Syllabus of Value Added Courses
As per UGC Curriculum and CBCS Framework for Undergraduate Programmes under NEP 2020
For
Undergraduate Courses (Semester I/II)
In
Faculties of Arts/Science/Commerce/Fine Arts/Social Sciences

w.e.f. Academic Session 2023-2024

University of Rajasthan, Jaipur

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List of Value Added Courses
As per NEP-2020
For
Undergraduate Courses (Semester I/II)
In Faculties of Arts/Science/Commerce/Fine Arts/Social Sciences
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List of Value Added Courses
As per NEP-2020
For
Undergraduate Courses (Semester I/II)
In Faculties of Arts/Science/Commerce/Fine Arts/Social Sciences
w.e.f. Academic Session 2023-2024

1. Anandam
2. Digital Enhancement
3. Understanding Indian Society & Culture
4. Nutrition for Health and Fitness
5. Geriatric Wellness and Care
6. National Cadet Corps(NCC)-I (Semester-I)
7. Indian Value System ()
8. National Service Scheme (NSS)-I (Semester-I)
9. Financial Literacy
10. National Cadet Corps(NCC)-II (Semester-II)
11. National Service Scheme (NSS)-II(SemesterII)

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NEP-2020 based Syllabus
For
Value Added Courses for Semester I and II in UG Programmes
(2 credits/semester for Semester I/II.)
VAC-1

1	Title of course- A n a n d a m		
2	Nodal Department of HEI to run course	Sociology.	
3	Nature of course- Independent/Progressive	No	
4	Number of Seats-	60 students per batch	
5	Course Code-……..	Credits-02(1Theory OR 2Practical Hours per week)	
6	Scheme of Examination Maximum Marks Minimum Marks	Annexure-I (Attached) 50 20	
7	Is this course is based on Outside Partners/Institutions/Industry/ Govt. Org. etc. ?	Yes	No
8	If Yes, Name of proposed Outside Partners /Institutions /Industry/ Govt. Org. etc.	Any Government Organization and NGOs	

9 **Syllabus**

- Individual Activities
- Group Activities
- 1 hour lecture per week
- Report of Group Project
- Lecture/Webinar, Interactive Session to be organized in College for students on Anandam Day (Last Working Day of every Month)

Guidelines

- Adopt an area/colony/office to train people about plastic/organic waste disposal.
- Form a group to ensure that injured and sick cows and other animals in your area are taken care of.
- Adopt an area/colony to rectify issues related to water /electricity/ waste disposal/ road safety/pollution, etc.
- Create a book/food/clothes/mobile/equipment bank and distribute it to the needy.
- To Monitor unauthorized cutting of trees and related issues.
- Engage in massive plantation and aforestation programs.
- Adopt local heritage sites or spots of tourist interest and work for its restoration and publicity on tourist guide maps.
- Coordinate with hospitals / NGOs and organise medical check-up camps for children/women in poor localities.
- Form drug/alcohol de-addiction help-groups and motivate people.
- Organize Vocational Skill Training Programs in juvenile jails and women homes.
- Form a group to help workers/house maids to make cooperatives for small scale loans.
- Form a group to monitor and resolve eve-teasing/ harassment of women, children and old people.
- Form a group to restore and publicise local art-forms like weaving/ dyeing, maandna, folk songs, old manuscripts, etc

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- Form age/gender specific groups for collective yoga/meditation in a community, society, hostel, etc.
- Form a group to restore wells/step wells/ponds or other similar water sources.
- Form a group to motivate people to employ rain water harvesting and solar energy harvesting techniques.
- Form a group to maintain a public garden/park for the residents of a particular area.
- To train youngsters about computer programming and apps.
- Engage in " Beti Bachao Beti Padhao" programs for over all development and empowerment of girl child in your locality.
- Innovate/Design Simple technology using local resources that saves labour time of labourers and poor farmers and impacts their lives positively.
- E-literacy programs, to help organizations/individuals with email and websites, etc.
- Time giving activities to adopted communities for spreading awareness regarding Govt. programmes/Schemes.
- Sports activities like yoga, meditation, drills and physical exercises in adopted areas
- Spread awareness about dental care, first-aid training, etc.
- Form group for attending to old people to assist them for market and groceries, etc.

Annexure-I

Examination Scheme:

Programme Evaluation Methods:

S.No.	Parameters	Max. Marks
1	Entries in Daily Diary	05
2	Synopsis of Project	10
3	Participation in Anandam Day (Last working day of every month)	10
4	Report of Group Project	25
	Total	50

Evaluation of Group Projects (25 Marks)

S.No.	Parameters	Max. Marks
1	Presentation/Video/Photographs submitted with Report	05
2	Media Report of Certificate from Govt. Organization/NGO/Community Forum/ Social Organisation Etc.	10
3	Challenging Issues / Problem Solving/ Innovation addressed in Project Report	10
	Total	25

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VAC-2

1	Title of course-**Digital Enhancement**		
2	Nodal Department of HEIto runcourse	All College Units	
3	Broad Area/Sector-	ICT Tools	
4	Number of Seats-	60 students per batch	
5	CourseCode-……..	Credits-02(4 Hours per week)- Presentations/ Demonstration and Group Activity	
6	Scheme of Examination Maximum Marks :50 Minimum Marks: 20	Internal Assessment : 10 Marks EoSE : 40 marks , Duration: 2 hours Exam pattern : MCQ , 80 questions. The responsibility of conducting and evaluating the Mid Semester Assessment is vested on the teacher designated as Course Coordinator. The End-Semester Examination shall be conducted by the concerned University.	
7	Is this course is based on Outside Partners/ Institutions/ Industry/ Govt. Org. etc. ?	Yes	No
8	**Syllabus outlines** **Unit I : Digital Inclusion and Empowerment** **Unit II : Communication and Collaboration in the Cyberspace** **Unit III : Towards safe and Secure Cyberspace** **Unit IV : Ethical Issues in Digital Word**		

- The course should be conducted in an interactive mode through demonstration, using appropriate ICT tools.
- Conduct workshops on e-services initiated under Digital India and Govt. of Rajasthan..
- Spread digital literacy/awareness amongst the vulnerable groups and marginalized sections of the society like street vendors, domestic help, security guards, senior citizens.
- Students will take up team activities/ projects exploring digital services in the areas such as education, health, planning, farming, security, cyber security, financial inclusion, and justice, e-Kranti.
- Any other Practical/ Practice as decided from time to time.

Unit wise Details of the Value Added Course

Particulars	**Presentations cum Practice Hours with individual and group activity. (30×2=60)**
Unit I: Digital inclusion and Digital Empowerment	**20**
• Needs and challenges • Vision of Digital India: DigiLocker, E-Hospitals, e-Pathshala, BHIM, Swayam Portal, e-Kranti (Electronic Delivery of Services), e-Health Campaigns. Digital Signature. • Public utility portals of Govt. of India such as RTI, Health, Finance, Education, SSO-ID.	

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Unit II: Communication and Collaboration in the Cyberspace	16
• Electronic Communication: electronic mail, blogs, social media tools • Collaborative Digital platforms • Tools/platforms for online learning • Collaboration using files haring, messaging, video conferencing	
Unit III: Digital Safety Measurement Tools.	**16**
• Online security and privacy • Threats in the digital world: Various forms of Viruses, Data breach and Cyber Attacks • Blockchain Technology • Security Initiatives by the Gov tof India	
Unit IV: Ethical Issues in Digital World	**8**
• Emerging Technologies: Overview of Cloud Computing, • Big Data, Internet of things, Virtual reality, Robotics, Artificial intelligence, • 3-D Printing, Future of digital technologies.	
Total	**60 hours**
Requisite: Basic knowledge of Computer Applications.	

Suggested Books/References/Weblinks(if available)

(a)	Books:	**Essential Readings / Online Resources** • Rodney Jones and Christopher Hafner. "Understanding digital Literacies: A PracticalIntroduction" Routledge Books, 2nd edition, 2021. • M.Swan, "Blockchain: Blueprint for a new economy, O'Reilly Media,2015. • K.Chandrasekhran, "Essential of Cloud Computing", CRC Press, 2014 • P.Kumar et al.,"Emerging Technologies in Computing: Theory, Practice and Advances, CRC Press, Routledge, Taylor & Francis Group, , IstEdn, 2021. • https://www.digitalindia.gov.in • https://www.digilocker.gov.in • https://www.cybercrime.gov.in • https://www.cybersafeindia.in • https://www.meity.gov.in/cyber-surakshit-bharat-programme
(b)	References:	**Suggested Readings** • David Sutton. "Cyber security: A practitioner's guide", BCS Learning & Development Limited, UK, 2017. • https://www.mha.gov.in/document/downloads/cyber-safety-handbook

Programme Specific Outcome(As per the directions of UGC Framework for UG Programmes)

- Digital enhancement programs wil provide streamline processes and automate tasks, leading to increased operational efficiency. By understanding and learning about learning digital tools and technologies and optimize the workflows willreduce human error.
- To empower individuals to work more productively. With access to digital tools, automation, and collaboration platforms, employees can streamline their work, enhance communication and collaboration, and achieve higher levels of productivity.
- Digital enhancement programs often involve upskilling and reskilling individual to adapt to new technologies and work practices. By training of digital activities one can work fast with efficiency. Enhancing digital literacy, and foster a culture of continuous learning will be developed in the student.

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(2 credits/ semester for Semester I, II.)
VAC-3

1	Title of course- **Understanding Indian Society and Culture**	
2	Nodal Department of HEI to run course	History
3	Broad Area/Sector-	Indian History
4	Number of Seats-	All students
5	Course Code-……	Credits- 02 (2 Theory Hours per week)
6	**Scheme of Examination** Maximum Marks :50 Minimum Marks: 20	Internal Assessment: 10 Marks EoSE : 40 marks, Duration: 2 Hours Exam pattern: MCQ , 80 questions The responsibility of conducting and evaluating the Mid Semester Assessment is vested on the teacher designated as Course Coordinator. The End-Semester Examination shall be conducted by the concerned University.
7	**Course Objective:** The objective of this value-added course on the evolution of Indian society isto provides students with a comprehensive understanding of the historical, social, and cultural aspects of early and medieval Indian society. By studying various concepts, institutions, teachings, and artistic expressions, students will gain insights into the evolution of Indian society and its impact on contemporary culture. The course aims to foster critical thinking, cultural appreciation, and a deeper understanding of the roots of Indian civilization.	
8	**Syllabus/ Guidelines** **UNIT I** : Spiritual Concepts and Institutions **UNITII** : Social and Political Ideas **UNITIII** : Styles of Architecture **UNITIV** : Cultural Synthesis	

Unit wise Details of the Value Added Course

Unit	Title of Unit	Course Content	Theory Hours	Practical Hours
I	Spiritual Concepts and Institutions	*varna, ashrama, purushartha,* and *samskaras.* Teachings of Jainism and Buddhism	08	-
II	Social and Political Ideas	Social ideas as depicted in the *Smritis* with special reference to *Manusmriti.* Political Ideas in ancient India with special reference to *Arthashastra*	07	-
III	Styles of Architecture	Temple Architecture Dravida Style Nagar Style Besar Style	07	-
IV	Cultural Synthesis	Indo-Saracenic cultural synthesis- with special reference to art and literature. Development of Mughal Painting.	08	-
		Total Hours	30	-

Suggested Books/References/Web-links(if available)

(1) S.K. De, U.N. Ghosal et al (ed.): *The Cultural Heritage of India, Vol. II (Itihasas, Puranas, Dharma and other Shastras)*, Ramkrishna Mission, Calcutta, 2nd ed., 1962.

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(2) P.V. Kane: *History of Dharmasastra*, 5 Vols, Bhandarkar Oriental Research Institute, Poona, 2nd ed., 1968-77. (Hindi translation of 5 vols. published by Uttar Pradesh Hindi Sansthan, Lucknow).
(3) P.H. Prabhu :*Hindu Social Organisation*, Popular Prakashan, Bombay, 1940
(4) N.K. Dutta :*Origin and Growth of Caste in India,* Vols. I & II, Combined Reprint, Calcutta, 1986.
(5) Rajbali Pandey :*Hindu Samskara* (*The Social and Religious Study of the Hindu Sacraments*), Varanasi (Also in Hindi), 1936
(6) G.C. Pande :*Bharatiya Samaj - Tattvika aur AitihasikaVivechana* (in Hindi), New Delhi, 1994.
(7) Patrick Olivelle :*The Law Code of Manu*, Oxford world Classics, 2009
(8) Ram Sharan Sharma: *Aspects of Political Ideas and Institutions in Ancient India*. Motilal Banrassidas, Delhi, 1959
(9) Charles Hallisey: *Therigatha – Selected Poems of First Buddhist Women,* Harvard University Press, 2015
(10) Thomas R Trautmann; *Arthashastra – The Science of Wealth.* Random House India, 2016
(11) J L Mehta *Advanced Study in the History of Medieval India* Vol. 3 Sterling Publication, Delhi, 2018
(12) Sacchidanad Sahay: *Mandir Sthapatya ka Itihas,* Bihar Hindi GranthAkademi, 2013

Course Outcome:

This course aims to give insights into the evolution of Indian society and emphasises the development of critical thinking skills, cultural appreciation, and a deeper understanding of the roots of Indian civilization. By the end of the course, students will be able to analyse and evaluate the factors that shaped Indian society, apply their knowledge to engage in meaningful discussions and demonstrate proficiency in interpreting the historical and cultural aspects of Indian society. Moreover, students will develop a broader perspective on the interconnectedness of early and medieval Indian society with contemporary culture and society.

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VAC-4

1	Title of course- **Nutrition for Health and Fitness**	
2	Nodal Department of HEI to run course	Department of Home Science
3	Broad Area/Sector-	Nutrition and Fitness
4	Nature of course - Independent / Progressive	Progressive
5	Number of Seats-	60 students per batch
6	Course Code-……..	Credits- 02 (2 Theory Hours per week)
7	Programme Objective: The course has been planned to provide the student about basic concept of health, wellness and fitness. The course shall create awareness about the importance of correct dietary and physical activity practices for positive health and wellness. The student shall understand balanced diet and impact of processed foods on health. An understanding of the current health scenario in the country and globally will be imparted	
8	**Scheme of Examination** Maximum Marks :50 Minimum Marks: 20	Internal Assessment: 10 Marks EoSE : 40 marks, Duration: 2 Hours Exam pattern: MCQ , 80 questions The responsibility of conducting and evaluating the Mid Semester Assessment is vested on the teacher designated as Course Coordinator. The End-Semester Examination shall be conducted by the concerned University.

10	**Syllabus/ Guidelines** **Unit I : Health & Fitness** **Unit II : Nutritional Guidelines** **Unit III : Processed Foods** **Unit IV: Physical Activity and Nutrition**

Unit wise Details of the Value Added Course

Unit	Title of Unit	Course Content	Theory Hours (30)
I	**Health & Fitness**	• Concept of positive Health and Wellness as per WHO Guidelines • Physical Fitness –definition • Role of Nutrition for Health and Fitness	4 4
II	**Nutritional Guidelines**	• Balanced Diets and Food Pyramid . • How to plan balanced diets for various age groups • Dietary Goals and Guidelines for Indians (Reference man &woman)	3 4
III	**Processed Foods**	• Concept of Processed Foods • Impact of Packaged, Ultra-processed and Convenience Foods on Health	3 4
IV	**Physical Activity & Nutrition**	• Effects on health of Physical Activity and Dietary Habits • Dual Burden of Malnutrition	4 4
		Total Hours	**30**

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Suggested Books/References/Web-links(if available)

(a)	Books:	(1) M.Swaminathan (2015): Advanced Text Book of Food and Nutrition. Volume I & II. The Bangalore Press, India. (2) Ravindra Chadhha &Pulkit Mathur (2015) : Nutrition and Life Cycle Approach. The Orient Blackswan; First Ed. (3) Dietary Guidelines for Indians –A Manual (2011) ,NIN, Hyderabad
(b)	References :	https://www.fao.org/3/ca5644en/ca5644en.pdf https://www.who.int/news-room/fact-sheets/detail/healthy-diet
(c)	Web-Links:	https://cdn.who.int/media/docs/default-source/health-promotion/framework4wellbeing_16dec22.pdf?sfvrsn=32a0e228_4&download=true https://www.nin.res.in/downloads/DietaryGuidelinesforNINwebsite.pdfhttps://apps.who.int/iris/rest/bitstreams/1315866/retrievehttps://ncert.nic.in/textbook/pdf/iehp104.pdf https://www.researchgate.net/publication/51711287_Consensus_Physical_Activity_Guidelines_for_Asian_Indianshttps://egyankosh.ac.in/handle/123456789/47981h ttps://egyankosh.ac.in/handle/123456789/44151 https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA

Programme Outcome

1. Enhancing the basic under standing of nutrition and physical fitness
2. Developing a healthy attitude to wards physical well being
3. Inculcating values of conscious and correct eating habits
4. Awareness generation regarding processed foods and their effects on health & wellness
5. Understanding importance of physical activity and its effect on health &wellness
6. Understanding nutrition and its effect on health and wellness

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(2 credits/ semester for Semester I, II.)
VAC-5

