases and inorganic polymers</li> </ul>	<ul style="list-style-type: none"> <li>Gain an idea about general principles of metallurgy, acid-base concepts. Gain a thorough knowledge about the s and p Block Elements</li> <li>Able to predict structure of noble gas compounds and their reactivity</li> <li>Will gain a firm idea about silicones and siloxanes. Borazines, silicates and phosphazenes.</li> </ul>	Global
6	Core-6	Organic Chemistry-II	<ul style="list-style-type: none"> <li>To introduce different types of reaction mechanism</li> <li>To understand the role of solvent, and other parameters upon reaction mechanism.</li> <li>To introduce with organometallic reagents.</li> <li>To learn the factors which affect acidity of alcohols and phenols.</li> <li>To gain knowledge about reducing agents and function.</li> </ul>	<ul style="list-style-type: none"> <li>Understand the reaction mechanism of an organic transformations.</li> <li>Gain an idea of functional group inter conversion and synthesis of small molecules using the studied reactions.</li> <li>To get firm idea on the reactivity of carbonyl compounds and acid derivatives.</li> </ul>	

			<ul style="list-style-type: none"> <li>To get an idea of preparation and reactivity of acids and acid derivatives.</li> </ul>		
7	Core-7	Physical Chemistry-III	<ul style="list-style-type: none"> <li>To introduce the undergraduates about the fundamental aspects of phase equilibrium in binary and three component systems,</li> <li>A knowledge of chemical kinetics and surface chemistry.</li> </ul>	<ul style="list-style-type: none"> <li>Gain an idea about micelles, CST, Nernst distribution law and azeotropic systems.</li> <li>Gain a thorough knowledge of chemical kinetics including Arrhenius equation, collision theory, rate expression of chemical reactions.</li> <li>Will gain a firm idea about catalysis, mechanisms of catalysis, enzyme catalysed reactions.</li> <li>Learn about surface chemistry, various types of adsorption isotherms, chemisorption and physisorption.</li> </ul>	
8	Core-8	Inorganic Chemistry-III	<ul style="list-style-type: none"> <li>To study fundamentals of transition chemistry</li> <li>To study about the physicochemical properties of d-block and f-block elements</li> <li>To study the basic principles of bioinorganic chemistry</li> </ul>	<ul style="list-style-type: none"> <li>Gain a thorough knowledge of d-block elements, their properties and uses Will gain a firm idea about lanthanides and actinides, their extraction, properties and uses</li> <li>Learn about the importance of metals ions in biological systems, their functions and toxicological effects Application of molecular spectroscopy to different molecules</li> </ul>	Global
9	Core-9	Organic Chemistry-III	<ul style="list-style-type: none"> <li>To introduce the factors which affect the basicity of amines, their classification and different chemical properties</li> <li>To learn the chemical synthesis of polynuclear aromatic ring as well as heterocyclic rings.</li> <li>To get an idea of</li> </ul>	<ul style="list-style-type: none"> <li>Understand the distinction between different classes of amines and their chemical nature Synthesise small rings by using certain reaction discussed in this course</li> <li>Get an overall idea of functional group inter conversion of</li> </ul>	Global

			natural sources of alkaloids and terpenes and their chemical properties	nitrogen containing molecules <ul style="list-style-type: none"> <li>Learn the structure determination and medicinal importance of certain alkaloid like nicotin, quinine, morphin etc.</li> </ul>	
10	Core-10	Physical Chemistry-IV	<ul style="list-style-type: none"> <li>To introduce the undergraduates about the basic concepts of conductance and its measurement and an introduction to fundamentals of electrochemistry.</li> </ul>	<ul style="list-style-type: none"> <li>Gain an idea about conductance and conductivity, derivation of various laws of conductance.</li> <li>Gain a thorough knowledge of ionic velocities, hydrolysis of salts Will gain a firm idea about Faraday's Laws of electrolysis, applications in metallurgy</li> <li>Learn about various types of electrodes, and the electrical properties of atoms and molecules</li> </ul>	Global
11	Core-11	Organic Chemistry-IV	<ul style="list-style-type: none"> <li>This course introduces the basic principles of electronic transition, selection rule, molecular vibrations and absorption of electromagnetic radiation.</li> <li>Also, nuclear spin and interaction of radiation with nucleus and fundamental principle of NMR spectroscopy is discussed.</li> <li>To introduce occurrence, biological importance and synthesis of carbohydrates.</li> </ul>	<ul style="list-style-type: none"> <li>Elucidate the structure and molecular mass of small organic molecules using UV, IR, NMR, MS. Calculate the absorption maxima of conjugated molecules using Woodward rule.</li> <li>To gain firm idea of functional groups present in a molecule from IR spectroscopic idea.</li> <li>To determine the absolute configuration, structure, and constitution, ring size of different mono and disaccharides.</li> </ul>	Global
12	Core-12	Physical Chemistry-V	<ul style="list-style-type: none"> <li>The main objective is to introduce the undergraduates about the fundamental aspects of quantum chemistry and molecular spectroscopy.</li> </ul>	<ul style="list-style-type: none"> <li>Gain an idea about fundamentals of quantum chemistry including Schrodinger equation and rigid rotator system. Gain a thorough knowledge of quantum</li> </ul>	Global

				<p>mechanical treatment of various molecules Will gain a firm idea about rotational spectroscopy and vibrational spectroscopy</p> <ul style="list-style-type: none"> <li>Learn about photochemistry including photoluminescence and chemiluminescence</li> </ul>	
13	Core 13	Inorganic Chemistry-IV	<ul style="list-style-type: none"> <li>The focus of this paper is to introduce students with organometallic compounds, their synthesis, properties and the mechanisms underlying their reaction.</li> </ul>	<ul style="list-style-type: none"> <li>Understand various bonding in organometallic compounds Preparation and application of ferrocene and other compounds</li> <li>Study the theoretical principles in mechanisms of organometallic compounds.</li> </ul>	Global
14	Core 14	Organic Chemistry-V	<ul style="list-style-type: none"> <li>To introduce synthesis, properties, isolation of amino acids, peptides and proteins. Introduce enzymes and their biological role and mechanism of action.</li> <li>To gain idea about structural and chemical significance of lipids, nucleic acid and dyes and their application.</li> <li>Therapeutic use of antipyretics, analgesics, antimalarials and synthesis of certain drug molecules.</li> </ul>	<ul style="list-style-type: none"> <li>To understand the biological role and significance of important biomolecules. To gain an insight into classification and molecular features of drug and drug like molecules.</li> <li>Synthesis and application of natural and synthetic dyes.</li> </ul>	Global
15	DSE I	Polymer chemistry	<ul style="list-style-type: none"> <li>Develop new polymerization methods and control polymer structure and molecular weight</li> <li>Understand how molecular structure affects physical properties</li> <li>Analyze polymers' properties using techniques like spectroscopy and</li> </ul>	<ul style="list-style-type: none"> <li>Creation of polymers with specific, tailored properties (e.g., conductive, biodegradable, or stimuli-responsive).</li> <li>Enhanced materials by combining different polymers or adding fillers, resulting in improved mechanical, thermal, or chemical properties.</li> </ul>	Global