1	Title of course- **GERIATRIC WELLNESS AND CARE**	
2	Nodal Department of HEI to run course	**Department of Home Science**
3	Broad Area/Sector-	**HUMAN DEVELOPMENTAND FAMILY STUDIES**
4	Nature of course - Independent / Progressive	Progressive
5	Number of Seats-	60 students per batch
6	Course Code-……..	Credits- 02 (2 Theory Hours per week)
7	**Scheme of Examination** Maximum Marks :50 Minimum Marks: 20	Internal Assessment: 10 Marks EoSE : 40 marks, Duration : 2 hours Exam pattern: MCQ , 80 questions The responsibility of conducting and evaluating the Mid Semester Assessment is vested on the teacher designated as Course Coordinator. The End-Semester Examination shall be conducted by the concerned University.
	Programme Objectives: The course shall give the student an understanding of role of geriatric care assistance and shall equip the student to be an effective care giver. The student shall be understand the importance of the general, medical and psychological problems faced by the elderly and be able to learn about basic first aid for elderly. An understanding of the current health scenario in the country and globally will be imparted.	
8	**Syllabus/ Guidelines** **Unit-1 : Introduction to health care of Geriatric population** **Unit-2 : Introduction to a Geriatric Care Assistant Programme** **Unit- 3 : Personal Hygiene and Health of elderly** **Unit-4 : Basic applied knowledge for Geriatric Care**	

Unit wise Details of the Value Added Course

Unit	Title of Unit	Course Content	Theory Hours	Practical Hours
UNIT-I	Introduction to healthcare of Geriatric population	a) Health care delivery system in India at primary, secondary and tertiary care, Community participation in health care delivery system	4	
		b) Basic medical, psychological and nutrition related terminologies; Issues in Health Care Delivery System in India.	3	
		c) Role of a Geriatric Care Assistant, Do's and Don'ts; Requirements to become a Certified Geriatric Care Assistant	4	

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UNIT-II	Introduction to a Geriatric Care Assistants	d) Basics of emergency care and life support skills-Vital signs, first aid and triage e) Identifying signs and taking measures for elderly emergency conditions e.g. Stroke, falls, injuries, accidents, cuts, bruises and sprain, Asthma attack, Gastro-Intestinal disorders, Hypothermia and fever, Dental problems,Vision and Hearing problems, Bacterial, fungal, urinary tract infections, Depression and Dementia and any other conditions	2 5	
UNIT- III	Personal Hygiene and Health of elderly	f) Understanding and procedures of Hygiene and prevention of infection including effective hand washing, bathing, drying, grooming etc g) Vaccination protocol against common Infectious diseases: immunization to reduce the health risks for care giver and patients.	3 3	
UNIT-IV	Basic applied knowledge for Geriatric Care	h) Understanding working systems for geriatric care institutions like hospital and old age Home i) Basic first aid for elderly population j) Leisure activities for elderly-importance and types of leisure activities	2 2 2	
		Total	30	

Suggested Books/References/Web-links(if available)

(a)	Books:	(1) NurseAssistantTrainingTextAmericaRedcross2013 (2) Draft Short Term, Training Curriculum Handbook of General Duty Assistant MOHFW. Govt.of India. (3) Draft of S.TTC Hand book of Hons. Health Aide MOHFN,GOI
(b)	References:	Manual on Geriatric care, MOHFW ,Dept. of Ayush GOI

Programme Outcome

(1) Understanding the health care in India
(2) Understanding the role of a Geriatric care Assistant
(3) Skilled and Trained caretakers for geriatric population

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(2 credits/ semester for Semester I, II.)

VAC-6

1.	Title of course- NCC-1(Semester-I)		
2	Nodal Department of HEI to run course	NCC Incharge of University	
3	Broad Area/Sector-	Participation in NCC	
4	Sub Sector-	College NCC Units	
5	Nature of course-Independent/Progressive	Progressive	
6	Number of Seats-	As per Vacancies allotted by DG NCC	
7	Course Code- 04	Credits-02(1Theory & 2 Practical Hours per week)	
8	Scheme of Examination Max Marks... Minimum Marks:	As per SNCCO Sept 2022 (Annexure-2) 50 20	
9	Is this course is based on Outside Partners/Institutions/Industry/ Govt. Org. etc. ?	Yes	No
10	If Yes, Name of proposed Outside Partners/Institutions/Industry/ Govt. Org. etc.	NCC office, Jaipur	
11	**Objective of NCC** The National Cadet Corps (NCC) is one of the largest youth organizations in India, with a primary objective of developing character, discipline, and leadership qualities among the youth. Established in 1948, the NCC has played a significant role in shaping the future generations of the country. Its core values, such as unity, discipline, and secularism, contribute to fostering national integration and a sense of pride among the cadets. • The NCC operates under the Ministry of Defence and has a presence in various educational institutions, including schools and colleges. It provides young boys and girls with a platform to develop their personality, physical fitness, and social awareness. The NCC motto, "Unity and Discipline," encapsulates its fundamental principles and the goals it strives to achieve. • One of the primary objectives of the NCC is to develop leadership qualities among the cadets. Through various training activities, including drill exercises, obstacle courses, and team-building exercises, the NCC instills in its cadets the ability to lead and inspire others. Cadets are taught to make quick decisions, take responsibility, and work in teams. These leadership skills are not only beneficial during the NCC training but also in all aspects of life, be it academics, career, or personal relationships. • Another crucial objective of the NCC is to foster national integration. India is a diverse nation, with numerous languages, religions, and cultures. The NCC embraces this diversity and promotes a sense of unity among its cadets. Regardless of their background, religion, or region, cadets come together under the common goal of serving the nation. The NCC emphasizes the importance of unity in diversity and encourages cadets to respect and appreciate different cultures and traditions. • The NCC also aims to create responsible and disciplined citizens. Cadets are required to adhere to a strict code of conduct, which includes punctuality, respect for authority, and ethical behavior. These principles help in molding the character of the cadets and preparing them for the challenges of life. The NCC believes that disciplined individuals contribute positively to society and uphold the values of integrity and honesty. • Moreover, the NCC plays a vital role in providing cadets with opportunities to engage in social service activities. The organization encourages cadets to actively participate in community development projects, blood donation drives, and environmental conservation initiatives. These activities not only develop a sense of empathy and social responsibility but also nurture a spirit of selflessness and service towards the nation. • Furthermore, the NCC aims to create a pool of talented and responsible youth who can contribute to the defense services of the country. Many NCC cadets choose to pursue a career in the armed forces or other uniformed services, where they can utilize their skills and training to serve the nation. The NCC provides a strong foundation for such individuals, preparing them physically, mentally, and emotionally for the challenges of these professions.		

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12	Syllabus Semester -I Total Hours- 15 (Credits-01) Practical- 30 Hours (Credits-01)

Unit wise Details of the Value Added Course (Semester-I)

Unit	Title of Unit	Course Content	Theory Hours	Practical Hours
I	NCC General	Aims, Objectives and Org of NCC, Incentives, Duties of NCC Cadets, NCC Camps: Types and Conduct	1 2 1	30
II	National Integration and Awareness	National Integration: Importance and Necessity, Factors affecting National Integration, Unity in Diversity, Threats to National Security	2 1 1 1	
III	Personality Development	Factors, Self-Awareness, Empathy, Critical and Creative Thinking, Decision Making and Problem Solving	1 2	
IV	Social Service and Community Development	Basics of Social Service, Rural Development Programmes, NGO'S, Rural Development Programmes, Contribution of Youth	3	
		Total Hours	15	30

Suggested Books/References/Web-links(if available)
Books:

1. NCC Hand Book
2. Pamela Martinez, Critical Thinking: Decision Making, Problem Solving and Self
3. Development (Effective Strategies That Will Make You Improve Critical Thinking) Carl Patterson, Critical Thinking Skills: Practical Tools for Rational Thinking and Deep Analysis to Boost Your Brainpower. Adopt Logic Strategies to Find Intelligent and Effective Solutions to Challenges
4. P. Gopinadhan Pillai, Rural Development in India

Web-Links:

1. https://indiancc.nic.in
2. https://www.researchgate.net/publication/357839324_NATIONAL_INTEGRATION_OF_INDIA_AND_THE_OBSTACLES_IN_ITS_WAY_STATE_RESPONSE_AND_ITS_REMEDIES
3. https://www.vedantu.com/english/importance-of-national-integration-essay

Programme Specific Outcome(As per the directions of UGC Framework for UG Programmes)

Programme Specific Outcomes (PSOs) are statements that describe what students are expected to know and be able to do by the time they complete a specific program or course of study. In the case of the National Cadet Corps (NCC), the PSOs focus on the unique learning outcomes that cadets should achieve through their participation in the NCC program.

The NCC is a youth organization in many countries, including India, designed to develop character, discipline, and leadership skills among young people. It aims to create a pool of disciplined and motivated youth who can serve as future leaders in various fields. The PSOs of NCC encompass a wide range of skills and qualities that cadets are expected to acquire during their NCC journey.

1. Leadership Skills: One of the primary PSOs of NCC is to develop leadership skills among cadets. Through various training activities, including leadership camps, command tasks, and practical exercises, cadets learn to lead and motivate their peers. They develop qualities like decision-making, effective communication, teamwork, and problem-solving skills, which are essential for effective

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2. Discipline and Time Management: NCC instills a sense of discipline and time management in cadets. They learn to follow rules and regulations, maintain punctuality, and develop a strong work ethic. Cadets are taught to manage their time effectively to balance their academic commitments and NCC activities, which helps them become more organized and efficient individuals.
3. Physical Fitness: Physical fitness is an important aspect of NCC training. Cadets engage in regular physical activities, including drill exercises, sports, and adventure activities, to enhance their fitness levels. The PSO focuses on improving their endurance, strength, agility, and overall physical well-being.
4. Social Awareness and Responsibility: NCC promotes social awareness and a sense of responsibility towards the community and the nation. Cadets are exposed to various social issues and are encouraged to actively participate in social service activities such as cleanliness drives, blood donation camps, and awareness campaigns. They develop empathy, compassion, and a sense of civic duty.
5. National Integration and Cultural Understanding: NCC fosters national integration and cultural understanding among cadets. It brings together young people from diverse backgrounds and provides a platform for them to interact and appreciate different cultures, languages, and traditions. Cadets learn to respect and value the rich cultural heritage of their country and develop a sense of unity and brotherhood.
6. Self-Confidence and Self-Development: NCC aims to boost the self-confidence and overall personality development of cadets. Through various activities like public speaking, personality development sessions, and exposure to challenging situations, cadets learn to overcome their fears and develop a positive self-image. They gain confidence in their abilities and become more self-assured individuals.
7. Crisis Management and Disaster Preparedness: NCC equips cadets with the skills and knowledge necessary to respond effectively in crisis situations and natural disasters. They receive training in first aid, disaster management, and rescue operations. Cadets learn to remain calm under pressure, make quick decisions, and provide assistance to those in need.
8. Ethics and Values: NCC emphasizes the importance of ethics, values, and integrity. Cadets are encouraged to uphold moral and ethical principles in all aspects of life. They learn to distinguish between right and wrong, and develop a strong sense of integrity, honesty, and accountability.
9. Teamwork and Interpersonal Skills: NCC focuses on developing teamwork and interpersonal skills among cadets. They learn to work collaboratively in a team, respect diversity, and effectively communicate with others. Cadets understand the significance of cooperation and coordination in achieving common goals.
10. Environmental Awareness and Conservation: NCC promotes environmental awareness and conservation among cadets. They learn about environmental issues, sustainable

Annexure-2

Examination Scheme (Programme Evaluation Methods)

Sr. No.	Parameters	Max Marks
1.	Entries in Daily Diary	05
2.	Synopsis Project - NCC General	10
3.	Participation in NCC training	10
4.	Participation in Social Service and Community Development (SSCD)	25*
	Total	50

*Evaluation of SSCD:

Sr. No.	Parameters	Max Marks
1.	Presentation/Video/Photographs submitted with report	05
2.	Day Significance	10
3.	Participation in Puneet Sagar, Swachch Bharat, quiz, Social Awareness and Jagrukata Rally etc.	10
	Total	25

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NEP-2020 based Syllabus
For
Value Added Courses for Semester I and II in UG Programmes
(2 credits/ semester for Semester I, II.)
VAC-7

1	Title of course - **Indian Value System- Bhāratīya Mūlyamīmāsā-I**	
2	Nodal Department of HEI to run course	Philosophy
3	Broad Area/Sector-	Understanding Indian value System
4	Nature of course - Independent / Progressive	Progressive
5	Number of Seats-	60 students per batch
6	Course Code-……	Credits- 02 (2 Theory Hours per week)
7	**Scheme of Examination** Maximum Marks :50 Minimum Marks: 20	Internal Assessment : 10 Marks **EoSE :** 40 marks, Duration : 2 Hours **Exam pattern:** MCQ , 80 questions The responsibility of conducting and evaluating the Mid Semester Assessment is vested on the teacher designated as Course Coordinator. The End-Semester Examination shall be conducted by the concerned University.
8	**Objectives:** The objective behind this course is to introduce to the students, the long tradition, plurality, depth, and perennial nature of Axiology, i.e., Philosophy of Value in classical texts of Indian philosophy	
9	**Syllabus/ Guidelines** **Unit I:** 1. An introduction to the meaning of philosophy and axiology ,i.e. ,philosophy of values. Origins and Nature of Indian Philosophy 2. Ethical concepts in Vedic corpus: Ṛta,Ṛṇa,Yajna,Śreyas-preyas, Vasudhaiva Kutumba kama 8 Lectures **Unit II:** 3. Puruṣārtha- types and role in holistic development of human life. 4. Upaniṣds: Tyaga and Bhoga (Īṣa),Taittirīya: Pañcakoṣa 8 Lectures **Unit III:** 5. Conception of Dharma- Sādhāraṇa andĀpadDharmaasin: Mahābhārata, Bhagawadgīta, Kaṇāda, Manu 4 Lectures 6. Jaina Ethics: Triratna, Pañca Mahāvrata: Satya-Ahiṁsa-Asteya, Aparigraha, Brahamcarya 4 Lectures **Unit IV:** 7. Niṣkām Karma Yoga of Gītā, Lokasaṁgraha 6 Lectures	

Suggested Books/References/Web-links(if available)

1. I.C.Sharma :Ethical Philosophiesof India.
2. S.K. Maitra :TheEthics of theHindus.
3. Surama Dasgupta :DevelopmentofMoralPhilosophyin India.
4. M. Hiriyanna :TheIndianConceptionofValues.
5. P.V. Kane :TheHistoryof DharmasastrasVol.I(Hindi translationavailable)
6. J.N. Sinha :A Manualof Ethics(Hindi translation available)
7. दिवाकरपांडेय भारतीय नीति शास्त्र
8. संगमलाल पांडेय नीति दर्शन का सर्वेक्षण

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10. गोविन्दचन्द्र पाण्डेय : मूल्यमीमांसा ईशादिदशनौ उपनिषद्, गीताप्रेस

Outcomes:

- Students should get a picture of the history of Indian valuc systcm
- Students should be able to understand the basic currents and concepts of classical Indian philosophy of values.
- Studentsshouldbeabletograspthefundamentalphilosophicalfoundationsof Indian value system.
- Students should be able to identify perennial values of Indian culture.
- Students should be able to understand the impact of Indian ethics and philosophy on Indian culture.

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National Education Policy 2020 based syllabus
For
Value added courses for Semester-I and II in UG Programmes
(2 Credits/ semester for I, II semester)
VAC-8

1.	Title of Courses	**National Service Scheme (NSS)-1**
2.	Nodal Department of HEI to run course	NSS Coordinator of University
3.	Hours	60 Hours per semester
4.	No. of seats	100 students in each NSS unit
5.	Course Code	
6.	Scheme of Examination	Annexure-3 (Attached)
7.	Maximum marks Minimum marks	50 20
8.	In the course is based on outside partners/ Institutions/ Industries/ Govt. organization etc.	Yes / No
9.	If yes, Name of proposed outside partners/ Institutions/ Industries/ Govt. organization etc.	Regional Directorate, National Service Scheme Jaipur, Rajasthan
10.	**National Service Scheme (NSS)** The National Service Scheme (NSS) is an Indian government sector public service program conducted by the Ministry of Youth Affairs [1] and Sports of the Government of India. Popularly known as NSS, the scheme was launched in Gandhiji's Centenary year in 1969. Aimed at developing student's personality through community service, NSS is a voluntary association of young people in Colleges, Universities and at +2 level working for a campus-community (esp. Villages) linkage. **Objectives of NSS:** ***The main objectives of National Service Scheme (NSS) are*** • understand the community in which they work • understand themselves in relation to their community • identify the needs and problems of the community and involve them in problem-solving • develop among themselves a sense of social and civic responsibility • utilise their knowledge in finding practical solutions to individual and community problems • develop competence required for group-living and sharing of responsibilities • gain skills in mobilising community participation • acquire leadership qualities and democratic attitudes • develop capacity to meet emergencies and natural disasters and • practise national integration and social harmony	
11	**Syllabus Guidelines:** **Theory Weight -15** **Practical/Project-work–30hours+ 15 hours (Project-work, Field Visits/Trainings)** **Unit-01: Introduction to NSS: Origin and concepts of NSS (3)** a) History, philosophy, aims & objectives of NSS b) Emblem, flag, motto, song, badge etc. c) Organizational structure d) Roles and responsibilities of various NSS functionaries **Unit-02: NSS Programmes and Activities (5)** a) Concept of regular activities, One day camps b) Basis of adoption of slum /village, methodology of conducting survey c) Youth development programmes/ schemes of Govt. of India d) Collaboration with different agencies **Unit-03: Understanding demography of adopted Slum (4)** a) Survey to understand various problems in the society b) Awareness programmes (Human rights, cleanliness programme etc.) c) Development of slums through various awareness activities d) Shramdaan	

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Know your culture (3)

a) Heritage and culture of the state
b) Heritage and culture of the country
c) Integration Programmes
d) Youth exchange programmes

Suggested books/ references/ websites

1. NSS Manual
2. https://nss.gov.in
3. yas.nic.in

Programme Specific Outcomes

- **Volunteership:** to make students understand the role of a volunteer and need of volunteership in Society.
- **Community participation:** Adoption of slum under this scheme is a better way to connect students with the society through which they can understand the society at grass root level
- **Youth development:** Various activities undertaken under scheme support overall development of youth, Participation of youth at various District, state, national and international camp supports that.
- **Leadership skills:** Promoting volunteership skills amongst students develops leadership skills in them.
- **Social awareness:** Activities like blood donation camp, Swachh bharat abhiyan, run for unity, HIV/ AIDS awareness, beti bachao beti padhao, voter awareness etc. builds social awareness among students.
- **Social harmony and community development:** Participation of students in community awareness activities promotes better connect with the society and developing understanding and builds harmony.
- **Integration:** Various camps like National Integration Camp and Youth Exchange Programmes integrate youth and understand culture.
- **Know your culture:** Activities that promote better understanding of heritage and culture is also a major concern of the syllabus.

Annexure-3

Examinations Scheme (Programme Evaluation Methods)

Sr. No.	Parameters	Max Marks
1.	Attendance	5
2.	Entries in Daily diaries	10
3.	Awareness Camps	10
4.	Participation in Social Service and Community Development (SSCD)	*25
	Total	50

*** Participation in Social Service and Community Development (SSCD)**

Sr. No.	Parameters	Max Marks
1.	Presentation/ Video/ Photographs submitted with Diary	5
2.	Significance of various days	10
3.	Participation in Blood donation, Swachh bharat abhiyan, quiz, social awareness and jagrukta railies, run for unity, yoga day, voter awareness and similar kind of activities.	10
	Total	25

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VAC-9

1.	Title of Courses	**Financial Literacy**
2.	Nodal Department of HEI to run course	Department of EAFM
3.	Hours	60 hours
4.	No. of seats	60 students per batch
5.	Course Code _____	Credits-02(4 Hours per week)- Presentations/ Demonstration and Group Activities *
6.	**Scheme of Examination** Maximum Marks :50 Minimum Marks: 20	**Internal Assessment:** 10 Marks **EoSE :** 40 marks, Duration: 2 Hours Exam pattern: MCQ , 80 questions The responsibility of conducting and evaluating the Mid Semester Assessment is vested on the teacher designated as Course Coordinator. The End-Semester Examination shall be conducted by the concerned University.
7.	In the course is based on outside partners/ Institutions/ Industries/ Govt. organization etc.	Yes / No
8.	If yes, Name of proposed outside partners/ Institutions/ Industries/ Govt. organization etc.	-
9.	**Learning Objectives** The Learning objectives of this course are as follows: • Familiarity with different aspects of financial literacy such as savings, investment, taxation, and insurance. • Understand the relevance and process of financial planning • Promote financial well-being	
10.	**Syllabus Guidelines** **UNIT – I Financial Planning and Financial Products** **UNIT – II Banking and Digital Payment** **UNIT – III Investment Planning and Management** **UNIT – IV Personal Tax**	

***Note :**
•Total Duration of this course = **15 Weeks**
• **2 Lectures of 2 Hours each** shall be conducted every Week

Unit wise Details of the Value Added Course
Detailed Syllabys for VAC-10 (FINANCIAL LITERACY)

UNIT – I Financial Planning and Financial Products (4 Weeks)

Introduction to Saving : Basics of Savings, Must Need Habit, Essential Component of Good Budgeting, Prevent Financial Emergencies and Uncertainties, Control the Spendings

Time Value of Money: Simple Interest and Compound Interest, Effective Rate of Interest, Annuity, Brief about Present Value and Future Value, Applications, Sinking Fund, Net Present Value (NPV), Compound Annual Growth Rate, Perpetuity

Management of Spending and Financial Discipline: Managing, Controlling and Analyzing the expenses, Brief about Financial Discipline, Key Elements of Financial Discipline

UNIT – II Banking and Digital Payment (3 Weeks)

Banking Products and Services: Deposit Accounts, Loan and Advances Accounts, Investment Services, Insurance Schemes, Forex and General Utilities

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Debit Cards (ATM Cards) and Credit Cards, Internet Banking and Mobile Banking (Immediate Payment Service (IMPS),Real Time Gross Settlement (RTGS),National Electronic Fund Transfer (NEFT)), Unified Payments Interface (UPI) & Bharat Interface for Money (BHIM),Mobile Wallets, Aadhaar Enabled Payment System (AEPS),Unstructured Supplementary Service Data (USSD),E-Rupi,Advantages and Disadvantages of Digital Payments and Transactions
Security and Precautions against Ponzi Schemes and Online Frauds: Security and Control against Cyber Frauds ,Precautions Against Investment Scams and Ponzi Schemes

UNIT – III Investment Planning and Management (4 Weeks)

Investment Opportunity and Financial Products: Introduction to Investments and Types of Investments, Return On Investments, Risk and Diversification
Brief about Financial Products: Securities and Stocks, Mutual Funds
Exchange Traded Funds (ETFs) and Index Funds, Bonds, Derivatives
Commodities, Currencies
Insurance Planning and Insurance Schemes: Introduction- Various Types of Insurance: Life Insurance , Non-Life Insurance (Medical Insurance, Fire Insurance, Property Insurance, Motor Insurance, Home Insurance, General Insurance, Travel Insurance
Importance of Insurance Planning

UNIT – IV Personal Tax (4 Weeks)

Introduction to Basic Tax Structure in India for Personal Taxation :Basic Concepts of Taxation, Residential Status and Scope of Income, Brief about Heads of Income
Aspects of Personal Tax Planning: Reduction of Tax Liability
Exemptions and Deductions for Individuals: Income Which Does Not Form Part of Total Income, Deduction Under Heads of Income, Deduction from Gross Total Income
e-Filing : Filing of Return of Income, Self-Assessment

Suggested Reading : As per suggested by Department of EAFM, University of Rajasthan, Jaipur.

Learning Outcomes

The Learning outcomes of this Course are as follows:
- Develop proficiency for personal and family financial planning
- Apply the concept of investment planning
- Ability to analyse the banking and insurance products
- Personal Tax Planning

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NEP-2020 based Syllabus

For

Value Added Courses for Semester I and II in UG Programmes

(2 credits/ semester for Semester I, II.)

VAC-10

1.	Title of course- NCC-2(Semester-II)		
2	Nodal Department of HEI to run course	Dept of NCC (NCC Incharge)	
3	Broad Area/Sector-	University	
4	Sub Sector-	College	
5	Nature of course-Independent/Progressive	Progressive	
	Requisite	Qualified in NCC-I(Semester-I)	
8	Number of Seats-	As per Vacancies allotted by DG NCC	
9	Course Code- 04	Credits-02(1Theory&2 Practical Hours per week)	
10	Scheme of Examination Max Marks... Minimum Marks:	As per SNCCO Sept 2022 (Annexure-4) 50 20	
11	Is this course is based on Outside Partners/Institutions/Industry/ Govt. Org. etc.	Yes	No
12	If Yes, Name of proposed Outside Partners/Institutions/Industry/ Govt. Org. etc.		
13	**Objective of NCC** The National Cadet Corps (NCC) is one of the largest youth organizations in India, with a primary objective of developing character, discipline, and leadership qualities among the youth. Established in 1948, the NCC has played a significant role in shaping the future generations of the country. Its core values, such as unity, discipline, and secularism, contribute to fostering national integration and a sense of pride among the cadets. • The NCC operates under the Ministry of Defense and has a presence in various educational institutions, including schools and colleges. It provides young boys and girls with a platform to develop their personality, physical fitness, and social awareness. The NCC motto, "Unity and Discipline," encapsulates its fundamental principles and the goals it strives to achieve. • One of the primary objectives of the NCC is to develop leadership qualities among the cadets. Through various training activities, including drill exercises, obstacle courses, and team-building exercises, the NCC instills in its cadets the ability to lead and inspire others. Cadets are taught to make quick decisions, take responsibility, and work in teams. These leadership skills are not only beneficial during the NCC training but also in all aspects of life, be it academics, career, or personal relationships. • Another crucial objective of the NCC is to foster national integration. India is a diverse nation, with numerous languages, religions, and cultures. The NCC embraces this diversity and promotes a sense of unity among its cadets. Regardless of their background, religion, or region, cadets come together under the common goal of serving the nation. The NCC emphasizes the importance of unity in diversity and encourages cadets to respect and appreciate different cultures and traditions. • The NCC also aims to create responsible and disciplined citizens. Cadets are required to adhere to a strict code of conduct, which includes punctuality, respect for authority, and ethical behavior. These principles help in molding the character of the cadets and preparing them for the challenges of life. The NCC believes that disciplined individuals contribute positively to society and uphold the values of integrity and honesty. • Moreover, the NCC plays a vital role in providing cadets with opportunities to engage in social service activities. The organization encourages cadets to actively participate in community development projects, blood donation drives, and environmental conservation initiatives. These activities not only develop a sense of empathy and social responsibility but also nurture a spirit of selflessness and service towards the nation.		

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	contribute to the defense services of the country. Many NCC cadets choose to pursue a career in the armed forces or other uniformed services, where they can utilize their skills and training to serve the nation. The NCC provides a strong foundation for such individuals, preparing them physically, mentally, and emotionally for the challenges of these professions.

14	**Syllabus Semester -II** **Total Hours- 15 (Credits-01)** **Practical- 30 Hours (Credits-01)** Personality Development : Communication Skills, Group Discussion-Coping with Stress and Emotions Leadership: Leadership Capsule; Traits, Indicators, Motivation, Moral Values. Honour Code; Case Studies Shivaji, Jhansi Ki Rani Social Service and Community Development: Protection of Children & Women Safety, Road/Rail Travel Safety, New Initiatives, Cyber and Mobile Security Awareness

Unit wise Details of the Value Added Course (NCC-2)

Unit	Title of Unit	Course Content	Theory Hours	Practical Hours
I	Personality Development	Communication Skills	3	
		Group Discussion-Coping with Stress and Emotions	2	
II	Leadership	Leadership Capsule;		
		Traits, Indicators, Motivation, Moral Values. Honour Code;	3	
		Case Studies Shivaji, Jhansi Ki Rani	2	30
III	Social Service and	Protection of Children & Women Safety	1	
IV	Community	Road/Rail Travel Safety	1	
	Development	New Initiatives	2	
		Cyber and Mobile Security Awareness	1	
		Total Hours	15	30

Suggested Books/References/Web-links(if available)

Books:

1. NCC Hand Book
2. Pamela Martinez, Critical Thinking: Decision Making, Problem Solving and Self Development (Effective Strategies That Will Make You Improve Critical Thinking)
3. Carl Patterson, Critical Thinking Skills: Practical Tools for Rational Thinking and Deep Analysis to Boost Your Brainpower. Adopt Logic Strategies to Find Intelligent and Effective Solutions to Challenges
4. P. Gopinadhan Pillai, Rural Development in India

Web-Links:

1. https://indiancc.nic.in
2. https://www.researchgate.net/publication/357839324_NATIONAL_INTEGRATION_OF_INDIA_AND_THE_OBSTACLES_IN_ITS_WAY_STATE_RESPONSE_AND_ITS_REMEDIES
3. https://www.vedantu.com/english/importance-of-national-integration-essay

Programme Specific Outcome

Programme Specific Outcomes (PSOs) are statements that describe what students are expected to know and be able to do by the time they complete a specific program or course of study. In the case of the National Cadet Corps (NCC), the PSOs focus on the unique learning outcomes that cadets should achieve through their participation in the NCC program.

The NCC is a youth organization in many countries, including India, designed to develop character, discipline, and leadership skills among young people. It aims to create a pool of disciplined and motivated youth who can serve as future leaders in various fields. The PSOs of NCC encompass a wide range of skills and qualities that cadets are

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during their NCC journey.

1. **Leadership Skills:** One of the primary PSOs of NCC is to develop leadership skills among cadets. Through various training activities, including leadership camps, command tasks, and practical exercises, cadets learn to lead and motivate their peers. They develop qualities like decision-making, effective communication, teamwork, and problem-solving skills, which are essential for effective leadership.
2. **Discipline and Time Management**: NCC instils a sense of discipline and time management in cadets. They learn to follow rules and regulations, maintain punctuality, and develop a strong work ethic. Cadets are taught to manage their time effectively to balance their academic commitments and NCC activities, which helps them become more organized and efficient individuals.
3. **Physical Fitness:** Physical fitness is an important aspect of NCC training. Cadets engage in regular physical activities, including drill exercises, sports, and adventure activities, to enhance their fitness levels. The PSO focuses on improving their endurance, strength, agility, and overall physical well-being.
4. **Social Awareness and Responsibility:** NCC promotes social awareness and a sense of responsibility towards the community and the nation. Cadets are exposed to various social issues and are encouraged to actively participate in social service activities such as cleanliness drives, blood donation camps, and awareness campaigns. They develop empathy, compassion, and a sense of civic duty.
5. **National Integration and Cultural Understanding:** NCC fosters national integration and cultural understanding among cadets. It brings together young people from diverse backgrounds and provides a platform for them to interact and appreciate different cultures, languages, and traditions. Cadets learn to respect and value the rich cultural heritage of their country and develop a sense of unity and brotherhood.
6. **Self-Confidence and Self-Development:** NCC aims to boost the self-confidence and overall personality development of cadets. Through various activities like public speaking, personality development sessions, and exposure to challenging situations, cadets learn to overcome their fears and develop a positive self-image. They gain confidence in their abilities and become more self-assured individuals.
7. Crisis Management and Disaster Preparedness: NCC equips cadets with the skills and knowledge necessary to respond effectively in crisis situations and natural disasters. They receive training in first aid, disaster management, and rescue operations. Cadets learn to remain calm under pressure, make quick decisions, and provide assistance to those in need.
8. Ethics and Values: NCC emphasizes the importance of ethics, values, and integrity. Cadets are encouraged to uphold moral and ethical principles in all aspects of life. They learn to distinguish between right and wrong, and develop a strong sense of integrity, honesty, and accountability.
9. Teamwork and Interpersonal Skills: NCC focuses on developing teamwork and interpersonal skills among cadets. They learn to work collaboratively in a team, respect diversity, and effectively communicate with others. Cadets understand the significance of cooperation and coordination in achieving common goals.
10. Environmental Awareness and Conservation: NCC promotes environmental awareness and conservation among cadets. They learn about environmental issues, sustainable

Annexure-4

Examination Scheme (Programme Evaluation Methods)

Sr. No.	Paramcters	Max Marks
5.	Entries in Daily Diary	05
6.	Synopsis Project - NCC General	10
7.	Participation in NCC training	10
8.	Participation in Social Service and Community Development (SSCD)	25*
	Total	50

*Evaluation of SSCD:

Sr. No.	Parameters	Max Marks
4.	Presentation/Video/Photographs submitted with report	05
5.	Day Significance	10
6.	Participation in Puneet Sagar, Swachch Bharat, quiz, Social Awareness and Jagrukata Rally etc.	10
	Total	25

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VAC-11

1.	Title of Courses	National Service Scheme (NSS)-2
2.	Nodal Department of HEI to run course	NSS Coordinator of University
3	Nature of Course- Independent/Progressive	-
4.	No. of seats	100 students in each NSS unit
5.	Course Code……	2 Credits (60 Hours per semester per Unit
6.	Scheme of Examination Maximum marks Minimum marks	Annexure-5 (Attached) 50 20
7.	In the course is based on outside partners/ Institutions/ Industries/ Govt. organization etc.	Yes / No
8.	If yes, Name of proposed outside partners/ Institutions/ Industries/ Govt. organization etc.	Regional Directorate, National Service Scheme Jaipur, Rajasthan
9.	**National Service Scheme (NSS)** The National Service Scheme (NSS) is an Indian government sector public service program conducted by the Ministry of Youth Affairs [1] and Sports of the Government of India. Popularly known as NSS, the scheme was launched in Gandhiji's Centenary year in 1969. Aimed at developing student's personality through community service, NSS is a voluntary association of young people in Colleges, Universities and at +2 level working for a campus-community (esp. Villages) linkage. **Objectives of NSS:** ***The main objectives of National Service Scheme (NSS) are*** • understand the community in which they work • understand themselves in relation to their community • identify the needs and problems of the community and involve them in problem-solving • develop among themselves a sense of social and civic responsibility • utilise their knowledge in finding practical solutions to individual and community problems • develop competence required for group-living and sharing of responsibilities • gain skills in mobilizing community participation • acquire leadership qualities and democratic attitudes • develop capacity to meet emergencies and natural disasters and • practise national integration and social harmony	
10	**Syllabus Guidelines:** **Theory Weight -15** **Practical/Project work – 30 hours + 15 hours (Any one project work, Field Visits/ Trainings)** **Unit-1: Importance and role of youth leadership in society (3)** a) Volunteerism and Leadership b) Gender and Society c) Fundamental Rights d) Consumer Rights **Unit-2: Awareness Camps (5)** a) First Aid Training b) Traffic Awareness Programme c) Self Defense d) Environment Protection **Unit-3: Social Harmony and Health (4)** a) Indian History and Culture b) Role of Youth in National Building c) Group Discussion d) Health, Hygiene and diseases	

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Syllabus of Skill Enhancement Courses

As per UGC Curriculum and CBCS

Framework for Undergraduate Programmes

Under NEP- 2020

For

Three/Four Year Under Graduate Programme in

(Semester – I to VI)

In

Faculty of Arts/Science/Commerce/Social Science/ Fine Arts

w.e.f. Academic Session - 2023-24

SKILL ENHANCEMENT COURSES

The introduction of Skill Enhancement courses into the Undergraduate Curriculum under the National Education Policy (NEP) 2020 signifies a significant leap forward in providing students with a holistic and practical education. These courses play a crucial role in equipping students with both technical and professional skills, empowering them to excel and adapt in the dynamic job market. The University of Rajasthan has taken proactive steps in offering a diverse range of Skill Enhancement courses, encompassing domains such as Computer Science, communication, digital literacy, entrepreneurship, and leadership, among others. This invaluable exposure not only aids students in making well-informed career decisions but also substantially enhances their employability prospects. Embracing these skill-oriented courses, the NEP-2020 envisions cultivating a generation of capable and job-ready professionals, fostering a brighter and more promising future for the young graduates.