			<p>microscopy</p> <ul style="list-style-type: none"> <li>• Design functional and specialized polymers for various applications</li> <li>• Create polymers for industries like healthcare, electronics, and packaging</li> <li>• Improve fabrication techniques and develop sustainable recycling methods</li> <li>• Enhance polymer properties through blending and adding nanomaterials</li> <li>• Study natural polymers for eco-friendly and bio-based materials</li> </ul>	<ul style="list-style-type: none"> <li>• Development of lightweight, durable, and often biodegradable plastics for packaging applications.</li> <li>• High-performance polymers that reduce weight and improve efficiency, such as carbon fiber composites or lightweight thermoplastics.</li> <li>• Conductive and insulating polymers used in flexible electronics, displays, and sensors.</li> <li>• Biodegradable polymers used for controlled release of medications.</li> <li>• Polymers used in implants, prosthetics, and wound dressings due to their biocompatibility.</li> <li>• Development of polymers for scaffolding in tissue regeneration.</li> <li>• Development of bio-based and biodegradable polymers to reduce plastic waste and environmental impact.</li> <li>• Advancements in polymer chemistry have led to growth in industries such as plastics, healthcare, electronics, and materials science, generating economic benefits.</li> <li>• Polymers play a critical role in the development of a wide range of consumer products, from clothing to household goods, making everyday life more efficient and sustainable.</li> </ul>	
16	DSE II	Green chemistry	<ul style="list-style-type: none"> <li>• Reduce the production of waste by designing</li> </ul>	<ul style="list-style-type: none"> <li>• Less pollution and waste, leading to</li> </ul>	Global

			<p>chemical processes that generate fewer by-products or waste materials, leading to a cleaner and more efficient system.</p> <ul style="list-style-type: none"> <li>• Develop chemical processes that require less energy, often by using milder conditions (e.g., lower temperatures and pressures), which reduces energy consumption and environmental impact.</li> <li>• Use renewable resources (e.g., plant-based materials) instead of non-renewable ones (e.g., fossil fuels) to reduce dependency on finite resources and promote sustainability.</li> <li>• Minimize the use of toxic chemicals and solvents in reactions, making products safer for human health and the environment.</li> <li>• Design reactions in a way that maximizes the incorporation of all materials used into the final product, minimizing waste and improving resource efficiency.</li> <li>• Promote the use of safer, more environmentally friendly solvents in chemical processes, such as water or supercritical fluids, in place of traditional volatile organic solvents.</li> <li>• Raise awareness about the importance of green chemistry and encourage its adoption in both industry and academic research to promote long-term environmental stewardship.</li> </ul>	<p>cleaner air, water, and soil.</p> <ul style="list-style-type: none"> <li>• More efficient processes that consume less energy.</li> <li>• Increased reliance on renewable resources and reduction in dependence on non-renewable ones.</li> <li>• Safer chemicals and materials that are non-toxic and environmentally friendly.</li> <li>• Lower production costs due to waste minimization and more efficient processes.</li> <li>• Development of novel, green technologies and sustainable solutions for industries.</li> <li>• Creation of green jobs and sustainable economic growth.</li> <li>• Minimized by-products and waste materials through improved process design.</li> </ul>	
17	DSE III	Industrial chemicals and	<ul style="list-style-type: none"> <li>• Develop chemical processes that minimize</li> </ul>	<ul style="list-style-type: none"> <li>• Lower emissions and waste, leading to</li> </ul>	Global

		environment	<p>environmental impact while maximizing efficiency.</p> <ul style="list-style-type: none"> <li>Minimize or eliminate harmful waste by optimizing chemical processes.</li> <li>Implement methods to reduce emissions of pollutants into air, water, and soil.</li> <li>Promote the use of renewable resources and reduce dependency on non-renewable materials.</li> <li>Reduce energy consumption in industrial chemical processes, making them more sustainable.</li> <li>Manufacture chemicals that are non-toxic, biodegradable, and safe for the environment.</li> <li>Ensure industrial practices align with environmental laws and standards to protect public health.</li> </ul>	<p>cleaner ecosystems.</p> <ul style="list-style-type: none"> <li>Optimized use of raw materials and energy, reducing consumption and waste.</li> <li>Production of safer, eco-friendly chemicals with minimal environmental impact.</li> <li>Adherence to environmental regulations, ensuring legal and ethical industrial practices.</li> <li>More energy-efficient processes, contributing to lower carbon footprints.</li> <li>Cost savings through efficient resource use, waste reduction, and eco-friendly innovations.</li> <li>Fewer harmful chemicals in the environment, resulting in safer living conditions.</li> </ul>	
18	DSE IV	Project		Students will learn how to prepare a project. They will gain idea about the ethics involved in research.	

## Programme: Computer Science

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Relevance
1	Core-1	Programming using C	Computer Languages	<ul style="list-style-type: none"> <li>Explore algorithmic approaches to problem solving.</li> <li>To learn basics of C programming language.</li> <li>Develop modular programs using control structures.</li> <li>Write programs to solve real world problems using C programming.</li> </ul>	Global
2	Core-2	Digital Logic	Design and Development of Hardware	<ul style="list-style-type: none"> <li>Apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions.</li> </ul>	Global



				<ul style="list-style-type: none"> <li>• To understand different methods used for the simplification of Boolean functions and binary arithmetic.</li> <li>• To design and implement combinational circuits, synchronous &amp; asynchronous sequential circuits.</li> <li>• To study in detail about Semiconductor Memory Systems.</li> </ul>	
3	Core-3	Programming using C++	Computer Languages	<ul style="list-style-type: none"> <li>• To know about the Object Oriented Programming concepts.</li> <li>• To be able to develop logics to create programs/ applications in C++.</li> <li>• Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.</li> <li>• Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming.</li> </ul>	Global
4	Core-4	Data Structures	Effective data Representation	<ul style="list-style-type: none"> <li>• Understand the concept of ADT.</li> <li>• To learn how the choice of data structures impacts the performance of programs.</li> <li>• Understand basic data structures such as arrays, linked lists, stacks and queues.</li> <li>• Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.</li> </ul>	Global
5	Core-5	JAVA Programming	Computer Languages	<ul style="list-style-type: none"> <li>• To learn the fundamentals of Object Oriented Programming in Java environment.</li> <li>• To learn the use of Java language and the Java Virtual Machine.</li> <li>• To write simple Java programming applications.</li> <li>• Develop reusable</li> </ul>	Global