Students enrolled in any undergraduate program at the University and/or its affiliated/constituent colleges are provided with a diverse selection of skill enhancement courses during the **First and Second Semesters**. This pool of courses offers students the opportunity to choose from a variety of options to enrich their skills and knowledge. Students can tailor their learning experiences by selecting courses that align with their interests and career aspirations, ensuring a well-rounded education and enhanced employability prospects. The list of such courses is as follows –

S. No.	Course Code-Course Title	Is offered to NC Students	Total Credit	Delivery Type of the Course
1.	SEC-001-Computer Fundamentals	Yes	2	T
2.	SEC-002-Introduction to Office Productivity Software	No	2	P
3.	SEC-003-Data Analysis Using Excel	No	2	P
4.	SEC-004-Business Communication Skills	Yes	2	T
5.	SEC-005-Effective Communication Skills	No	2	T+P
6.	SEC-006-Learning Life Skills	No	2	T+P
7.	SEC-007-Logical and Critical Thinking	Yes	2	T
8.	SEC-008-Quantitative Aptitude and Data Interpretation	Yes	2	T
9.	SEC-009-Finance for Everyone	Yes	2	T
10.	SEC-010- Basics of Tourism Concepts	Yes	2	T
11.	SEC-011-Data Literacy	Yes	2	T
12.	SEC-012-Bio-Fertilizer	No	2	T+P
13.	SEC-013-Nursery and Gardening Techniques	No	2	T+P
14.	SEC-014- अनुवाद कौशल	Yes	2	T
15.	SEC-015-प्रभावी हिन्दी लेखन	Yes	2	T
16.	SEC-016-Pest Management and Control	No	2	T+P
17.	SEC-017-Vermicomposting	No	2	T+P
18.	SEC-018- Understanding Union Budget and Economic Survey	Yes	2	T
19.	SEC-019- Survey Methodology	Yes	2	T

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Adhoc Committee Member and Domain Expert for Skill Enhancement Courses

S. No.	Name		Signature
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2.	Prof. Payal Lodha Department of Botany	Member	
3.	Prof. Naresh Kumar Department of EAFM	Member	
4.	Prof. Paresh Vyas Department of Mathematics	Member	
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9.	Dr R. K. Gunsariya Department of Chemistry	Member	
10.	Dr Nikki Chaturvedi Department of History	Member	
11.	Dr Jitendra Singh Department of Hindi	Member	
12.	Prof. Pankaj Nagar Department of Statistics	Special Invitee	
13.	Prof. Rashmi Jain Department of Sociology	Special Invitee	
14.	Prof. Urvashi Sharma Department of Hindi	Special Invitee	
15.	Prof. Rameshwar Jat Department of Economics	Special Invitee	

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Syllabus

SEC-001 – Computer Fundamentals

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-001	Computer Fundamentals			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Theory	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – 1. To provide students with a comprehensive understanding of Information Technology and its evolution, including the different generations of computers and types of computer systems. 2. To familiarize students with the architecture of a computer system, encompassing the CPU, ALU, memory, input/output devices, and hardware-software interactions. 3. To introduce students to various operating systems, such as UNIX, Linux, Windows, and their types, enabling them to comprehend the significance of operating systems in computing. 4. To acquaint students with different programming languages, including low-level and high-level languages, procedural programming, object-oriented programming, functional programming, scripting languages, and their respective applications. 5. To enable students to utilize the Internet effectively, including web browsing, understanding domain names and URLs, utilizing email services, participating in online communication, and exploring e-commerce and m-commerce platforms. 6. To educate students about social, legal, and ethical aspects of information technology, raising awareness about cyber threats, cybercrime prevention, and the importance of data security. 7. To provide insights into various cyber threats and attacks, such as computer viruses, malware, identity theft, phishing, and SQL injection, and to equip students with preventive measures against such threats.					

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Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-001 –Computer Fundamentals	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Computer Fundamentals will be so set that it has 40 multiple choice questions (Bilingual) of one mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-001 –Computer Fundamentals	1 Hrs	50 Marks	20 Marks

Question paper for Computer Fundamentals will be so set that it has 50 multiple choice questions (Bilingual) of one mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-001- Computer Fundamentals

Unit – I

Introduction to Information Technology: Evolution and generation of computers, Type of computers, Micro, mini, mainframe and Super computer, Architecture of a computer system: CPU, ALU, Memory (RAM, ROM families, Cache Memory, Input/Output Devices, Pointing Devices, Hardware and Software

Operating System and Programming Languages: Concept of Operating System, Need, Types of Operating Systems, Batch, Single User, Multi-Processing, Distributed and Timeshared operating systems, Introduction to UNIX, Linux, Windows, Window NT, Virtual Machine, Programming Languages, Low Level and High Level, Generation of Languages, 3 GL and 4 GL languages, Procedural Programming Languages, Object Oriented Programming languages, Functional Programming Languages, Scripting Languages, Logic Programming Languages, Command Line Interface and Graphical User Interface

(8 Lectures)

Unit -II

The Internet: History and Functions of the Internet, Working with Internet, Web Browsers, World Wide Web, Uniform Resource Locator and Domain Names, Uses of Internet, Search for Information, Email, Chatting, Instant Messenger Services, News Group, Teleconferencing, Video Conferencing, E-Commerce and M-Commerce, E-services -Online Banking, Online Payment Modes, Mobile Wallets, Social Networking Sites, E-Learning/ Online Educations, Cloud-Based Storage, Digital Signature

Manage an E-Mail Account, E-Mail Address, Configure E-Mail Account, Login to an Email, Receive Email, Sending Email, Sending Files as Attachments, Adress Book, Downloading files

(8 Lectures)

Unit -III

Social, Legal, Ethical Matters and Network Security: Types of Cyber Threats, how to identify Safe Websites/ Portals, Secure Seals (Verisign/Trust pay etc.), Secure Browsing Habits and Mailing Etiquettes, Social, Legal and ethical aspect of IT, Effects on the way we work Socialise, Operational Areas, Cyber Crime, Prevention of Cyber Crime, Cyber Law, Indian IT Act, Intellectual Property Right, Software Piracy, Copy right and Patent, Software Licencing, Proprietary Software, Free and Open-Source Software, GPL Licence,

(7 Lectures)

Unit-IV

Cyber Security Threats: Security Threats and Attacks (Passive, Active), Types and Effects, Computer Virus, Malware, Adware, Ransomware, Spyware, Emotet , Identity Theft, Denial of Service, Man in Middle, Phishing, MySQL/SQL Injection, Password Attacks

Network Security: Risk Assessment and Security Measures, Assets and Type (Data, Applications System and Network), Security issues and Security Measure (Firewall, Encryption/Decryption), Prevention

(7 Lectures)

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Suggested Books and References –

1. Introduction to Computers by Peter Norton, McGraw-Hill Education
2. Computer Fundamentals by P.K. Sinha and Priti Sinha
3. Fundamental of Computers, Anita Goel
4. Fundamental of Computers, V. Rajaraman
5. Computer Fundamentals and Programming in C, Reema Thereja
6. Computers: Understanding Technology by Floyd Fuller and Brian Larson
7. Computer Science: An Overview by J. Glenn Brookshear
8. Discovering Computers by Misty E. Vermaat, Susan L. Sebok, Steven M. Freund, and Jennifer T. Campbell.
9. Computers Are Your Future by Catherine Laberta
10. The Elements of Computing Systems: Building a Modern Computer from First Principles by Noam Nisan and Shimon Schocken
11. How Computers Work by Ron White and Timothy Edward Downs
12. The Complete Idiot's Guide to the Internet by Peter Kent and Joe Kraynak
13. Cybersecurity for Beginners by Raef Meeuwisse.
14. Cybersecurity: The Beginner's Guide by Dr. Erdal Ozkaya and Hispasec Sistemas

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Students will gain a strong foundational knowledge of Information Technology and the historical progression of computers, leading to a broader perspective on technological advancements.
2. Students will be able to comprehend the architecture of a computer system, including the roles of CPU, ALU, memory, and input/output devices, fostering a deeper understanding of hardware-software interactions.
3. Students will acquire knowledge of different operating systems and programming languages, allowing them to make informed decisions while selecting appropriate tools for various applications.
4. Students will develop proficiency in using the Internet for research, communication, and e-commerce purposes, enhancing their digital literacy skills.
5. Students will understand the importance of social, legal, and ethical aspects of IT and be able to make responsible and secure choices while using technology.
6. Students will be able to identify potential cyber threats and adopt preventive measures to safeguard personal and organizational data from cyber-attacks.
7. By the end of the course, students will be equipped with essential skills and knowledge to navigate the digital world safely, making them more confident and informed users of technology.

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Syllabus

SEC-002 – Introduction to Office Productivity Software

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-002	Introduction to Office Productivity Software			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	-	2	NO	60 Hours Practical	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – The objective of this course is to provide participants with a comprehensive understanding of the fundamental features and functionalities of word processing tools, electronic spreadsheets, and presentation software. Through hands-on practice and theoretical knowledge, participants will develop the skills necessary to efficiently create, format, and manage documents, spreadsheets, and presentations. By the end of the course, participants will be able to use these tools effectively to enhance their productivity in various professional and personal scenarios.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Practical	SEC-002- Introduction to Office Productivity Software	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

The Practical examination Scheme for **Introduction to Office Productivity Software** should be as follows –

- Three Practical Exercise of 10 Marks each from each Unit – 30 Marks
- Viva-Voce – 10 Marks
- Record – 10 Marks

Duration of Practical Examination will be of 1 Hours.

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Detailed Syllabus

SEC-002 – Introduction to Office Productivity Software

Unit – I

Word Processing Tools:

Text Basics: Typing the text, Alignment of text, Editing Text: Cut, Copy, Paste, Select All, Clear, Find & Replace, **Text Formatting and saving file:** New, Open, Close, Save, Save As, Formatting Text: Font Size, Font Style, Font Colour, Use the Bold, Italic, and Underline, Change the Text Case, Line spacing, Paragraph spacing, Shading text and paragraph. Working with Tabs and Indents, **Objects:** Shapes, Clipart and Picture, Word Art, Smart Art, Columns and Orderings - To Add Columns to a Document, Change the Order of Objects, Page Number. Date & Time, Inserting Text boxes, Inserting Word art, inserting symbols, Inserting Chart, **Header & Footers:** Inserting custom Header and Footer, inserting objects in the header and footer, add section break to a document **Bullets and numbered lists:** Multilevel numbering and Bulleting, Creating List, Customizing List style, Page bordering, Page background, **Tables:** Working with Tables, Table Formatting, Table Styles, Alignment option, Merge and split option, **Styles and Content:** Using Build- in Styles, Modifying Styles, Creating Styles, Creating a list style, Table of contents and references, Adding internal references, Adding a Footnote, Adding Endnote **Merging Documents:** Typing new address list, Importing address list from Excel file, Write and insert field, Merging with outlook contact, Preview Result, Merging to envelopes, Merging to label, Setting rules for merges, Finish & Merge options **Sharing and Maintaining Document:** Changing Word Options, Changing the Proofing Tools, Managing Templates, Restricting Document Access, Using Protected View, Working with Templates, Managing Templates, Understanding building blocks **Proofing the document:** Check Spelling As You Type, Mark Grammar Errors As You Type, Setting AutoCorrect Options **Printing:** Page Setup, setting margins, Print Preview, Print

(20 Hours Practical)

Unit -II

Electronic Spreadsheet:

Introduction to spreadsheet: Introduction, Understanding rows and columns, Naming Cells, Working with excel workbook and sheets , **Formatting excel work book**:: New, Open, Close, Save, Save As, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, Wrap text, Merge and Centre, Currency, Accounting and other formats, Modifying Columns, Rows & Cells, **Perform Calculations with Functions:** Creating Simple Formulas, Setting up your own formula, Date and Time Functions, Financial Functions, Logical Functions, Lookup and Reference, Functions Mathematical Functions, Statistical Functions, Text Functions, **Sort and Filter Data:** Sort and filtering data, Using number filter, Text filter, Custom filtering, Removing filters from columns, Conditional formatting, **Create Charts:** Create an effective chart with Chart Tool, Design, Format, and Layout options. Adding chart title, Changing layouts, Chart styles, Editing chart data range, Editing data series, Changing chart , **PivotTables and Pivot Charts:** Understand PivotTables, Create a PivotTable, Framework Using the PivotTable and PivotChart, Create Pivot Chart from pivot Table, Inserting slicer, Creating Calculated fields **Protecting and Sharing the work book:** Protecting a workbook with a password, Allow user to edit ranges, Track changes, Working with Comments, Insert Excel Objects and Charts in Word Document and Power point Presentation. **Use Macros to Automate Tasks:** Creating and Recording Macros, Assigning Macros to the work sheets, Saving Macro enabled workbook **Proofing and Printing:** Page setup, setting print area, print titles, inserting custom Header and Footer, inserting objects in the header and footer, Page Setup, setting margins, Print Preview, Print, enable back ground error checking, Setting Auto Correct Options

(20 Hours Practical)

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Unit -III

POWERPOINT:

Setting Up PowerPoint Environment: :New, Open, Close, Save, Save As, Typing the text, Alignment of text, Formatting Text: Font Size, Font Style , Font Color, Use the Bold, Italic, and Underline, Cut, Copy, Paste, Select All, Clear text, Find & Replace, Working with Tabs and Indents, **Creating slides and applying themes:** Inserting new slide, Changing layout of slides, Duplicating slides, Copying and pasting slide, Applying themes to the slide layout, Changing theme color ,Slide background , Formatting slide background ,Using slide views , **Working with bullets and numbering:** Multilevel numbering and Bulleting, Creating List , Page bordering, Page background, Aligning text, Text directions, Columns option **Working with Objects:** Shapes, Clipart and Picture, Word Art, Smart Art, Change the Order of Objects, Inserting slide header and footer, Inserting Text boxes, Inserting shapes, using quick styles, Inserting Word art, Inserting symbols, Inserting Chart, **Hyperlinks and Action Buttons:** Inserting Hyperlinks and Action Buttons, Edit Hyperlinks and Action Button, Word Art and Shapes **Working With Movies and Sounds:** Inserting Movie From a Computer File, Inserting Audio file , Audio Video playback and format options, Video options, Adjust options, Reshaping and bordering Video, **Using SmartArt and Tables:** Working with Tables, Table Formatting, Table Styles, Alignment option, Merge and split option, Converting text to smart art, **Animation and Slide Transition:** Default Animation, Custom Animation, Modify a Default or Custom Animation, Reorder Animation Using Transitions ,Apply a Slide Transition, Modifying, Transition, Advancing to the Next Slide, **Using slide Master:** Using slide master, Inserting layout option, Creating custom layout, Inserting place holders, Formatting place holders, **Slide show option:** Start slide show, Start show from the current slide, Rehearse timing, creating custom slide show, **Proofing and Printing:** Check Spelling As You Type, Setting AutoCorrect Options, Save as video, Save as JPEG files, Save as PowerPoint Show file, Print Preview, Print

(20 Hours Practical)

Suggested Books and References –

1. Microsoft Office for Beginners by M.L. Humphrey
2. Microsoft Word 2016 Step by Step by Joan Lambert and Curtis Frye
3. Excel 2016 Bible by John Walkenbach
4. PowerPoint 2016 For Dummies by Doug Lowe
5. Microsoft Office 2016 In Practice by Randy Nordell

Course Learning Outcomes:

By the end of the course, students should be able to:

1. **Word Processing:**
   - Format documents using advanced text styling and alignment.
   - Manipulate text with cut, copy, paste, and find & replace functions.
   - Enhance document layout with headers, footers, and page numbering.
   - Create visually appealing content using tables, objects, and styles.
   - Efficiently merge documents and manage templates for streamlined work.
2. **Electronic Spreadsheet:**
   - Apply formatting and calculations using a variety of functions.
   - Organize and analyze data through sorting, filtering, and charts.
   - Automate tasks with macros and protect workbooks with passwords.
   - Create dynamic pivot tables for data visualization and analysis.
3. **PowerPoint:**
   - Design captivating presentations with themes, formatting, and multimedia
   - Incorporate interactive elements like hyperlinks and action buttons.
   - Apply animations and transitions for engaging slide shows.
   - Customize master slides for consistent and polished presentations.

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Syllabus

SEC-003 – Data Analysis Using Excel

Semester	Code of the Course	Title of the Course/Paper		NHEQF Level	Credits
I/II	SEC-003	Data Analysis Using Excel		5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course
		Theory	Practical		
Introductory	Skill Enhancement	-	2	No	60 Hours Practical
Prerequisites	XII Pass				
Objectives of the Course:	**Objectives of the Course –** 1. To Understand Data Analysis Fundamentals and Excel Basics: 2. Understanding the process of cleaning and transforming data. 3. Understanding Visualization of data. 4. Understanding Inbuilt functions of MS-Excel and User defined functions 5. To understand Statistical Tools for Data analysis. 6. Apply Data Analysis to Real-world Scenarios.				

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Practical	Data Analysis Using Excel	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

The Practical examination Scheme for **Introduction to Office Productivity Software** should be as follows –

- Three Practical Exercise of 10 Marks each from each Unit – 30 Marks
- Viva-Voce – 10 Marks
- Record – 10 Marks

Duration of Practical Examination will be of 1 Hours.