				programs using the concepts of inheritance, polymorphism, interfaces and packages.	
6	Core-6	Database Systems	Effective data storage	<ul style="list-style-type: none"> <li>Describe DBMS architecture, physical and logical database designs, database modelling, relational models.</li> <li>Learn and apply Structured query language (SQL) for database definition and database manipulation.</li> <li>Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.</li> <li>Understand various transaction processing, concurrency control mechanisms and database protection mechanisms.</li> </ul>	Global
7	Core-7	Discrete Mathematical Structures	Study of Mathematical Structure	<ul style="list-style-type: none"> <li>Perform operations on various discrete structures such as sets, functions, relations, and sequences</li> <li>Ability to solve problems using Counting techniques, Permutation and Combination, Recursion and generating functions.</li> <li>Apply algorithms and use of graphs and trees as tools to visualize and simplify Problems</li> <li>Understand the basic concepts of formal languages, automata and grammar types, as well as the use of formal languages and reduction in normal forms</li> </ul>	Global
8	Core-8	Operating Systems	System Software	<ul style="list-style-type: none"> <li>Understand the basics of operating systems like kernel, shell, types and views of operating systems</li> <li>Describe the various</li> </ul>	Global

				<p>CPU scheduling algorithms and remove deadlocks.</p> <ul style="list-style-type: none"> <li>• Explain various memory management techniques and concept of thrashing</li> <li>• Recognize file system interface, protection and security mechanisms.</li> </ul>	
9	Core-9	Computer Networks	Effective Data Communication	<ul style="list-style-type: none"> <li>• Identify and understand various techniques and modes of transmission.</li> <li>• To understand the parts of a communication network and how they work together.</li> <li>• Understand computer network basics, network architecture, TCP/IP and OSI reference models.</li> <li>• Understand network security and define various protocols such as FTP, HTTP, Telnet, DNS</li> </ul>	Global
10	Core-10	Computer Graphics	Graphics Object representation and visualization	<ul style="list-style-type: none"> <li>• Understand the basics of computer graphics, different graphics systems and applications of computer graphics.</li> <li>• Understand contemporary graphics principles and graphics hardware, demonstrate geometrical transformations.</li> <li>• Use of geometric transformations on graphics objects and their application in composite form.</li> <li>• Extract scene with different clipping methods and its transformation to graphics display device.</li> </ul>	Global
11	Core-11	Web Technologies	Web Designing	<ul style="list-style-type: none"> <li>• Discuss the insights of internet programming and implement complete application over the web.</li> <li>• Demonstrate the important HTML tags for designing static pages and separate</li> </ul>	Global

				<p>design from content using Cascading Style sheet.</p> <ul style="list-style-type: none"> <li>• Utilize the concepts of JavaScript to make dynamic web pages</li> <li>• Use MySQL database with server-side programming php to build dynamic web pages.</li> </ul>	
12	Core-12	Software Engineering	Development of Software	<ul style="list-style-type: none"> <li>• Plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements</li> <li>• Able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project</li> <li>• Analyze and translate a specification into a design, and then realize that design practically, using an appropriate software engineering methodology.</li> <li>• Know how to develop the code from the design and effectively apply relevant standards and perform testing, and quality management and practice</li> </ul>	Global
13	Core 13	Artificial Intelligence	Artificial Intelligence	<ul style="list-style-type: none"> <li>• Define the concept of Artificial Intelligence.</li> <li>• Solve basic AI based problems.</li> <li>• Apply AI techniques to real-world problems to develop intelligent systems.</li> <li>• Select appropriately from a range of techniques when implementing intelligent systems.</li> </ul>	Global
14	Core 14	Algorithm Design Techniques	Effective writing of Algorithms	<ul style="list-style-type: none"> <li>• Appreciate the need for analysis of algorithms</li> </ul>	Global

				<ul style="list-style-type: none"> <li>• How to analyze the best-case, average-case and the worst-case running times of algorithms using asymptotic analysis.</li> <li>• Design efficient algorithms for problems encountered in common engineering design situations.</li> <li>• Understand different algorithm design paradigm.</li> </ul>	
15	DSE I	Numerical Techniques	Solution using numeric approximation	<ul style="list-style-type: none"> <li>• To learn various numerical techniques.</li> <li>• To be able to implement different numerical techniques using programming language.</li> <li>• Determine an interpolating function for data</li> <li>• Understanding of numerical methods for the solution of scientific problems which cannot be solved analytically.</li> </ul>	Global
16	DSE II	Unix Shell Programming	Unix working environment	<ul style="list-style-type: none"> <li>• To learn the basics of UNIX OS, UNIX commands and File system.</li> <li>• To familiarize students with the Linux environment.</li> <li>• To learn fundamentals of shell scripting and shell programming.</li> <li>• To be able to write simple programs using UNIX.</li> </ul>	Global
17	DSE III	Data Science	Data Analytics	<ul style="list-style-type: none"> <li>• To learn emerging issues related to various fields of data science</li> <li>• To understand the underlying principles of data science, exploring data analysis.</li> <li>• To learn the basics of R Programming.</li> <li>• Use appropriate models of analysis, assess the quality of input, derive insight from results.</li> </ul>	Global
18	DSE IV	Project Work		Students will learn how to prepare a project. They will gain idea about the ethics involved in research.	

## Programme: **GEOLOGY**

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Relevance
1	Core-1	General and Quaternary Geology	Internal structure of earth, Geomorphology glacier and volcano	Glaciation and its causes, geological phenomena quaternary geology	Global
2	Core-2	Remote sensing ,Tectonics	Scale,resolution,marine sediments	Mineral exploration ,ground water exploration	National
3	Core-3	Mineralogy and Crystallogrphy	Crystallography ,mineralogy ,silicate and nonsilicate mineral	To identify various minerals like Diamond, olivine etc,descriptivemineroogy	Global
4	Core-4	Optics and Geochemistry	cosmic abundance of elements ,structure and composition of earth	Mineral optics ,geochemistry	Global
5	Core-5	Igneous Petrology	Concepts ,forms of igneous rocks ,its diversity	Megascopic identification of igneous rocks	Global
6	Core-6	Sedimentary Petrology	Origin ,textures and provenance of sedimentary rocks	Megascopic identification of sedimentary rocks	Global
7	Core-7	Metamorphic Petrology	Metamorphic facies ,its relation with tectonism metamorphism	Megascopic identification of metamorphic rocks metamorphic petrography	Global
8	Core-8	Palaeontology	fossils study	To know about past environment condition and study evolution	Local
9	Core-9	Stratigraphy	Determining the age of various rock strata	To know the stratigraphy of odisha and other states	National
10	Core-10	Structural Geology	To study folds ,faults joints etc unconformities foliation and lineation	Study of rock deformation	Global
11	Core-11	Process of Formation and Mineral Economics	process of formation of minerals and mineral economics	Process of ore formation, mineral economics	Global
12	Core-12	Economic Geology	process of formation of minerals , mineral economics	To identify and explore minerals and ores	Global
13	Core 13	Ground water and Engineering geology	Ground water exploration, selection of dam and bridge sites	To study water bearing characteristics and identify dam ,bridge and tunnel sites	Global
14	Core 14	Mining and Environmental Geology	Resource and disaster management environmental geolgy	To study basics of mining, management of resources ,common disasters and their management ,environmental geology	Global
15	DSE I	Fuel Geology	study of origins, occurrence ,movement, accumulation and exploration of hydrocarbon and coal	Coal petrology ,Origin and accumulation of petroleum	Global
16	DSE II	Climate Change and	To study CLIMATE	Common natural disasters and	National