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Detailed Syllabus

SEC-003 – Data Analysis Using Excel

Unit	Course Contents	No. of Lectures
Unit-I	**Introduction:** Introduction to data analysis concepts. Excel's interface and its features. Data entry, formatting, and basic calculations on work sheet. Introduction to Simple Excel functions (SUM, AVERAGE, COUNT, date formats etc.). Various form of storing an excel file. Managing worksheets and workbooks. Storing Workbooks.	16
Unit-II	**Data Cleaning and Transformation** Importing data from various sources (CSV, text, databases). Data cleaning techniques (removing duplicates, handling missing values). Text-to-columns and data splitting. Data validation and conditional formatting.	12
Unit-III	**Visualization:** Creating basic charts (bar, line, pie). Customizing charts (titles, labels, legends). Using advanced chart types (scatter plots, histograms). Adding trend lines and data labels. Creating dynamic charts with slicers. Probability Distributions and their graphical representation. Pivot Tables: Creating, modifying, and summarizing data. Pivot Charts: Visualizing Pivot Table data. Introduction to What-If Analysis	16
Unit-IV	**Data Analysis Tools:** Introduction to basic statistical functions (STDEV, MIN, MAX). Using Excel's built-in analysis tools (Correlation, Regression). Introduction to Power Query for data transformation. User Defined Formulae, Data Analysis Tool-Pack, Preparation of Correlation Matrix, Fitting multiple Regression equation. Generating Random Numbers, Statistical Inference tools : Application of Z-Test, t-test, F-tests, ANOVA- One way and Two-way.	16

Suggested Books and References –

1. Paul McFedries (2022): Excel Data Analysis For Dummies, 5th Edition, John Wiley & Sons, ISBN: 978-1-119-84442-6
2. K. Berk (Author), Partrick Carey (2003), Data Analysis with Microsoft Excel, Duxbury Press; New edition (25 March 2003), ISBN-13 : 978-0534407148
3. Robert de Levie(2003), Advanced Excel for Scientific Data Analysis, OUP USA (9 October 2003), ISBN-13 : 978-0195170894
4. Manisha Nigam(2019): Data Analysis with Excel, BPB Publications; First Edition (5 September 2019), ISBN-13 : 978-9388176675
5. L. Winston Wayne (2019): MICROSOFT EXCEL 2019: DATA ANALYSIS & BUSINESS MODEL, 6th Edn., PHI Learning Pvt. Ltd. (11 October 2019), ISBN-13 : 978-9389347180
6. Wayne Winston(2017), Microsoft Excel Data Analysis and Business Modeling, Microsoft Press; 5th edition, ISBN-13 : 978-1509304219

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Suggested E-resources:

Online Lecture Notes and Course Materials:

1. E-PG Pathshala:
   https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=fBYckQKJvP3a/8Vd3L08tQ==
2. **Lecture Notes:**
   1. https://www.gacbe.ac.in/pdf/ematerial/18BCS5EL-U5.pdf
   2. https://drive.google.com/file/d/11yrw1jBol2RRaBIj4Vy3XpZQhaM8D1dz/view?pli=1
   3. https://www.guru99.com/excel-tutorials.html
   4. https://gacbe.ac.in/pdf/ematerial/18MEC24C-U4.pdf

Course Learning Outcomes:

After completing this short-term course students will gain with

1. Proficiency in Excel.
2. Data Analytical tools with Excel.
3. Data Visualization tools with MS-Excel:
4. Creating Pivot-Table Mastery.
5. Participants will have a solid foundation for further studies in data analysis, statistics, or related fields.
6. Successful completion of the course can enhance participants' career prospects by equipping them with sought-after data analysis skills.
7. Participants will be better equipped to solve real-world problems using data-driven insights and informed decision-making.
8. Students will realize confident navigating and utilizing Excel for various data analysis tasks.

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Syllabus

SEC-004 – Business Communication Skills

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-004	Business Communication Skills			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lectures	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – • Acquire the essentials of business communication skills. • Acquire career skills and truly pursue to partake in a successful career path. • Teach them all types of business correspondences including electronic. • Prepare good resume, prepare for interviews and group discussions. • Explore desired career opportunities in the employment market in consideration of an individual SWOT.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-004-Business Communication Skills	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Business Communication Skill will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-004-Business Communication Skills	1 Hrs	50 Marks	20 Marks

Question paper for Business Communication Skill will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-004 – Business Communication Skills

Unit 1. Introduction to the essentials of Business Communication

Meaning, Process and Functions
Channels and Types of Communication
Effective Communication and its Barriers
Importance of Business Communication

(7 Lecture)

Unit 2: Business Correspondence

Advertisement
Inviting Tender and Placing Order
Notice, Circular, Memo, Minutes of Meeting
Appreciation and Complaint Letters

(8 Lecture)

Unit 3. Oral Business Communication

Greeting and Telephonic Conversation
PPT Making and Presentation Skills
Interview
Group Discussion

(8 Lecture)

Unit 4: Electronic Communication

Email Writing
Virtual Business Meetings
Use of Social-Media for Business Communication
Internet Etiquettes and Correct use of Emoticons

(7 Lecture)

Suggested Books and References –

1. English Communication – A Textbook for AECC-2 (Cambridge), Somak Mandal/ Sharmishtha Chatterjee Sriwastav (Cambridge)
2. Interact – A Course in Communicative English, Malathy Krishnam/ Zinia Mitra/ Binayak Ray (Cambridge)
3. English Fluency – I, Pooja Khanna/ Neerja Deswal
4. Sen Madhucchanda (2010), An Introduction to Critical Thinking, Pearson, Delhi
5. Silvia P.J. (2007), How to Read a Lot, American Psychological Association, Washington DC

Suggested E-resources:

1. **Online Lecture Notes and Course Materials:**
   Online platform SWAYAM

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Course Learning Outcomes:

By the end of the course, students should be able to:

1. By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.
2. Participate in a digital lifestyle conversant with computers, applications, Internet and nuances of cyber security.
3. Engage in effective communication by respecting diversity and embracing good listening skills.
4. Distinguish the guiding principles for communication in a diverse, smaller internal world.

Syllabus

SEC-005 – Effective Communication Skills

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-005	Effective Communication Skills			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	No	20 Lectures and 20 Hour Activity Based	
Prerequisites	XII Pass					
Objectives of the Course:	• Develop a deep understanding of key concepts • To acquire good LSRW • To Prepare them for course and employment • Understand the importance of empathetic listening • Master a subject or tool with hands-on projects					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
	SEC-004-Effective Communication Skills	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Effective Communication Skills will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-005 – Effective Communication Skills

Unit 1:

Communication Process

Meaning of Communication and its Components
Types of Communication
Barriers of Communication
Activity based Learning

(8 Lectures)

Unit 2:

Non-Verbal Communication

Meaning of non-verbal communication
Introduction to modes of non-verbal communication
Do's and Don'ts
Activity based Learning

(7 Lectures)

Unit 3:

Listening and Speaking Skills

Techniques of Effective Listening
Listening and Comprehension
Understanding English Sounds, Tone and Intonation
Activity based Learning

(8 Lectures)

Unit 4:

Reading and Writing Skills

Techniques of Effective Reading
Reading and Comprehension
Common Errors
Activity based Learning

(7 Lectures)

Suggested Books and References –

1. English Communication – A Textbook for AECC-2 (Cambridge), Somak Mandal/ Sharmishtha Chatterjee Sriwastav (Cambridge)
5. Interact – A Course in Communicative English, Malathy Krishnam/ Zinia Mitra/ Binayak Ray (Cambridge)
6. English Fluency – I, Pooja Khanna/ Neerja Deswal
7. Sen Madhucchanda (2010). An Introduction to Critical Thinking. Pearson, Delhi
8. Silvia P.J. (2007). How to Read a Lot. American Psychological Association, Washington DC

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Suggested E-resources:

1. **Online Lecture Notes and Course Materials:**
   Online platform SWAYAM

Course Learning Outcomes:

By the end of the course, students should be able to:

1. By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.
2. Participate in a digital lifestyle conversant with computers, applications, Internet and nuances of cyber security.
3. Engage in effective communication by respecting diversity and embracing good listening skills.
4. Distinguish the guiding principles for communication in a diverse, smaller internal world.

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Syllabus

SEC-006 – Learning Life Skills

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-006	Learning Life Skills			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	No	20 Lectures and 20 Hour Activity Based	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – • To help young students to better understand themselves • To get along well with others • To take responsible and mature decisions • To cope with life's inevitable challenges realistically and effectively					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-006-Learning Life Skills	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Learning Life Skills will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-006 – Learning Life Skills

Unit – I

Life Skills- Introduction, Need and Significance, Benefits and Methods of Life Skills Education

(8 Lectures)

Unit –II

Social Skills-Self Awareness, Empathy, Effective Communication, Interpersonal Relationship

(7 Lectures)

Unit –III

Thinking Skills- Creative Thinking, Critical Thinking, Decision Making, Problem Solving

(8 Lectures)

Unit-IV

Emotional Skills- Coping with Stress, Coping with Emotions

(7 Lectures)

Suggested Books and References –

1. Saravanakumar, A. R. (2020) Life Skill Education through Lifelong Learning. Maharashtra, India, Laxmi Book Publication.
2. Verma, S. (2014) Development of Life Skills and Professional Practice. Noida, India, Vikas Publishing House Pvt. Ltd.
3. UNICEF Comprehensive Life Skills Framework.
4. AIF Handbook of Activities on Life Skills (2018)

Suggested E-resources:

1. www.AIF.org
2. www.unicef.org
3. www.who.org

Course Learning Outcomes:

By the end of the course, students will be able to:

1. identify and share the interests, aspirations, strengths and weaknesses by enhancing self-awareness.
2. develop social and communication skills and learn to maintain healthy relationships.
3. analyse and evaluate situations, actions and thoughts rationally and creatively.
4. learn to manage and cope with stress and deal effectively with positive and negative emotions

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Syllabus

SEC-007 – Logical and Critical Thinking

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-007	Logical and Critical Thinking			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – This course aims to equip students with a comprehensive understanding of various logical reasoning concepts and critical thinking techniques. Through a diverse range of topics and exercises, the course seeks to enhance students' ability to analyze information, evaluate arguments, solve complex problems, and make informed decisions. By the end of the course, students should have a solid foundation in logical reasoning and critical thinking, empowering them to excel in various academic, professional, and everyday scenarios.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-007- Logical and Critical Thinking	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Logical and Critical Thinking will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-007- Logical and Critical Thinking	1 Hrs	50 Marks	20 Marks

Question paper for Logical and Critical Thinking will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-007- Logical and Critical Thinking

Unit – I

Alphabet test, Alphanumeric series, Analogy, Analytical and Decision Making, Arithmetic Reasoning, Artificial Language,

(7 Lectures)

Unit – II

Blood Relations, Calendars, Cause and Effect, Classification, Clocks, Code Inequalities, Coded equations, Coding and Decoding, Course of Action, Critical path, Critical Reasoning, Cubes and cuboids,

(8 Lectures)

Unit – III

Data Sufficiency, Decision Making, Deductive Reasoning/Statement Analysis, Dices, Direction questions, Embedded Images, Figure Matrix, Input-Output, Mirror and Water Images, Odd One Out, Ordering and Ranking, Paper folding; unfolding questions

(8 Lectures)

Unit – IV

Picture Series and Sequences, Puzzles, Reasoning Analogies, Seating Arrangements, Shape Construction, Statement and Assumptions, Statement and Conclusions, Syllogism, Venn Diagram. Verbal Reasoning, Visual Reasoning

(7 Lectures)

Suggested Books and References –

1. A Modern Approach to Logical Reasoning by R.S. Aggarwal
2. Logical and Analytical Reasoning by A.K. Gupta
3. How to Prepare for Logical Reasoning for CAT by Arun Sharma
4. Verbal and Non-Verbal Reasoning by R.S. Aggarwal
5. Analytical Reasoning by M.K. Pandey
6. Logical Reasoning and Data Interpretation for CAT by Nishit K. Sinha
7. The PowerScore LSAT Logical Reasoning Bible by David M. Killoran
8. Critical Thinking: A Student's Introduction by Gregory Bassham, William Irwin, and Henry Nardone
9. Thinking, Fast and Slow by Daniel Kahneman
10. The Art of Thinking Clearly by Rolf Dobell

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Demonstrate Proficiency in Various Logical Reasoning Techniques: Students will grasp the fundamental principles of logical reasoning and apply techniques such as analogy, classification, coding-decoding, statement analysis, syllogism, and more.
2. Enhance Critical Thinking Skills: Students will develop the ability to critically evaluate information, identify assumptions, and analyze arguments to make well-reasoned decisions.

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3. Solve Complex Problems: Students will be adept at solving intricate problems involving arithmetic reasoning, puzzles, sequencing, and other logical challenges.
4. Interpret Visual and Verbal Data: Students will effectively interpret visual information, such as figure matrices, and comprehend verbal reasoning exercises to arrive at accurate conclusions.
5. Navigate Various Question Types: Students will become proficient in handling a wide range of logical reasoning question formats, including seating arrangements, blood relations, calendars, and more.
6. Strengthen Decision-Making Abilities: Students will sharpen their decision-making skills by considering cause and effect relationships, identifying critical paths, and applying course of action principles.
7. Enhance Test-Taking Abilities: Students will be well-prepared for competitive exams and assessments that include logical reasoning sections, as they will have practiced a diverse set of reasoning challenges.
8. Apply Logical Thinking in Real-Life Contexts: Students will be able to apply logical and critical thinking techniques to real-life situations, improving their problem-solving abilities in various domains.

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Syllabus

SEC-008 – Quantitative Aptitude and Data Interpretation

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-008	Quantitative Aptitude and Data Interpretation			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – • To provide a strong foundation in the number system and basic arithmetic concepts. • To understand divisibility rules, decimal fractions, greatest common divisor (GCD), least common multiple (LCM), surds, indices, and simplifying square and cube roots. • To solve problems related to averages, ages, allegations, and percentages.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-008- Quantitative Aptitude and Data Interpretation	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Quantitative Aptitude and Data Interpretation will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-008- Quantitative Aptitude and Data Interpretation	1 Hrs	50 Marks	20 Marks

Question paper for Quantitative Aptitude and Data Interpretation will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-008 – Quantitative Aptitude and Data Interpretation

Unit – I

Number system, divisibility, decimal fractions, GCD & LCM, surds and indices, Squares and Cubes, square roots and cube roots, problems on averages and ages, allegations, percentage.

(08 Lectures)

Unit -II

Profit & loss, partnership, discount, simple & compound interest, ratio & proportion and variation.

(06 Lectures)

Unit -III

Time and work, time, speed and distance, geometry and mensuration, coordinate geometry, functions, inequalities, quadratic and other equations, logarithms, permutations and combinations, probability, set theory

(08 Lectures)

Unit-IV

Basic modes of data Interpretation, Data, Nature of Data, Data represents variable, types of variable need for capturing data, Data interpretation -definition, organization and presentation, Tabular presentation. Tables, bar Charts- Simple, Stacked, Composite, representation of percentage, show deviation, XY Charts, Pie Charts, Cases, Challenges of data interpretation, Data Sufficiency

(08 Lectures)

Suggested Books and References –

1. R.S. Aggarwal, Quantitative Aptitude for Competitive Examinations, S. Chand, 2018.
2. Arun Sharma, Teach Yourself Quantitative Aptitude, McGraw Hill, 2019.
3. P.A. Anand, Wiley Quantitative Aptitude For Competitive Exams, Wiley India Pvt.Ltd, 2015.
4. Rajesh Verma, Fast Track Objective Arithmetic, Arihant Publications, 2018.
5. Nishit K. Sinha - The Pearson Guide to Quantitative Aptitude and Data Interpretation for the CAT-Pearson Education (2012)

Course Learning Outcomes:

By the end of the course, students will be proficient in solving a range of mathematical problems, interpreting data, and making informed decisions in various contexts. They will have developed quantitative reasoning skills that can be applied both academically and in practical situations.

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Syllabus

SEC-009 – Finance for Everyone

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-009	Finance for Everyone			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – The course "Finance for Everyone" aims to provide participants with a solid foundation in financial literacy and personal finance management. Through comprehensive lessons, it seeks to familiarize students with essential financial concepts, various financial institutions, investment strategies, taxation principles, and insurance planning. The course is designed to empower individuals with the knowledge and skills necessary to make informed financial decisions and effectively manage their personal finances.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-009- Finance for Everyone	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Finance for Everyone will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-009- Finance for Everyone	1 Hrs	50 Marks	20 Marks

Question paper for Finance for Everyone will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-009 – Finance for Everyone

Unit – I

Lesson :1 – Introduction to Financial Literacy and Personal Finance
Lesson :2 – Brief about Financial Institution (Banks, NBFC's and Insurance Companies)
Lesson :3 – Financial Planning and Decisions
Lesson :4 – Introduction to Financial Forecasting and Budgeting

(08 Lectures)

Unit -II

Lesson :1 – Introduction to Banking and Electronic Banking (Including Digital Payments)
Lesson :2 – Basic Concepts of Investment
Lesson :3 – Basics of Money Market
Lesson :4 – Brief about Capital Market and its types

(08 Lectures)

Unit -III

Lesson :1 – Introduction to Insurance Planning
Lesson :2 – Various types of Insurance
Lesson :3 – Introduction to Indirect Tax (GST)

(06 Lectures)

Unit-IV

Lesson :1 – Income Tax: An Introduction
Lesson :2 – Basic Concepts of Taxation (Including Residential Status and Heads of Income)
Lesson :3 – Personal Tax Planning and Reduction of Tax Liability

(08 Lectures)

Suggested Books and References –

1. Finance for everyone: Devinder Kumar Anand, Vikas Publishing House Pvt Ltd.
2. Basics of Finance and Banking: Bhattacharya & Agarwal. Himalya Publishing House.