		Disaster Management	CHANGE AND DISASTER MANAGEMENT	their management, fundamentals of climatology, world weather circulation and climate change	
17	DSE III	Earth and Climate	Climate and its components	Climate system ,heat budget of earth ,monsoons, hydrosphere glacial periods	Global
18	DSE IV	Evolution of Life Through Time	Evolution of life	Origin of life ,life through ages ,life through paleozoic ,Mesozoic and cenozoic era	Global

## Programme: MATHEMATICS

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Calculus	The primary objective of this course is to introduce the basic tools of calculus and geometric properties of different conic sections which are helpful in understanding their applications in planetary motion, design of telescope and to the real-world problems. Also, to carry out the hand on sessions in computer lab to have a deep conceptual understanding of the above tools to widen the horizon of students' self-experience. .	This course will enable the students to: <ul style="list-style-type: none"> <li>• Sketch curves in a plane using its mathematical properties in the different coordinate systems of reference.</li> <li>• Apply derivatives in Optimization, Social sciences, Physics and Life sciences etc.</li> <li>• Compute area of surfaces of revolution and the volume of solids by integrating over cross-sectional areas.</li> </ul>	Global
2	Core-2	Discrete Mathematics	This is a preliminary course for the basic courses in mathematics and all its applications. The objective is to acquaint students with basic counting principles, set theory and logic, matrix theory and graph theory.	This course will enable the students to: <ul style="list-style-type: none"> <li>• Do simple mathematical modeling.</li> <li>• They can study advance course in mathematical modeling, computer science, statistics, physics, chemistry etc.</li> <li>• Graphs, their types and its applications in study of shortest path algorithms.</li> </ul>	Global
3	Core-3	Real Analysis	The course will develop a deep and rigorous understanding of real line $\mathbb{R}$ and of defining terms to prove the results about convergence and divergence of sequences and series of real numbers. These concepts has wide range of applications in	This course will enable the students to: <ul style="list-style-type: none"> <li>• Understand many properties of the real line and learn to define sequence in terms of functions from <math>\mathbb{N}</math> to a subset of <math>\mathbb{R}</math></li> <li>• Recognize bounded, convergent, divergent, Cauchy and monotonic</li> </ul>	Global

			real life scenario.	<p>sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.</p> <ul style="list-style-type: none"> <li>• Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.</li> <li>• To have a rigorous understanding of the concept of limit of a function.</li> <li>• The geometrical properties of continuous functions on closed and bounded intervals.</li> </ul>	
4	Core-4	Differential Equations	The main objectives of this course are to introduce the students to the exciting world of Differential Equations, Mathematical Modeling and their applications.	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> <li>• Formulate Differential Equations for various Mathematical models.</li> <li>• Solve first order non-linear differential equation and linear differential equations of higher order using various techniques.</li> <li>• Apply these techniques to solve and analyze various mathematical models.</li> </ul>	
5	Core-5	Theory of Real functions	The objective of the course is to have knowledge on limit theorems on functions, limits of functions, continuity of functions and its properties, uniform continuity, differentiability of functions, algebra of functions and Taylor's theorem and, its applications. The student how to deal with real functions and understand uniform continuity, mean value theorems.	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> <li>• Students will have working knowledge on the concepts and theorems of the elementary calculus of functions of one real variable.</li> <li>• workout problems involving derivatives of function and their applications.</li> <li>• Some of the families and properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.</li> <li>• Beta and Gamma functions and their properties.</li> </ul>	Global
6	Core-6	Group Theory-I	Group theory is one of the building blocks of modern algebra. Objective of this course is to introduce student to basic concepts of group theory and examples of groups	<p>The course will enable the students to:</p> <ul style="list-style-type: none"> <li>• Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups, etc;</li> </ul>	Global



			and their properties. This course will lead to future basic courses in advanced mathematics, such as Group theory and ring theory.	<ul style="list-style-type: none"> <li>• Link the fundamental concepts of Groups and symmetrical figures;</li> <li>• Analyze the subgroups of cyclic groups;</li> <li>• Explain the significance of the notion of cosets, normal subgroups, and factor groups.</li> </ul>	
7	Core-7	Partial differential equations and system of ODEs	The objective of this course is to understand basic methods for solving Partial Differential Equations of first order and second order. In the process, students will be exposed to Charpit's Method, Jacobi Method and solve wave equation, heat equation, Laplace Equation etc. They will also learn classification of Partial Differential Equations and system of ordinary differential equations.	The course will enable the students to: <ul style="list-style-type: none"> <li>• Formulate, classify and transform partial differential equations into canonical form.</li> <li>• Solve linear and non-linear partial differential equations using various methods; and apply these methods in solving some physical problems.</li> </ul>	Global
8	Core-8	Numerical Methods and Scientific Computing	Calculation of error and approximation is a necessity in all real life, industrial and Scientific computing. The objective of this course is to acquaint students with various numerical methods of finding solution of different type of problems, which arises in different branches of science such as locating roots of equations, finding solution of systems of linear equations and differential equations, interpolation, differentiation, evaluating integration.	The course will enable the students to learn the following: <ul style="list-style-type: none"> <li>• Some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision.</li> <li>• Interpolation techniques to compute the values for a tabulated function at points not in the table.</li> <li>• Applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.</li> </ul>	Global
9	Core-9	Topology of Metric spaces	This is an introductory course in topology of metric spaces. The objective of this course is to impart knowledge on open sets, closed sets, continuous functions, connectedness and compactness in metric spaces.	The course will enable the students to: <ul style="list-style-type: none"> <li>• Understand the basic concepts of metric spaces;</li> <li>• Correlate these concepts to their counter parts in real analysis;</li> <li>• Appreciate the abstractness of the concepts such as open balls, closed balls, compactness, connectedness etc. beyond their geometrical imaginations.</li> </ul>	Global
10	Core-10	Ring Theory	This is a second course in modern algebra which	The course will enable the students to learn about:	Global