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Recognize the significance of financial literacy and its role in making informed financial decisions.
2. Understand the functions and roles of different financial institutions, including banks, NBFCs, and insurance companies.

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3. Develop effective financial planning skills, set financial goals, and make prudent financial decisions.
4. Apply financial forecasting and budgeting techniques to manage expenses and achieve financial objectives.
5. Navigate electronic banking, including digital payments, and utilize online banking services effectively.
6. Grasp fundamental investment concepts, assess risk and return relationships, and explore different investment options.
7. Comprehend the basics of the money market and its importance in short-term financing.
8. Gain insight into the capital market and its primary and secondary segments, along with various traded securities.
9. Understand the significance of insurance planning, choose appropriate insurance products, and manage financial risks.
10. Identify different types of insurance, such as life, health, property, and liability insurance, and their respective benefits.
11. Gain a basic understanding of the Goods and Services Tax (GST) and its implications.
12. Familiarize themselves with income tax, its fundamental concepts, residential status determination, and various sources of income.
13. Employ personal tax planning strategies, optimize tax liabilities, and explore tax-saving investment options

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Syllabus

SEC-010 – Basics of Tourism Concepts

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-010	Basics of Tourism Concepts			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – 1. Introduce students to the core concepts of tourism, including its historical development, types, forms, and components. 2. Provide insights into the characteristics and patterns of growth in domestic and international tourism. 3. Develop an understanding of the motivations driving tourism demand and the factors influencing individuals' choices to travel. 4. Explore the wide-ranging impacts of tourism, including economic, socio-cultural, and environmental effects, both positive and negative.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-010- Basics of Tourism Concepts	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Basics of Tourism Concepts will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-010- Basics of Tourism Concepts	1 Hrs	50 Marks	20 Marks

Question paper for Basics of Tourism Concepts will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-010 – Basics of Tourism Concepts

Unit I

Tourism Concepts: Definitions and historical development of tourism, Types of tourist-Visitor-Excursionists, Types and Forms of Tourism, Tourism system: Nature, characteristic, Tourism: Components and Characteristics

(08 Lectures)

Unit II

Domestic Tourism: features, pattern of growth and profile
International Tourism: Tourist generating and destination regions Tourism motivation and tourism demand

(08 Lectures)

Unit III

Tourism Impacts: Positive and Negative Impacts of Tourism; Economic, Socio-Cultural, and Environmental Impact

(07 Lectures)

Unit IV

Tourism Organizations: Objectives and Role of ITDC, TFCI. IRCTC

(07 Lectures)

Suggested Books and References –

1. Burkart & Medlik : Tourism: Past, Present and Future
2. Chunky Gee et-al: Travel Industry
3. Cooper C., Fletcher J., Gilbert D and Wanhil. S: Tourism: Principles and Practices
4. J.K. Sharma: Tourism Planning and Development -
5. McIntosh, R.W.: Tourism: Principles and Practices
6. Mill and Morrison: Tourism systems
7. P.C. Sinha: Tourism Management Vol. - 4
8. Prannath Seth: Successful Tourism Management
9. R. Gartner: Tourism Development
10. Sagar Singh: Studies in Tourism

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Identify and assess the positive and negative impacts of tourism on different sectors.
2. Understand the economic effects of tourism, including income generation and employment opportunities.
3. Analyze the socio-cultural impacts of tourism on local communities and cultural heritage.
4. Recognize the environmental impacts of tourism and its effects on ecosystems and natural resources.

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Syllabus

SEC-011 – Data Literacy

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-011	Data Literacy			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – The objective of this course is to develop students' data literacy skills. This course will give students skills in understanding and interpreting data from simple descriptive representation of data, to the use of graphs.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-011- Data Literacy	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for Data Literacy will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-011- Data Literacy	1 Hrs	50 Marks	20 Marks

Question paper for Data Literacy will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-011 – Data Literacy

Unit – I

Data- Meaning and Types, Nature and Properties of Data, Uses of Data

(07 Lectures)

Unit -II

Sources of Data, Types of Government Data, Types of Measurement, Reliability and Validity

(07 Lectures)

Unit -III

Techniques of data Collection, Text as Data, Different Data sets and how to read them

(08 Lectures)

Unit-IV

Data visualization, Graphical and Tabular representation of data, Types of Data Analysis

(08 Lectures)

Suggested Books and References –

1. Walliman Nicholas, Research Methods- The Basics, Routledge, 2011
2. Pandey P. and Pandey M.M, Research Methodology: Tools and Techniques, Bridge Center, 2015
3. Kothari C. R. Research Methodology: Tools and Techniques, (Chapter 6), New Age International Publishers, 1990
4. Research Methods, Alagappa University, Unit 8-11, Vikas Publishing House, 2020

Suggested E-resources:

Online Lecture Notes and Course Materials:

1. https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=sP9KhysDemvbqPHPOAmaYw==
2. https://egyankosh.ac.in/bitstream/ unit 2
3. https://www.toppr.com/guides/maths/statistics/data/
4. **https://www.simplilearn.com/what-is-data-article**

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Identify different types of data and data sources
2. Evaluate how quantitative data is used within everyday life and academics:
3. Recognise the limitations of quantitative data;
4. Apply basic data literacy skills to practical analysis of datasets.

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Syllabus

SEC-012 – Biofertilizers

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-012	Biofertilizers			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	No	15 Hours Lecture +30 Hours Lab Activity / Fieldwork	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – The concept of biofertilizers and develop the skills for handling microbial inoculants. The growth and multiplication conditions of useful microbes and their role in mineral cycling and nutrition to plants. Various methods of decomposition of biodegradable waste and their conversion to compost					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-012-Biofertilizers	1 Hrs-MT 1 Hrs-EoSE	5 Marks-MT 20 Marks-EoSE	2 Marks-MT 8 Marks-EoSE

Theory question paper for biofertilizers will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-012 – Biofertilizers

Unit –I

Biofertilizers - Introduction, status and scope; Rhizobia: isolation, purification, morphology, identification, and mass cultivation. Actinorrhizal symbiosis.

(04 Lectures)

Unit -II

Azospirillum: isolation and mass multiplication – carrier-based inoculant, associative effect of different microorganisms. *Azotobacter*: classification, characteristics – crop response to *Azotobacter* inoculum, maintenance and mass multiplication

(04 Lectures)

Unit –III

Cyanobacteria (blue green algae), *Azolla* and *Anabaena azollae* association, nitrogen fixation, factors affecting growth, blue green algae and *Azolla* in rice cultivation. FCO specifications and quality control of biofertilizers

(04 Lectures)

Unit-IV

Mycorrhizal association, types of mycorrhizal association, taxonomy, occurrence and distribution, phosphorus nutrition, growth and yield – colonization of VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop Plants

(03 Lectures)

Practical:

1. Sterilization of glassware, culture media, other substances, materials and equipment
2. Study of heterocyst in cyanobacteria.
3. Isolation and culturing of Rhizobium from root nodules of leguminous crops.
4. Preparation of media for microbial biofertilizers.
5. Preparation of media for microbes.
6. Isolation of Azotobacter from root nodules of leguminous crops.
7. Cultivation of blue green algae.
8. Study of different types of Cyanobacteria used for nitrogen fixation.
9. Study various biocontrol methods and their application Pheromone trap. Trichoderma. Pseudomonas, Neem etc.
10. Preparation of Vermicompost.

(30 Hours Lab Activity)

Suggested Books and References –

1. Dubey, R.C. (2005). A Text Book of Biotechnology. S. Chand and Co. New Delhi.
2. John Jothi Prakash, E. (2004). Outlines of Plant Biotechnology. Emkay Publication. New Delhi.

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3. Kumaresan. V. (2005). Biotechnology. Saras Publications, New Delhi.
4. Sathe, T.V. (2004). Vermiculture and Organic Farming. Daya Publishers.
5. Subha Rao, N.S. (2000). Soil Microbiology, Oxford and IBH Publishers, New Delhi.
6. Vayas, S.C, Vayas, S. and Modi, H.A. (1998). Bio-fertilizers and organic Farming. Akta Prakashan, Nadiad
7. Somani, L.L. (2004). Handbook of Biofertilizers. Agrotech Publishing Academy, Udaipur-313002
8. Khosla, R. (2017). Biofertilizers and Biocontrol Agents for Organic Farming Kojo Press
9. Trueman's Biofertilizers. (2018). Trueman Book Company, Jalandhar.

Suggested E-resources:

1. Azotobacter - Isolation and characterization -- https://youtu.be/1Z1VhgJ2h6U
2. Rhizobium -- Identification and characterization - https://youtu.be/jELlo-pMvc4

Course Learning Outcomes:

By the end of the course, students should be able to:
1. Develop conceptual skill about identifying microbes, and bio-fertilizers
2. Gain knowledge about developing commercial enterprise of bio-fertilizers.

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Syllabus

SEC-013 – Nursery & Gardening Techniques

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-013	Nursery & Gardening Techniques			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	No	15 Hours Lecture +30 Hours Lab Activity / Fieldwork	
Prerequisites	Biology courses of Central Board of Secondary Education or equivalent.					
Objectives of the Course:	Objectives of the Course – The program is aimed to teach students the basic knowledge required to develop entrepreneurship skills in the development of Nursery, Gardening and Landscaping. This course would train students to initiate a remunerative enterprise owing to a high demand of skilled professionals in this field					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-013- Nursery & Gardening Techniques	1 Hrs-MT 1 Hrs-EoSE	5 Marks-MT 20 Marks-EoSE	2 Marks-MT 8 Marks-EoSE

Theory question paper for Nursery & Gardening Technique will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-013 – Nursery & Gardening Techniques

Unit –I

Nursery: definition, objectives and scope and building up of infrastructure for nursery, planning and seasonal activities - Planting - direct seeding and transplants.

(03 Lectures)

Unit -II

Seed: Structure and types - Seed dormancy; causes and methods of breaking dormancy-Seed storage: Seed banks, factors affecting seed viability, genetic erosion – Seed production technology - seed testing and certification

(04 Lectures)

Unit -III

Vegetative propagation: air-layering, cutting, selection of cutting, collecting season, treatment of cutting, rooting medium and planting of cuttings - Hardening of plants – green house - mist chamber, shed root, shade house and glass house

(04 Lectures)

Unit-IV

Gardening: definition, objectives and scope - different types of gardening-landscape and home gardening, parks and its components - plant materials and design-computer applications in landscaping, Gardening operations: soil laying, manuring, watering, management of pests and diseases and harvesting.

(04 Lectures)

Practical: -

1. Study of germination of dormant & non-dormant seeds (Pea, tomato, maize, bean).
2. Seed viability test.
3. To estimate bulk density and porosity of Garden soils.
4. To determine moisture content & water holding capacity of Garden Soils.
5. Study of different types of tools & accessories for Nursery
6. Methods of preparation of nursery beds and sowing of seeds.
7. Media for propagation of plants in Nursery Beds, Pots and Mist chamber.
8. Study and practice of different propagation methods viz., cutting, layering, division, grafting and budding.
9. Introduction and practicing Bonsai training, pruning and wiring.
10. Study of different types of gardens (indoor and outdoor) and key features of gardens (Paths & Avenues, Hedges & Edges, Lawn, Flowerbeds, Arches & Pergolas, Fencing, Water bodies, Rock Garden).
11. Visit to a horticulture/forest nursery
12. Hands on training on sowing methods of seed and vegetative propagation techniques

(30 Hours Lab Activity)

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Suggested Books and References –

1. Agrawal, P.K. (1993). Hand Book of Seed Technology. Dept. of Agriculture and Cooperation, National Seed Corporation Ltd., New Delhi.
2. Bose T.K. and Mukherjee, D. (1972). Gardening in India, Oxford and IBH Publishing Co., New Delhi.
3. Jules J. (1979). Horticultural Science. (3rd Ed.), W.H. Freeman and Co., San Francisco, USA.
4. Kumar, N. (1997). Introduction to Horticulture, Rajalakshmi Publications, Nagercoil.
5. Sandhu, M.K. (1989). Plant Propagation, Wile Eastern Ltd., Bangalore, Madras
6. Ratha Krishnan, M. *et al.*, (2014). Plant Nursery management: Principles and Practices, Central Arid Zone Research Insititute (ICAR) Jodhpur, Rajasthan.
7. Roy, R. K., Roy, R. K. (2013). Fundamentals of Garden Designing: A Colour Encyclopaedia. India: New India Publishing Agency.
8. Littlepage, R., Littlepage, R. (2017), Fundamentals of Garden Design: An Introduction to Landscape Design. (n.p.): Create Space Independent Publishing Platform

Course Learning Outcomes:

By the end of the course, students should be able to:
1. Describe and differentiate between the types of gardens.
2. Develop conceptual of nursery and gardening.
3. Gain knowledge about developing commercial enterprise of nursery

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Syllabus

SEC-014 –अनुवाद कौशल

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-014	अनुवाद कौशल			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – 1. अन्य भाषा के साहित्य को लक्ष्यभाषा में उपलब्ध करवाना 2. वैश्विक ज्ञान को लक्ष्यभाषा में उपलब्ध करवाना 3. ज्ञान का विस्तार					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-014- अनुवाद कौशल	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for अनुवाद कौशल will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-014- अनुवाद कौशल	1 Hrs	50 Marks	20 Marks

Question paper for अनुवाद कौशल will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-014 – अनुवाद कौशल

Unit –I

- अनुवाद, आवश्यकता और महत्त्व
- अनुवाद के प्रकार
- अनुवाद की प्रक्रिया

Unit –II

- अनुवाद कार्य की प्रकृति
- अनुवाद और समतुल्यता
- अनुवाद की समस्याएँ

Unit –III

- अँग्रेजी से हिन्दी में अनुवाद
- अन्य भारतीय भाषाओं से हिन्दी में अनुवाद
- प्रशासनिक–पारिभाषिक शब्दावली

Unit-IV

- पाठ : मालगुडी डेज़ – मालगुडी की कहानियाँ आर. के. नारायण (02 कहानियाँ)

Suggested Books and References –

1. मालगुडी की कहानियाँ, आर.के. नारायण, राजपाल एंड संस, नई दिल्ली, 2017
2. अनुवाद : सिद्धांत एवं व्यवहार, डॉ. जयन्ती प्रसाद नौटियाल, राजकमल प्रकाशन, नई दिल्ली
3. अनुवाद सिद्धांत और प्रयोग, जी. गोपीनाथन, अभिजीत पब्लिकेशन्स, 2008
4. अनुवाद : सिद्धांत और समस्याएँ, डॉ. रवीन्द्रनाथ श्रीवास्तव– डॉ. कृष्णकुमार गोस्वामी, आलेख प्रकाशन, 2008

Suggested E-resources:

1. **Online Lecture Notes and Course Materials:**

Course Learning Outcomes:

अनुवाद कौशल के अध्ययन को पूरा करने पर, छात्र निम्नलिखित क्षमताओं को प्राप्त करेंगे-

1. अनुवाद शब्द की परिभाषा और इसे सभी भाषाओं के बीच संवाद में महत्वपूर्णता की व्याख्या करना।
2. भाषाई और सांस्कृतिक अंतरों को पार करने में अनुवाद के भूमिका को पहचानना।
3. साहित्यिक, तकनीकी, कानूनी और वैज्ञानिक अनुवाद सहित विभिन्न अनुवाद प्रकार के बीच अंतर करना।
4. प्रत्येक प्रकार के अनुवाद के साथ जुड़े विशेष चुनौतियों का विश्लेषण करना।
5. स्रोत पाठ विश्लेषण से लेकर लक्ष्य पाठ उत्पादन तक की विभिन्न चरणों की जाँच करना।
6. सटीक और सांस्कृतिक रूप से सही अनुवाद उत्पन्न करने में शामिल कदमों का वर्णन करना।
7. लाक्षिक अनुवाद पैराफ्रेजिंग, अनुकूलन और स्थानीयकरण जैसे विभिन्न अनुवाद विधियों के साथ अनुभव होना।
8. पाठ की प्रकृति और लक्ष्य दर्शक के आधार पर उपयुक्त विधियों का प्रयोग करना।

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9. अनुवाद समता की अवधारणा समझें और स्रोत पाठ के अर्थ और शैली को बनाए रखने में इसकी भूमिका समझना।
10. अर्थ की प्राप्ति में सामान्य चुनौतियों का विश्लेषण करना।, जैसे कि मुहावरे और सांस्कृतिक सूक्ष्मताएँ।
11. रूपांतरण, सुचनांक, और सांस्कृतिक प्रतिस्थापन जैसी तकनीकों का अन्वेषण करें ताकि इच्छित अर्थ को प्रभावी रूप से प्रस्तुत करना।
12. इन तकनीकों को विभिन्न अनुवाद परिदृश्यों में लागू करना।
13. लक्ष्य भाषा में पठनीयता को बनाए रखते हुए स्रोत पाठ के प्रति वफादारी के लिए अनुवादक की जिम्मेदारी को मान्यता देंना।
14. अनुवाद प्रक्रिया के दौरान अनुवादकों के द्वारा नैतिक विचारणाएँ और चुनौतियों का मूल्यांकन करना।
15. अंग्रेजी से हिंदी में चयनित अंशों का अनुवाद करना, जिससे कि पाठ्यक्रम में सीखे गए अनुवाद सिद्धांतों की समझ प्रदर्शित हो सके।
16. सटीक और प्रभावी अनुवाद के लिए उपयुक्त विधियों, तकनीकों, और रणनीतियों का प्रयोग करना।