			deals with ring theory. Some basics of ring theory like rings, subrings, ideals, ring homomorphisms and their properties and. This course is an integral part of any course on Modern algebra the others being Group theory and Field Theory.	<ul style="list-style-type: none"> <li>The fundamental concept of Rings, Fields, subrings, integral domains and the corresponding morphisms.</li> <li>Appreciate the significance of unique factorization in rings and integral domains.</li> </ul>	
11	Core-11	Multivariable Calculus	The objective of this course to introduce functions of several variable to a student after he has taken a course in one variable calculus. The course will introduce partial derivatives and several of its consequences and will introduce double and triple integrals along with line Integrals which are fundamental to all streams where calculus can be used.	The course will enable the students to learn about: <ul style="list-style-type: none"> <li>to calculate partial derivatives, directional derivatives, extremum values</li> <li>to calculate double, triple and line integrals. He will have idea of basic vector calculus including green's theorem, divergence theorem. and stokes theorem.</li> <li>To take courses in calculus on manifolds, Differential geometry and can help in numerical computations involving several variables.</li> </ul>	Global
12	Core-12	Linear Algebra	Linear algebra is a basic course in almost all branches of science. A full course in undergraduate program will help students in finding real life applications later. The objective of this course is to introduce a student the basics of linear algebra and some of its application	The course will enable the students to learn about: <ul style="list-style-type: none"> <li>The concept of linear independence of vectors over a field, the idea of a finite dimensional vector space, basis of a vector space and the dimension of a vector space.</li> <li>Basic concepts of linear transformations, the Rank-Nullity Theorem, matrix of a linear transformation, algebra of transformations and the change of basis.</li> <li>It has applications in computer science, finance mathematics, industrial mathematics, bio mathematics and what not.</li> </ul>	Global
13	Core 13	Complex Analysis	The objective of the course is aimed to provide an introduction to the theories for functions of a complex variable. The concepts of analyticity and complex integration are presented. The Cauchy's theorem and its applications, the calculus of residues and its	The course will enable the students to learn about: <ul style="list-style-type: none"> <li>Understand the significance of differentiability of complex functions leading to the understanding of Cauchy-Riemann equations.</li> <li>Evaluate the contour integrals and understand the role of Cauchy-Goursat theorem and the Cauchy</li> </ul>	Global

			applications are discussed in detail.	<p>integral formula.</p> <ul style="list-style-type: none"> <li>Expand some simple functions as their Taylor and Laurent series, classify the nature of singularities, find residues and apply Cauchy Residue theorem to evaluate integrals.</li> </ul>	
14	Core 14	Group Theory-II	The objective of this course is to be exposed to more advanced results in group theory after completing a basic course. The course introduces results on automorphism, commutator subgroup, group action Sylow theorems etc.	<p>The course shall enable students to learn about:</p> <ul style="list-style-type: none"> <li>Automorphisms for constructing new groups from the given group.</li> <li>Group actions, Sylow theorems and their applications to check nonsimplicity.</li> <li>Students can learn on direct products, group actions, class equations and their applications with proof of all results.</li> </ul>	Global
15	DSE I	Linear Programming	The objective of this course is to familiarize industrial problems to students with various methods of solving Linear Programming Problems, Transportation Problems, Assignment Problems and their applications. Also, students will know the application of linear Programming method in Game Theory.	<p>This course will enable the students to learn:</p> <ul style="list-style-type: none"> <li>Analyze and solve linear programming models of real life situations.</li> <li>The relationships between the primal and dual problems and their solutions with applications to transportation, assignment and two-person zero-sum game problem.</li> <li>This is also prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory etc.</li> </ul>	Global
16	DSE II	Probability and Statistics	The objective of the course is to expertise the student to the extensive role of statistics in everyday life and computation, which has made this course a core course in all branches of mathematical and engineering sciences.	<p>This course will enable the students to learn:</p> <ul style="list-style-type: none"> <li>Distributions to study the joint behavior of two random variables.</li> <li>To establish a formulation helping to predict one variable in terms of the other, i.e., correlation and linear regression.</li> <li>Central limit theorem, which helps to understand the remarkable fact that: the empirical frequencies of so many natural populations, exhibit a bell shaped curve.</li> </ul>	Global
17	DSE III	Differential Geometry	After learning methods on curve tracing and Analytic Geometry, the objective of	<p>This course will enable the students to learn:</p> <ul style="list-style-type: none"> <li>Serret-Frenet formulae,</li> </ul>	Global

			<p>this course is to teach Differential geometry of curves and surfaces which trains a student using tools in calculus to derive intrinsic properties of plain curves and space curves.</p>	<p>relation between tangent, normal and binomials,</p> <ul style="list-style-type: none"> <li>• First and second fundamental forms and ideas on various curvatures.</li> <li>• He has scope to take more advanced courses in surface theory and geometry.</li> </ul>	
18	DSE IV			•	
19	Generic Elective -1	Calculus and Differential Equations	<p>Calculus invented by Newton and Leibnitz is powerful analytical tool to solve mathematical problems which arise in all branches of science and engineering. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of a mathematical nature as well as practical problems using calculus and differential equation. The aim should be to expose the student to basic ideas as quickly as possible without much theoretical emphasis with importance on applications.</p>	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> <li>• Apply knowledge of calculus and differential equations in the areas of their own interest.</li> <li>• Draw the graph of functions in polar coordinates</li> <li>• Visualize cross sections of various 3D objects like sphere, ellipsoid etc.</li> <li>• Analyze real-world scenarios to recognize when ordinary (or systems of) or partial differential equations are appropriate for creating an appropriate model.</li> </ul>	Global
20	Generic Elective - II	Algebra	<p>This is a preliminary course for the basic courses in mathematics like, abstract algebra and linear algebra. The objective is to acquaint students with the properties of natural numbers i.e. Euclidean algorithm, congruence relation, fundamental theorem of arithmetic, etc. The basics of linear algebra i.e. vector spaces matrices are introduced here.</p>	<p>This course will enable the students to:</p> <ul style="list-style-type: none"> <li>• Study further courses in mathematics like, group theory, ring theory and field theory and linear algebra.</li> <li>• It has applications not only in higher mathematics but also in other science subjects like computer science, statistics, physics, chemistry etc.</li> <li>• to learn the techniques of proving mathematical theorems.</li> </ul>	Global
21	SECC-II	Quantitative and logical thinking (special course)	<ul style="list-style-type: none"> <li>• To engage the students for more creatively to improve their critical thinking skill</li> <li>• To strengthen the quantitative and logical thinking of Undergraduate students</li> </ul>	<p>This course will enable the students to learn:</p> <ul style="list-style-type: none"> <li>• Students can able to appear competitive examination</li> </ul>	Global

## Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Mathematical Physics-I	Students will understand the concepts of calculus and vector operation to solve various problems in physics.	<ol style="list-style-type: none"> <li>1. To gain the knowledge of the basics of calculus.</li> <li>2. To understand vector operation.</li> <li>3. To study orthogonal curvilinear coordinate system.</li> <li>4. To apply the knowledge of vector calculus.</li> </ol>	Global
2	Core-2	Mechanics	To understand and apply the concepts of laws of motion to solve physics problems.	<ol style="list-style-type: none"> <li>1. To study rotational dynamics.</li> <li>2. To remember and understand the ideas of elasticity.</li> <li>3. To study the laws of gravitation and calculation of central force problems.</li> <li>4. To apply the knowledge of oscillation and to study special theory of relativity.</li> </ol>	Global
3	Core-3	Electricity and Magnetism	To understand the laws of electricity and magnetism and apply the concepts to solve problems.	<ol style="list-style-type: none"> <li>1. To understand the concept of electric potential and apply the concept to solve image problems.</li> <li>2. To study the origin of magnetic fields due to different current elements.</li> <li>3. To study dielectric properties of matter and study electromagnetic induction.</li> <li>4. Apply the knowledge of alternating current to various circuits.</li> </ol>	Global
4	Core-4	Waves and Optics	Students will understand the nature of light through interference and diffraction.	<ol style="list-style-type: none"> <li>1. To remember the application of geometrical optics.</li> <li>2. To understand various types of wave motion and application.</li> <li>3. To understand the interference nature of light and experiments.</li> <li>4. To study diffractions and its related experiments.</li> </ol>	Global
5	Core-5	Mathematical Physics-II	To students will implement the ideas of Fourier series and differential equation to	<ol style="list-style-type: none"> <li>1. To study the properties of Fourier series and its application.</li> </ol>	Global

			solve various problems in physics.	<ol style="list-style-type: none"> <li>2. To understand the roles of various special polynomials in physics and its application.</li> <li>3. To explore different polynomials and different integral problems.</li> <li>4. To understand and apply differential equations.</li> </ol>	
6	Core-6	Thermal Physics	Students will understand the ideas of thermostatics, thermodynamics, and its laws with application.	<ol style="list-style-type: none"> <li>1. To remember various laws of thermodynamics.</li> <li>2. To study various thermodynamics potentials, phase transition and maxwells relation.</li> <li>3. To understand the transport phenomena in gas.</li> <li>4. To explore the properties of real gases.</li> </ol>	Global
7	Core-7	Analog Systems and Applications	Students will study the semiconduction device and its properties for application in physics.	<ol style="list-style-type: none"> <li>1. To study pn junction diode and its properties.</li> <li>2. To understand transistor and its properties.</li> <li>3. To explore different types of amplifiers.</li> <li>4. To implement the concepts of OPAM in various applications.</li> </ol>	Global
8	Core-8	Mathematical Physics III	To solve various physics problems trough integral transform and complex analysis.	<ol style="list-style-type: none"> <li>1. To understand complex numbers and complex theory.</li> <li>2. To study the properties of Fourier transform.</li> <li>3. To apply the concepts of Fourier, transform in physics problem.</li> <li>4. To apply the concepts of Laplace transform to solve differentials equations in physics.</li> </ol>	Global
9	Core-9	Elements of Modern Physics	Students will study the developments in modern physics and application.	<ol style="list-style-type: none"> <li>1. To study the various models of atom.</li> <li>2. To understand wave particle duality and its related experiments.</li> <li>3. To understand basic properties of nucleus.</li> <li>4. To explore the concepts of radioactivity and nuclear reactions.</li> </ol>	Global
10	Core-10	Digital Systems and Applications	Students will understand digital system circuits and its application.	<ol style="list-style-type: none"> <li>1. To remember integrated circuits and digital circuits.</li> </ol>	Global

				<ol style="list-style-type: none"> <li>2. Understand the concepts of Boolean algebra and CRO.</li> <li>3. To explore data processing circuits and timers.</li> <li>4. To introduce the concepts of computer architecture and counters.</li> </ol>	
11	Core-11	Quantum Mechanics and Application	Students will understand the concept of quantum mechanics, operators and its application in various quantum physics problems.	<ol style="list-style-type: none"> <li>1. Students will understand Schrodinger equation and its properties.</li> <li>2. To study the concepts of operators and their properties.</li> <li>3. To apply the Schrodinger equation to various one-dimensional potential problems.</li> <li>4. To understand the problems like atoms under the effect of electric field and magnetic field.</li> </ol>	Global
12	Core-12	Solid State Physics	Students will understand crystal structure and the application of quantum mechanics to solid state physics.	<ol style="list-style-type: none"> <li>1. To study crystal structure and X-ray diffraction.</li> <li>2. To understand phonon and magnetic properties in solid.</li> <li>3. To explore dielectric properties and understand LASER.</li> <li>4. To apply the concepts of quantum mechanics to solid to understand band structure.</li> </ol>	Global
13	Core 13	Electro-magnetic Theory	Students will understand the application of Maxwell's equation to understand electromagnetic waves in different mediums and the concept of polarization.	<ol style="list-style-type: none"> <li>1. To understand differential and integral form of maxwell equation and gauge transformation.</li> <li>2. To study em wave motion in unbounded media.</li> <li>3. To understand em wave motion in bounded media and concept of Fresnel equations.</li> <li>4. To understand polarization of em wave and its application.</li> </ol>	Global
14	Core 14	Statistical Mechanics	To understand classical and quantum statistical mechanics.	<ol style="list-style-type: none"> <li>1. To remember classical statistical mechanics and types of ensemble.</li> <li>2. To study Gibb's paradox and Sakur-</li> </ol>	Global

				<p>Tetrode Equations.</p> <p>3. To understand quantum statistics and its properties.</p> <p>4. To study theory of radiation to understand various experiments like blackbody radiation.</p>	
15	DSE I	Classical Dynamics	The emphasis of the course is based on applications in solving problems of interest to the physicists and students are to be examined on the basis of the concepts and the problems, seen and unseen.	After the completion of the course, the students are able to integrate their basic knowledge about the subject matter and learn how to execute the same in their practical life.	Global
16	DSE II	Nuclear and Particle Physics	The emphasis of the course is to learn the fundamental laws and concepts of nuclear and particle physics.	After the completion of the course, the students are able to apply their understanding to fundamental laws of nature, and solve problems related to the course.	Global
17	DSE III	Nano Materials and Applications	The emphasis of the course is to understand nanomaterials and the physical principles involved in the synthesis & characterization of nanomaterials.	After the completion of the course, the students are able to understand what are nanomaterials and interpret its practical applications.	Global
18	DSE IV	Project Work		Students will learn how to prepare a project. They will gain idea about the ethics involved in research.	