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Syllabus

SEC-015 – प्रभावी हिन्दी लेखन

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-015	प्रभावी हिन्दी लेखन			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – 1. विद्यार्थी को लेखन स्तर पर कुशल बनाना 2. विविध लेखन शैलियों व शब्द भण्डार का ज्ञान 3. अभिव्यक्ति की सशक्तता और सटीकता प्राप्त करना					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-015- प्रभावी हिन्दी लेखन	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Question paper for **प्रभावी हिन्दी लेखन** will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-015- प्रभावी हिन्दी लेखन	1 Hrs-EoSE	50 Marks-EoSE	20 Marks-EoSE

Question paper for **प्रभावी हिन्दी लेखन** will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-015 - प्रभावी हिन्दी लेखन

Unit –I

- लेखन –कौशल की आवश्यकता
- लेखन कौशल के उद्देश्य
- लेखन कौशल का विकास

Unit –II

- रचनात्मक आयाम
- पत्र लेखन
- रिपार्ट लेखन
- कहानी लेखन
- फ़ीचर लेखन

Unit –III

- प्रायोगिक आयाम
- कार्यशाला
- उच्चारण अभ्यास (जैसा बोलेंगे वैसा लिखेंगे)

Unit-IV

- शब्दकोश का उपयोग
- वर्तनी अशुद्धि परिमार्जन
- वक्तृता कौशल

Suggested Books and References –

1. रचनात्मक लेखन, संपा रमेश गौतम, भारतीय ज्ञानपीठ–वाणी प्रकाशन 2022 नई दिल्ली
2. मीडिया लेखन, वाणी प्रकाशन 2018, तीसरा संस्करण, नई दिल्ली
3. रेडियो लेखन, राजेन्द्र मिश्र, तक्षशिला प्रकाशन, 2009
4. पटकथा : एक परिचय,मनोहर श्याम जोशी, राजकमल प्रकाशन, 2000, नई दिल्ली

Course Learning Outcomes:

प्रभावी लेखन कौशल" को पूरा करने पर, छात्र निम्नलिखित क्षमताओं को प्राप्त करेंगे:

1. विभिन्न व्यक्तिगत और पेशेवर प्रसंगों में मजबूत लेखन कौशल के महत्व को मान्यता देना।
2. स्पष्ट संवाद में सहायक होने और विचारों को प्रस्तुत करने में प्रभावी लेखन का योगदान समझाना।
3. लेखन कौशल का विकसन करने के लक्ष्यों को पहचानना, जिसमें स्पष्टता, प्रसंज्ञानशीलता, और लिखित संचार में रुचिकरता को बढ़ावा देना शामिल है।
4. विचारों को स्पष्ट और सुसंगत तरीके से लिखकर व्यक्त करने की क्षमता को बढ़ावा देना।
5. सुधारित लेखन प्रवीणता के लिए व्याकरण नियम, विराम चिह्न, और वाक्यबद्धता का उपयोग करना।
6. रचनात्मक आयामों में गहराई में जाएं, जिसमें कल्पनाशील और कलात्मक अभिव्यक्तियाँ शामिल होना।
7. ऐतिहासिक भाषाका प्रयोग करके पाठकों को रोचक तरीके से आकर्षित करने वाले लेखित कार्य बनाना।
8. विभिन्न उद्देश्यों के लिए दैनिक पत्र, ईमेल, और संवादों को तैयार करने में परिपूर्णता विकसित करना।
9. दैनिक संवाद में प्रभावी तरीके से संवाद करने के लिए उपयुक्त भाषा और भाषा का प्रयोग करना।

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10. ऐसे निबंध, रिपोर्ट, और संक्षेप तैयार करने की प्रवीणता हासिल करना जो जानकारी और विचारों को प्रभावी रूप से प्रस्तुत करता हो।
11. विभिन्न लेखन प्रारूपों के विशिष्ट घटकों और संरचनाओं को समझना।
12. आकर्षक और संवादात्मक कथानकों को तैयार करने के कौशल हासिल करना।
13. अच्छी तरह से प्लाट और पात्र विकास के साथ कहानियों को बनाने की क्षमता विकसित करना।
14. फीचर लेखन की कला और उसकी तकनीकों को समझना, जिनसे जानकारी को रचनात्मक तरीके से प्रस्तुत किया जा सकता हो।
15. पाठकों को सूचित करने और मनोरंजन करने वाले लेखों को तैयार करने के लिए उपयुक्त तकनीकों का प्रयोग करना।
16. रिज्यूम, कवर पत्र, और प्रस्तावों जैसे दस्तावेजों के लिए आवश्यक प्रैक्टिकल लेखन कौशल की ज्ञान प्राप्त करना।
17. योग्यता और संवाद को प्रभावी बनाने के लिए तकनीकों का प्रयोग करना।
18. सहयोग और सहकारीता को प्रोत्साहित करने वाली लेखन कार्यशालाओं में भाग लेना।
19. संवाद कौशल को और भी बेहतर बनाने के लिए सुरक्षित प्रतिक्रिया प्राप्त करना।
20. वाक्यांशों को सही ढंग से उच्चारित करने के लिए उच्चारण कौशल विकसित करना।
21. सही उच्चारण का अभ्यास करके लिखित सामग्री को मौखिक रूप से प्रभावी ढंग से संवादित करना।
22. शब्दकोषों और शब्दसंग्रहों का उपयोग शब्दावली को समृद्ध करने और शब्द चयन को बेहतर बनाने के लिए करना।
23. उच्च शब्दावली का प्रयोग करके विचारों को और अधिक स्पष्ट और जीवंत ढंग से प्रस्तुत करने का प्रयास करना।
24. सुधारने और संपादन की कला को सीखकर व्याकरण, विराम चिह्न, और शैली में सुधार करना।
25. स्पष्टता और प्रभाव के लिए लिखित काम को पूर्णता और प्रभाव के लिए पुनः संवाद करना।

RJ Jain

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Syllabus

SEC-016 – Household Pests and their Management

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-016	Household Pests and their Management			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	0	No	15 Hours Lecture +30 Hours Lab Activity / Fieldwork	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – The aim of the study is to know the basics of common household pest like cockroaches, mosquito, housefly, termite, etc. and their medical importance in human life.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-016- Household Pests and their Management	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Theory question paper for **Household Pests and their Management** will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-016- Household Pests and their Management

Unit - I

Introduction to household pests and mode of disease transmission
Housefly: Systematic position, Morphology and identification characters, life cycle, mode of disease transmission, control measures
Silver fish: Systematic position, Morphology and identification characters, life cycle, their damage and control

(4 Lectures)

Unit -II

Mosquito: Systematic position, Morphology and identification characters, life cycle, role of mosquito in virus/ protozoan borne diseases, control measures-preventive and curative, WHO initiated programmes
Ants: Systematic position, Morphology and identification characters, castes and social life, ant mounds, their mode of damage and control

(4 Lectures)

Unit -III

Termite: Systematic position, Morphology and identification characters, castes and social life, termitarium, their mode of damage and control
Crickets: Systematic position, Morphology and identification characters, life cycle, control measures

(3 Lectures)

Unit-IV

Cockroach: Systematic position, Morphology and identification characters, life cycle, spread of diseases carrying pathogens, control measures
Bedbug: Systematic position, Morphology and identification characters, life cycle, inflammation and their control measures
***Pediculus*:** Systematic position, Morphology and identification characters, life cycle, *Pediculus* borne disease and their control measures

(4 Lectures)

Practicums:

1. **Permanent slides**
   Mosquito: W.M. of adults of *Anopheles, Aedes, or Culex* (male and female), larvae of mosquito; *Anopheles, Aedes, or Culex*
   Cockroach: nymph stage
   Silver fish: W.M. ; Bedbug: W.M.
   Termite: W.M. of termite castes: queen, soldier: nasute & mandibulate, worker
   Ants: W. M ; *Pediculus*: W.M
2. **Specimens:** *Periplaneta americana, Musca domestica*, crickets
3. **Laboratory rearing and study of life cycle of mosquitoes (any one genera: *Anopheles, Aedes, or Culex spp.*)**
4. **Laboratory rearing and study of life cycle of cockroaches**
5. **Field visits to study termitarium, ant mounds and mosquito breeding sites**

(30 Hours Lab Activity)

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Suggested Books and References –

1. Medical and Veterinary Entomology by Gary R. Mullen and Lance A. Durden, 3rd Edition 2009, ISBN 978-0-12-814043-7,
2. Insect-Borne Diseases in the 21st Century by Marcello Nicoletti, 2020, ISBN 978-0-12-818706-7
3. Pests and vector-borne diseases in the livestock industry by Garros, Claire, editor.; Bouyer, Jérémy, editor.; Takken, Willem, editor.; Smallegange, Renate C., 2018, ISBN: 9789086868636
4. Biological and environmental control of disease vectors by Cameron, M. M. (Mary M.), editor.; Lorenz, L. M. (Lena M.), 2013, ISBN: 9781845939861

Suggested E-resources:

1. Medically important vectors: https://vidyamitra.inflibnet.ac.in/index.php/content/index/5fd9f1678007bef4453de567

Course Learning Outcomes:

By the end of the course, students should be able to:

1. To understand the common household pest
2. Able to differentiate between various household pest on the basis of their basic morphological characters and life cycle.
3. Student will be able to answer which life stage is damaging to the human dwellings
4. Student will be aware of common disease-causing vectors inhabiting our houses like mosquito, housefly, bedbug, termites, etc.
5. Gain awareness about the diseases they spread like malaria, dengue, chikungunya, local inflammation, diarrhoea, etc.
6. Able to manage and control these pests with basic knowledge given

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Syllabus

SEC-017 – VERMICOMPOSTING

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-017	Vermicomposting			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	No	15 Hours Lecture +30 Hours Lab Activity / Fieldwork	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – This is a skill-oriented course aimed to understand the concept of vermicomposting, get hands-on experience while learning and to practice it techniques in appropriate site/location.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-017- Vermicomposting	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Theory question paper for **Vermicomposting** will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-017- Vermicomposting

Unit - I

Earthworms – Taxonomic position, external features- shape, size, colour, segmentation, setae& clitellum. Reproductive system-Male & Female, copulation, cocoon formation & fertilization,; ecological grouping – Epigeic species, Endogeic species and Anecics.

(4 Lectures)

Unit -II

Vermiculture – definition, scope and importance; common species for culture; Environmental parameters; culture methods – wormery – breeding techniques; indoor and outdoor cultures - monoculture and polyculture – merits and demerits; Limiting factors-climatic factors, pH, humidity, Temperature, gases, xenobiotics

(4 Lectures)

Unit -III

Vermicomposting of wastes in field pits, ground heaps, tank method, roof shed method, wedges & bin method; harvesting the compost, storage, Vermiwash-Preparation and application vermicomposting harvest and processing. Nutritional composition of vermicompost; Comparison with other fertilizers.

(4 Lectures)

Unit-IV

Applications of vermiculture –use of vermicastings in organic farming/horticulture, earthworms for management of municipal/selected biomedical solid wastes; as feed/bait for capture/culture fisheries; forest regeneration.

(3 Lectures)

Practicals:

1. Collection of earthworms from soil and identification
2. Study of life stages and development of Earthworms
3. Study of vermiculture, Vermiwash and vermiculture equipment and devices
4. Analysis of vermicompost nutritional status
5. Visit to a vermicompost manufacturing unit

(30 Hours Lab Activity)

Suggested Books and References –

1.Sultan Ahmed Ismail. 2005. The Earthworm Book, Second Revised Edition. Other india Press. Goa, India.
2.Bhatnagar & Patla,2007. Earthworm vermiculture and vermin-composting. Kalyani Publishers,New Delhi .
3.Mary Violet Christy,2008. Vermitechnology,MJP Publishers, Chennai.
4.Aravind Kumar. 2005. Verms & Vermitechnology, A.P.H. Publishing Corporation, New Delhi.
5.Jordan & Verma,2009. Invertebrate Zoology . Chand & Company Ltd
6. Edwards, C.A & J.R Lofty Vermicoloogy The Biology of earthworm. 1997 Chapman & Hall Publications N.Y.U.S.A.

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Course Learning Outcomes:

By the end of the course, students should be able to:

(i) To develop basic theoretical knowledge about morphology, ecology and role of earthworms in enhancing soil fertility.
(ii) To perform vermicomposting using the locally available organic waste items.
(iii) To adopt vermicomposting as a tool of organic farming on a smaller scale.

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Syllabus

SEC-018 – Understanding Union Budget and Economic Survey

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-018	Understanding Union Budget and Economic Survey			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – The course seeks to familiarize students with basic concepts related to the Union Budget and Economic Survey. It aims to equip students with sufficient knowledge and skills to analyze budget and economic survey.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-018-Understanding Union Budget and Economic Survey	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Theory question paper for Understanding Union Budget and Economic Survey will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-018-Understanding Union Budget and Economic Survey	1 Hrs	50 Marks	20 Marks

Question paper for Understanding Union Budget and Economic Survey will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-018- Understanding Union Budget and Economic Survey

Unit -I

Types of Expenditures, Revenue/Receipts, Taxes and Deficits; Introduction to budget; Types of Budgets- Traditional, Zero Based, Gender and Incremental Budgeting; Need for the budget.

(07 Hours Lecture)

Unit -II

Process of Union budget making in India; Components of Union Budget; Structure of Union Budget; Budget Estimates- Actual, Revised and Budget Estimates; Important Features of Union Budget and State Budget.

(08 Hours Lecture)

Unit- III

Importance of the Economic Survey, Main Ingredients of Economic Survey; The Current State of the Economy. Recent Fiscal Developments.

(07 Hours Lecture)

Unit- IV

Main Features of Physical, Digital and Social Infrastructures; Current Policy Emphasis; Challenges for the Economy.

(08 Hours Lecture)

Suggested Books and References –

Given the nature of the course, readings will be updated every year

1. Centre for Budget and Governance Accountability. Recent reports.
2. Ministry of Finance, Economic and social classification of the budget.
3. Ministry of Finance, Union budget (lates).
4. Ministry of Finance, Economic Survey (latest).
5. State Budget, Government of Rajasthan (latest).

Course Learning Outcomes:

By the end of the course, students should be able to –

1. Understand the concepts of government expenditures, revenue, taxes, and deficits, and their roles in public finance.
2. Differentiate between various types of expenditures and taxes, and explain their significance.
3. Comprehend the purpose and importance of creating budgets and the different budgeting approaches.
4. Explain the process of formulating the Union Budget in India and its key components.
5. Analyze budget estimates, actual figures, and revised estimates in the context of government finances.

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6. Recognize the role and significance of the Economic Survey in assessing the nation's economic health.
7. Identify the main sections and elements of the Economic Survey and interpret its findings.
8. Describe the current economic state of the country based on data from the Economic Survey.
9. Evaluate recent fiscal developments and their implications.
10. Differentiate between physical, digital, and social infrastructures, and understand their importance.
11. Assess current policy priorities and challenges in the economic landscape.
12. Analyze policy measures aimed at addressing economic challenges and promoting growth.

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Syllabus

SEC-019 – Survey Methodology

Semester	Code of the Course	Title of the Course/Paper			NHEQF Level	Credits
I/II	SEC-019	Survey Methodology			5	2
Level of Course	Type of the Course	Credit Distribution		Offered to NC Student	Delivery Type of the Course	
		Theory	Practical			
Introductory	Skill Enhancement	2	-	Yes	30 Hours Lecture	
Prerequisites	XII Pass					
Objectives of the Course:	Objectives of the Course – Survey methodology as a scientific field seeks to identify principles about the sample design, data collection instruments, statistical adjustment of data and data processing that can create systematic and random survey errors.					

Examination Scheme-

Regular Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	SEC-019-Survey Methodology	1 Hrs-MT 1 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Theory question paper for Survey Methodology will be so set that it has 40 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

Non-Collegiate Students –

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (EoSE)	Minimum Marks (EoSE)
Theory	SEC-019-Survey Methodology	1 Hrs	50 Marks	20 Marks

Question paper for Survey Methodology will be so set that it has 50 multiple choice questions (Bilingual) of One mark each. The Question paper will be of duration of 1 hours. The examinees will have to give their answers on OMR sheet only to be provided by the University whose evaluation will be done based on OMR Scanning Technology.

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Detailed Syllabus

SEC-019 – Survey Methodology

Unit-I

Introduction; types of data; Sources of data; methods of data collection; Survey Design- Coverage and sampling, Choosing the method collecting data, writing effective questions, the logic of constructing questionnaires, testing survey questions.

(07 Hours Lecture)

Unit-II

Face-to-face interviews, Telephone surveys, Self-administered questionnaires: mail surveys and other applications, Internet surveys, Interactive Voice Response, Mixed mode surveys: When and why.

(08 Hours Lecture)

Unit-III

Processing of survey data- Data cleaning, Weighting survey data and checking for consistency; Incomplete data: Diagnosis, Imputation and accommodating measurement errors; The basic of data Management; Representation of sample data.

(07 Hours Lecture)

Unit-IV

Descriptive Statistics Analysis (Applications) – Mean, Median, Mode, Dispersion, Skewness and Kurtosis.

(08 Hours Lecture)

Suggested Books and References –

1. Andres, Lesley (2012). Designing and Doing Survey Research, London: Sage.
2. Dillman, D.A. (1978) Mail and telephone surveys: The total design method, New York: Wiley.
3. Edith D. de Leeuw, Joop Hox, Don Dillman (2008). International Handbook of Survey Methodology, Routledge.
4. Engel. U., Jann, B., Lynn, P., Scherpenzeel, A. and Sturgis, P. (2014). Improving Survey Methods: Lessons from Recent Research, New York: Routledge.
5. Groves, R.M.; Fowler, F. J.; Couper, M.P.; Lepkowski, J.M.; Singer, E.; Tourangeau, R. (2009). Survey Methodology. New Jersey: John Wiley & Sons.
6. Kumar. R. (2014). Research methodology: A step by step guide for beginners. 4th ed. Sage Publications.