## Programme: ZOOLOGY

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	Core-1	Non-chordates I: Protista to Pseudocoelomates	To obtain a thorough understanding of the gradual changes in the processes of life from primitive stage onwards. Knowledge of parasitic life.	The students will be able to gain basic taxonomic knowledge of systematics and phylogeny.	Global
2	Core-2	Principles of Ecology	To provide a holistic idea about populations, their interactions among themselves and with their	Students will be exposed to the fundamental aspects of ecology, climate change and related aspects for sustainable	Global



			environment and to understand the pressing situations associated with climate change, pollution and related environmental processes.	environmental existence of life.	
3	Core-3	Non chordates II: Coelomates	To obtain a thorough understanding of the gradual changes in the structure and function enabling organism to pervade initial aquatic condition of life to land and air. Knowledge of parasitic adaptation.	The students will be able to gain basic taxonomic knowledge of systematics and phylogeny. It provides basic knowledge of soil fertility, small and medium entrepreneurship in related to prawn, pearl etc.	Global
4	Core-4	Cell biology	To understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes and organelles.	Students will be acquainted with the bio membrane structure and functions, the cytoskeleton, cell division and their regulation through different check points. The association between defect in cell cycle, apoptosis, signal transduction and cancer will help in understanding cell physiology.	Global
5	Core-5	Diversity of Chordates	To understand the structure, behavior, interactions and economic importance of higher animal groups	The students will be able to gain basic taxonomic knowledge of systematics, phylogeny and entrepreneurs by utilizing the basic understanding available from vertebrates like fishes, birds and Mammals, etc. Immediate lifesaving skills can be obtained in study of reptiles.	Global
6	Core-6	Physiology: Controlling and Coordinating systems	To learn and understand the foundational concepts relating to a broad range of topics in life sustaining mechanisms and their interplay to maintain Homeostasis.	The students will be able to explore the original queries on structural organization in animals.	Global
7	Core-7	Fundamentals of Biochemistry and microbiology	To understand the structure and function of biomolecules. To enhance students expatiation for critical microbial analysis.	the students will understand the fundamental energetic of biochemical processes and chemical logic of metabolic pathways.	National
8	Core-8	Comparative anatomy of Vertebrates	To be familiar with the anatomical design and adaptive modifications of life sustain systems in chordates.	Students can grasp the up gradation and its utility associated with evolution of Vertebrates.	Global
9	Core-9	Physiology: Life Sustaining Systems	To improve the student's pursue for life and health through in-depth study of human physiology	Students can explore the functional detail of various physiological organs and its associated processes.	Global
10	Core-10	Biochemistry of Metabolic Processes	To exude students interest for understanding of metabolic pathways.	Idea of metabolites, their role in sustainable health and hygiene can be explored by students,	National
11	Core-11	Molecular Biology	To understand the	The course will acquaint the	Global

			foundation of molecular basis of life like DNA, RNA and protein and their regulation, subsequent desirable molecular manipulations.	students with versatile tools and techniques employed in molecular research, innovations and creativity in basic and applied fields of biological research.	
12	Core-12	Principles of Genetics	To provide the fundamental knowledge on principles of inheritance, basis of family lineages, genetic disorders and the methods of genetic combats.	To provide the fundamental knowledge on classical genetics, genetic disorders and the methods of gene transfer.	Global
13	Core 13	Developmental Biology	To understand the fundamental concepts mechanisms of development including metamorphosis, regeneration, interaction of genes and environment.	The course will provide an in depth information on developmental biology starting from molecular aspects of gametogenesis to regeneration and senescence.	Global
14	Core 14	Evolutionary Biology	To understand the origin of life and evolutionary mechanisms operating through descent of organisms.	The students are expected to develop a solid foundation on processes of evolutionary processes responsible for bringing about variation and adaptation.	Global
15	DSE I	Animal Behavior and Chronobiology	To provide basic idea of chronology in biological systems and to understand behavioral patterns and their regulation across animal groups.	Study of animal behavior will enable the students to understand the significance of harmonious coexistence, preservation of species and individual to collective measures for sustainable existence.	Global
16	DSE II	Immunology	To learn the organization, malfunctioning and disorders of the immune system. To get a broad awareness of vaccines and their utility public health.	At the end of the course, the students should be able to understand the role of microbes in human health and diseases. They will be able to identify the cellular and molecular basis of immune responsiveness and understand how the innate and adaptive immune responses coordinate to fight invading pathogens.	Global
17	DSE III	Wildlife Conservation And Management	To generate idea on wildlife, its conservation and related laws and their utility for public welfare	Students will be exposed to the fundamental aspects of ecology, significance of wildlife, wildlife laws and various technological developments for their conservation.	Global
18	DSE IV	Project Work		Students will learn how to prepare a project. They will gain idea about the ethics involved in research.	

## ETHICS and VALUES (EV)

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	EV-I	Issues Relating to Women	<p>The module aims to generate a sensitivity among the students towards women</p> <p>Enable them to value the contributions of women, from family to the larger society</p> <p>To generate among them a distinct urge to respect women</p> <p>To appreciate that women should have equal status and equal entitlements as member of the society</p>	<p>Students are expected to have changes in their perceptions and practices towards women</p> <p>Develop proper attitude towards women and value their work and contribution</p> <p>Come forward to challenge unethical treatments against women</p> <p>End gender based hierarchy and hegemony, remove the feeling that women are counter to men and</p> <p>Bring about a complementarity among the hitherto existing gender binary</p> <p>Allow women to realize their self-worth and contribute their best for betterment of the society</p> <p>Pioneer in creating a gender equal society where the well-being, happiness and security of the women will be well protected; contributing towards a better and happier society.</p>	National
2	EV-II	Values and Good Citizenship	<p>Introducing salient features of Indian Constitution to students and to inculcate the sense of patriotism in them.</p> <p>Encouraging them to volunteer social work.</p>	<p>Understanding Basic Values of Indian Constitution</p> <p>Inculcating Volunteerism for Social change</p> <p>Helping students to become good human being and citizen</p>	National
3	EV-III	Issues of Drug, tobacco and Alcohol Addiction	<p>Creating awareness about health and societal hazards of drugs, tobacco and alcohol addiction</p> <p>Sensitizing students about professional support system for treatment and rehabilitation</p>	<p>The students become aware of the grave danger of consuming alcohol, tobacco and drugs</p> <p>Students would encourage their friends to remain away from tobacco, alcohol, drugs and seek professional help when needed.</p>	Global
4	EV-IV	Ethical Values for Student Life	<p>To familiarize the students with core values of Academics and Goals of Education.</p> <p>To create an awareness about unethical practices in the academics.</p>	<p>The students will learn to behave ethically in the campus.</p> <p>Exhibit respectful treatment to others in an organizational context.</p> <p>Contribute to develop a positive social environment through active participation cooperation with other.</p>	Global
5	EV-V	Vulnerable Sections of Society: Understanding their Issue	<p>To create an awareness amongst students about the need for ensuring dignity and equality for the vulnerable sections of the society.</p>	<p>Students would be able to appreciate values and ethics relating to vulnerable sections of the society.</p> <p>Students would learn to practice equality, diversity and social justice.</p> <p>Students would become more</p>	National

				empathetic and compassionate towards vulnerable sections of the society.	
6	EV-VI	Environmental & Techno Ethics	<p>To develop awareness and sensitize sustainable students about the importance of environment for a sustainable earth and to bring Green Technology into action.</p> <p>To focus their attention towards cleanliness, preservation of biodiversity and practice of conservation of natural resources.</p> <p>To make them understand the judicious use of modern technology strictly on need basis.</p> <p>To use science and technology for preservation on environment and its sustainable development but not for destruction.</p>	<p>Develop an understanding of environmental ethics and work towards sustainable development Commitment to Green Technology for sustainable Future.</p> <p>Understand ethical issues relating to use of digital Medium.</p>	Global

## ENVIRONMENTAL SCIENCE (EVS)

### Course Outcome

Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	AECC	Environmental Science	The study creates awareness among the people to know about various renewable and nonrenewable resources of the region. "Environmental education	Students will understand key concepts in the life and physical sciences and will apply them to environmental issues. Students will understand and apply the scientific process, as well as appreciate both the potential and limitations of the	Global

## NATIONAL CADET (NCC)

### Course Outcome

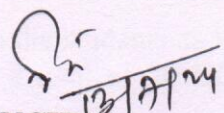
Sl.No	Core Paper	Course Name	Thrust Area/Objective	Outcome	Local/Regional/National/Global Relevance
1	GE-I	GE-I	<ul style="list-style-type: none"> <li>Introduction to NCC, Armed Forces</li> <li>National Integration, Concepts of Unity in Diversity, Role of NCC in Nation Building, Threats</li> </ul>	<ul style="list-style-type: none"> <li>The students will be able to:</li> <li>Understand history, organization and role of NCC in inculcating values that mould youth</li> </ul>	National

			<p>to National Security. Leaders of India and Indian Neighbours</p> <ul style="list-style-type: none"> <li>• Drill: Foot Drill - Importance and Benefits of Drill, Words of Command, General-Attention, Stand-at-ease Structure and Function of Human Body, Reproductive system, Endocrine system Hygiene and Sanitation, Benefits Prevention of Diseases, First-aid and common medical emergencies</li> </ul>	<p>into empowered citizens of the nation.</p> <ul style="list-style-type: none"> <li>• Understand the requirement for National Integration, learn to Appreciate the spirit of unity in diversity, the importance of social-cultural fabric of the country.</li> <li>• Understand the importance of discipline in a cadet, learn coordination and group work, improve posture and bearing, instil pride in uniform and spirit of patriotism.</li> <li>• Value the importance of physical and mental health.</li> <li>• 5. Render basics first aid.</li> </ul>	
2	GE-II	GE-II	<ul style="list-style-type: none"> <li>• Personality Development: Introduction to Personality development, Factors shaping/influencing personality, Types of Skills, Core Life Skills.</li> <li>• Disaster Management Organizations: Organizational structure and role of NDMA, NDRF.</li> <li>• Social Service: What constitutes social service, basics of social service, types of</li> <li>• social service activities, weaker section of society and their needs, Contribution of NCC Cadets.</li> </ul>	<ul style="list-style-type: none"> <li>• The students will be able to:</li> <li>• Be aware of critical life skills and learn to apply them in their personal life.</li> <li>• Be familiar with different aspects of disaster management, essential services, firefighting and civil defense organization.</li> <li>• Appreciate the need for social service for country's development and how youth can contribute in service to the Nation.</li> <li>• Be aware of policies and schemes introduced by the Govt. that impact society at large and focus on social upliftment in particular.</li> <li>• Become adept at map reading.</li> </ul>	National

3	GE-III	GE-III	<ul style="list-style-type: none"> <li>• Communication Skills : Barriers to effective communication, Reducing communication gap, Group Discussions</li> <li>• Leadership: Leadership and its types, Important leadership Traits, Indicators of good leadership, development of the indicators of good leadership, Leadership principles, Motivation and factors that motivate</li> <li>• Field and Battle Craft: Introduction to Field Craft and Battle Craft Judging Distance, Methods of judging distance, Under and over estimation of distance</li> <li>• Biography: Necessity of studying military history, Biography of Field Marshall</li> </ul>	<ul style="list-style-type: none"> <li>• The students will be able to:</li> <li>• Learn to navigate stressful situation, improve time management and their communication skills.</li> <li>• Learn the qualities that make a good leader &amp; learn to imbibe the same qualities in their own life.</li> <li>• Gain elementary knowledge of field and battle craft, know practical applications of field craft such as judging distance, concealment, description of target, field signals.</li> <li>• Be inspired and motivated through studying life history of renowned Military leaders.</li> </ul>	National
4	GE-IV	GE-IV	<ul style="list-style-type: none"> <li>• Social Service and Community Development Activities Social Evils: Drug abuse, Female foeticide, Dowry, Child abuse, POCSO Act 2012</li> <li>• Road/Rail Travel Safety: Traffic control organization, Traffic rules and regulations, Importance of traffic awareness</li> <li>• Natural resources conservation and management- basic information on natural resources, types of resources, need for management and conservation of natural</li> </ul>	<ul style="list-style-type: none"> <li>• The students will be able to:</li> <li>• Understand various community development activities undertaken by NCC.</li> <li>• Be informed about the prevailing safety measures for protection of women and children as well as those relating to travel via road/rail. Be aware of new initiatives promoted by Govt. of India.</li> <li>• Understand importance of environment preservation, role of pollution, need for</li> </ul>	National

			<p>resources, methods of management and conservation of resources.</p> <ul style="list-style-type: none"> <li>Battles since Independence: of Indo-Pak War 1948, 1965, 1971, Kargil War, Chinese Aggression- 1962 Surgical Strikes</li> </ul>	<p>conservation.</p> <ul style="list-style-type: none"> <li>Learn of the wars India has been engaged in since Independence and threats to sovereignty of the Nation.</li> </ul>	
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