Course Learning Outcomes:

By the end of the course, students should be able to develop an understanding of how commonly available data is collected and processed.

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SYLLABUS

Ability Enhancement Course

Foundations of English Language: A Comprehensive Introduction

I & II Semester

Examination 2023-24

As per NEP 2020

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Foundations of English Language: A Comprehensive Introduction

2023-24

Semester I General English

Credit: 2 **Max. Marks: 50**

Duration: 3 hrs (40+10)

The syllabus aims at achieving the following objectives:

1. Enhancing vocabulary with different types of words
2. Translation from Hindi to English and vice versa
3. Reinforcing selected components of grammar and usage
4. Strengthening comprehension of poetry, prose and short-stories
5. Strengthening compositional skills in English for paragraph writing. CVs and job applications.

The Pattern of the Question Paper will be as follows:

Unit I: Vocabulary and Translation ~~(20 marks)~~ (5)

1. Homophones and Homonyms ~~(06)~~
2. Translation of 05 Words from Hindi to English ~~(07)~~
   from English to Hindi ~~(07)~~

Unit II: Grammar and Usage ~~(15 marks)~~ (5)

3. Elements of a Sentence ~~(05)~~
4. Tense ~~(05)~~
5. Punctuation of a Short Passage with 10 Punctuation Marks ~~(05)~~
   (As discussed in Quirk and Greenbaum)

Unit III: Comprehension ~~(15 marks)~~ (10)

Following Essays and Stories in *Essential Language Skills* revised edition compiled by Macmillan for University of Rajasthan General English B. A. /B. Com./B. Sc. Candidates will be required to answer 5 questions out of ten questions from the prescribed texts. Each question will be of two (5) marks. ~~(25)~~

6. Bernard Shaw — *Spoken English and Broken English*
7. Ruskin Bond — *Night Train at Deoli*
8. M.K. Gandhi — *The Birth of Khadi*

9. The candidates will be required to answer 5 questions from an unseen passage. ~~(15)~~
10. One vocabulary question of 5 words from the given passage. ~~(5)~~

Unit IV: Compositional Skills ~~(20 marks)~~ (20)

11. Formal Letter and Writing Emails ~~(10)~~
12. Paragraph Writing ~~(10)~~

Recommended Reading:

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Sasikumar, V., Dutta and Rajeevan, A Course in Listening and Speaking-I Foundation Books. 2005.

Sawhney, Panja and Verma eds. English At the Workplace, Macmillan 2003.

Singh, R.P. Professional Communication. OUP. 2004

Judith Leigh. CVs and Job Applications. OUP. 2004

Arthur Waldhorn and Arthur Zeiger, English Made Simple. Upa and Co.

Gunashekar ed. A Foundation English Course for Undergraduates. Book I, CIEFL, Hyderabad.

Quirk and Greenbaum: A University Grammar of English Longman, 1973

Foundations of English Language: A Comprehensive Introduction
2023-24
Semester II

Credit: 2 **Max. Marks: 50**
Duration: 3 hrs (40+10)

The syllabus aims at achieving the following objectives:

1. Enhancing vocabulary with different types of words
2. Translation from Hindi to English and vice versa
3. Reinforcing selected components of grammar and usage
4. Strengthening comprehension of poetry, prose and short-stories
5. Strengthening compositional skills in English for paragraph writing. CVs and job applications.

The Pattern of the Question Paper will be as follows:

Unit I: Vocabulary and Translation (~~25~~ marks) (5)

1. One Word Substitution, Antonyms & Synonyms (05)
2. Translation of 05 Sentences :from Hindi to English (05)
   :from English to Hindi (05)

Unit II: Grammar and Usage (~~20 marks~~) (5)

3. Transformation of Sentences (10)
   a. Direct and Indirect Narration
   b. Active and Passive Voice
4. Modals (10) (10)

Unit III: Comprehension (25 marks)

Following Essays and Stories in *Essential Language Skills* revised edition compiled by Macmillan for University of Rajasthan General English B. A. /B. Com./B. Sc.
Candidates will be required to answer 2 questions out of four questions from the prescribed texts. Each question will be of five (5) marks. (10)

5. J.L. Nehru — *A Tryst with Destiny*
6. Martin Luther King Jr. — *I have a Dream*

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7. The candidates will be required to answer 5 questions from an unseen passage. (10)

8. One vocabulary question of 10 words from the given passage. (5)

Unit IV: Compositional Skills (~~30 marks~~ 20)

9. CV's and Job Applications (Cover Letter) and Newspaper Report

Recommended Reading:

Sasikumar, V., Dutta and Rajeevan, A Course in Listening and Speaking-I Foundation Books. 2005.

Sawhney, Panja and Verma eds. English At the Workplace, Macmillan 2003.

Singh, R.P. Professional Communication. OUP. 2004

Judith Leigh. CVs and Job Applications. OUP. 2004

Arthur Waldhorn and Arthur Zeiger, English Made Simple. Upa and Co.

Gunashekar ed. A Foundation English Course for Undergraduates. Book I, CIEFL, Hyderabad.

Quirk and Greenbaum: A University Grammar of English Longman, 1973

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SYLLABUS

(Three/Four Year Under Graduate Programme in Science)

I & II Semester

Examination-2023-24

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As per NEP - 2020

(D) A

Name of University	University of Rajasthan, Jaipur
Name of Faculty	UG0803-B. Sc. (Maths Group)
Name of Discipline	Physics

SEMESTER-WISE PAPER TITLES WITH DETAILS

UG0803-B. Sc. (Maths Group)								
				PHYSICS	Credits			
#	Level	Semester	Type	Title	L	T	P	Total
1.	5	I	MJR	UG0803-PHY-51T-101-Mechanics& Oscillations	4	0	0	4
2.	5	I	MJR	UG0803-PHY-51P-102-Physics Lab-I	0	0	2	2
3.	5	II	MJR	UG0803-PHY-52T-103-Electromagnetism	4	0	0	4
4.	5	II	MJR	UG0803-PHY-52P-104-Physics Lab-II	0	0	2	2
5.	6	III	MJR	UG0803-PHY-63T-201-Optics	4	0	0	4
6.	6	III	MJR	UG0803-PHY-63P-202-Physics Lab-III	0	0	2	2
7.	6	IV	MJR	UG0803-PHY-64T-203-Thermodynamics & Statistical Physics	4	0	0	4
8.	6	IV	MJR	UG0803-PHY-64P-204-Physics Lab-IV	0	0	2	2
9.	7	V	MJR	UG0803-PHY-75T-301-Electronics and Solid-State Devices	4	0	0	4
10.	7	V	MJR	UG0803-PHY-75P-302-Physics Lab-V	0	0	2	2
11.	7	VI	MJR	UG0803-PHY-76T-303-Quantum Mechanics and Spectroscopy	4	0	0	4
12.	7	VI	MJR	UG0803-PHY-76P-304-Physics Lab-VI	0	0	2	2
13.	8	VII	MJR	UG0803-PHY-87T-401-Solid State Physics	4	0	0	4
14.	8	VII	MJR	UG0803-PHY-87T-402-Mathematical Physics	4	0	0	4
15.	8	VII	MJR	UG0803-PHY-87P-403-Physics Lab-VII	0	0	2	2
16.	8	VIII	MJR	UG0803-PHY-88T-404-Nuclear Physics	4	0	0	4
17.	8	VIII	MJR	UG0803-PHY-88T-405-Numerical Methods and Computer Programming	4	0	0	4
18.	8	VIII	MJR	UG0803-PHY-88P-406-Physics Lab-VIII	0	0	2	2

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Syllabus: UG0803-B.Sc.
I-Semester- Physics
(2023-2024)

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	UG0803-PHY-51T-101-Mechanics& Oscillations	1 Hrs-MT 3 Hrs-EoSE	20 Marks-MT 80 Marks-EoSE	8 Marks-MT 32 Marks-EoSE
Practical	UG0803-PHY-51P-102-Physics Lab-I	2 Hrs-MT 4 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Semester	Code of the Course	Title of the Course/Paper	NHEQF Level	Credits
I	UG0803-PHY-51T-101	Mechanics& Oscillations	5	4
Level of Course	Type of the Course	Delivery Type of the Course		
Introductory	Major/Minor	Lecture, Sixty Lectures including diagnostic and formative assessments during lecture hours.		
Prerequisites	Physics and Mathematics courses of Central Board of Secondary Education or equivalent.			
Objectives of the Course:	Objectives of the Course in Mechanics: The objective of the course is to provide students with a comprehensive understanding of classical mechanics, including the laws of motion, frames of reference, forces, motion of particles and rigid bodies, oscillations, and central forces. The course aims to develop their knowledge and skills in analyzing and solving problems related to these topics, using appropriate mathematical formalism and physical concepts.			

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Detailed Syllabus

PHY-51T-101-Mechanics & Oscillations

Unit - I

Physical Law and frame of Reference: (a) Inertial and non-inertial frames, Transformation of displacement, velocity. acceleration between different frames of reference involving translation. Galilean transformation and invariance of Newton's laws.(b) Coriolis Force: Transformation of displacement, velocity and acceleration between rotating frame, Pseudo forces, Coriolis force, Motion relative to earth,Focult's pendulum.(c) Conservative Forces: Introduction about conservative and non-conservative forces, Rectilinear motion under conservative forces, Discussion of potential energy curve and motion of a particle.**(15 Lectures)**

Unit -II:

Centre of Mass: Introduction about Centre of Mass. Centre of Mass Frame: Collision of two particles in one and two dimensions (elastic and inelastic), Slowing down of neutrons in a moderator, Motion of a system with varying mass, Angular momentum concept, conservation and charge particle scattering by a nucleus.

Rigid body: Equation of a motion of a rotating body. Inertial coefficient. Case of J not parallel to ω. The kinetic energy of rotation and the idea of principal axes. The processional motion ofthe spinningTop.**(15 Lectures)**

Unit -III

Motion under Central Forces: Introduction about Centrul Forces, Motion under central forces, gravitational interaction. inertia und gravitational mass, General solution under gravitational interaction. Keplers laws, Discussion of trajectories, Cases of elliptical and circular orbits, Rutherford scattering.

Damped Harmonic Oscillations: Introduction about oscillations in a potential well, Damped force and motion under damping. Damped Simple Harmonic Oscillator, Power dissipation, Anharmonic oscillator and simple pendulum as an example.**(15 Lectures)**

Unit-IV

Driven Harmonic Oscillations: Driven harmonic oscillator with damping, Frequency response. Phase factor, Resource,.Seriau and parallel of LCR circuit, ElectromechanicalGalvanometer.

Coupled Oscillations: Equation of motion of two coupled Simple Harmonic Oscillators, Normal modest motion in mixed modes. Trust behavior, Dynamics of a number of oscillators with neighbor interactions. **(15 Lectures)**

Suggested Books and References –

1. Mechanics, Berkeley Physics, Vol.1, Kittel, Knight, et.al. 2007, Tata McGraw-Hill
2. An introduction to Mechanics, D. Kleppner, R.J. Kolenkow, 1973, McGraw-Hill
3. Feynman Lectures, Vol. I, R.P. Feynman, R.B. Leighton, M. Sands, 2008, Pearson Education.
4. Course of Theoretical Physics, Vol-I Mechanics, L.D. Landau, E.M. Lifshitz, Butterworth-Heinemann
5. Mechanics, D.S. Mathur, S. Chand and Company Limited,
6. Theoretical Mechanics, M.R. Spiegel, 2006, Tata McGraw Hill.
7. Introduction to Classical Mechanics: With Problems and Solutions, David Morin

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8. Classical Mechanics, Herbert Goldstein, Charles P. Poole, and John L. Safko
9. Classical Mechanics, John R. Taylor
10. Mechanics, Keith R. Symon
11. The Physics of Waves & Oscillations,Bajaj
12. Waves, A. P. French

Suggested E-resources:

1. **Online Lecture Notes and Course Materials:**

- MIT OpenCourseWare: Classical Mechanics - This resource provides lecture notes, problem sets, and solutions for a complete course on classical mechanics: https://ocw.mit.edu/courses/physics/8-01sc-classical-mechanics-fall-2016/
- HyperPhysics - This online resource provides concise explanations and interactive simulations for various topics in mechanics: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Understand the concept of inertial and non-inertial frames of reference and their implications on the laws of motion.
2. Apply transformations of displacement, velocity, and acceleration between different frames of reference involving translation.
3. Explain the Galilean transformation and the invariance of Newton's laws.
4. Analyze the motion in rotating frames, including the transformation of displacement, velocity, and acceleration, and the effects of pseudo forces such as the Coriolis force.
5. Analyze the motion of a Foucault pendulum and understand its relation to the rotation of the Earth.
6. Define conservative and non-conservative forces and analyze rectilinear motion under conservative forces.
7. Analyze potential energy curves and understand the motion of particles under conservative forces.
8. Explain the concept of the center of mass and its relevance in the motion of systems of particles.
9. Apply the concept of conservation of angular momentum and analyze particle scattering by a nucleus.
10. Understand the equations of motion for rotating bodies and the concept of the moment of inertia.
11. Analyze the kinetic energy of rotation and the motion of spinning tops.
12. Understand the motion under central forces, including gravitational interaction, and apply Kepler's laws.
13. Analyze damped harmonic oscillations and understand the effects of damping on oscillatory motion.
14. Analyze driven harmonic oscillators with damping and understand frequency response and power dissipation.
15. Explain the behavior of coupled oscillators and analyze systems of oscillators with neighbor interactions.

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Semester	Code of the Course	Title of the Course/Paper	NHEQF Level	Credits
I	UG0803-PHY-51P-102	Physics Lab-I	5	2
Level of Course	Type of the Course	Delivery Type of the Course		
Introductory	Major/Minor	Practical, Sixty hours of practical including diagnostic and formative assessment during practical hours.		
Prerequisites	Physics and Mathematics courses of Central Board of Secondary Education or equivalent.			
Objectives of the Course:	The objective of the physics lab-I, with the mentioned experiments, is to provide students with hands-on experience in conducting experiments related to oscillations, damping, coupled oscillators, and properties of materials. The lab aims to reinforce theoretical concepts learned in the classroom, develop practical skills, and enhance the understanding of physics principles through experimentation.			

UG0803-PHY-51P-102: Physics Lab-I

The colleges are free to set new experiments of equivalent standards. This should be intimated and approved by the Convener, Board of Studies before the start of the academic session. It is binding on the college to have an experimental set-up of at least ten experiments listed below. In case the number of experiments performed by the student is less than eight, his marks shall be scaled down in the final examination on a pro-rata basis. Laboratory examination paper will be set by the external examiner out of eight or more experiments available at the centre

List of Experiments –

1. Study the variation of the time period with amplitude in large-angle oscillations using a compound pendulum.
2. To study the damping using a compound pendulum.
3. To study the excitation of normal modes and measure frequency splitting into two coupled oscillators.
4. To study the frequency of energy transfer as a function of coupling strength using coupled oscillators.
5. To study the viscous fluid damping of a compound pendulum and determinethe dampingcoefficient and Q of the oscillator.
6. To study the electromagnetic damping of a compound pendulum and to find the variation of damping coefficients with the assistance of a conducting lamina.
7. Study of normal modes of a coupled pendulum system. Study of oscillations in mixedmodes and find the period of energy exchange between the two oscillators.
8. To determine Young's modulus by bending of the beam.
9. To determine Y, σ and n by Searle's method
10. To determine the modulus of rigidity of a wire using Maxwell's needle.
11. To determine the moment of Inertia of a fly-wheel.
12. To find the motion of a spring and calculate (a) Spring constant (b) Acceleration due to gravity (g) (c) Modulus of Rigidity

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Suggested Books and References –

Suggested E-resources.

Course Learning Outcomes:

Through these experiments, students will develop practical skills in experimental techniques, data collection, analysis, and interpretation. They will also enhance their understanding of fundamental concepts and principles in oscillations, damping, coupled oscillators, and material properties. The lab experiences will foster critical thinking, problem-solving abilities, and the application of theoretical knowledge to real-world scenarios.

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Syllabus: UG0803-B.Sc.
II-Semester- Physics
(2023-2024)

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (Midterm + EoSE)	Minimum Marks (Midterm + EoSE)
Theory	UG0803-PHY-52T-103-Electromagnetism	1 Hrs-MT 3 Hrs-EoSE	20 Marks-MT 80 Marks-EoSE	8 Marks-MT 32 Marks-EoSE
Practical	UG0803-PHY-52P-104-Physics Lab-II	2 Hrs-MT 4 Hrs-EoSE	10 Marks-MT 40 Marks-EoSE	4 Marks-MT 16 Marks-EoSE

Semester	Code of the Course	Title of the Course/Paper	NHEQF Level	Credits
II	UG0803-PHY-52T-103	Electromagnetism	5	4
Level of Course	Type of the Course	Delivery Type of the Course		
Introductory	Major/Minor	Lecture, Sixty Lectures including diagnostic and formative assessments during lecture hours.		
Prerequisites	Physics and Mathematics courses of Central Board of Secondary Education or equivalent.			
Objectives of the Course:	Objectives of the Course in Electromagnetism: The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts and principles of electromagnetism. It aims to develop their knowledge and skills in analyzing scalar and vector fields, electric and magnetic fields, and their interactions, as described by Maxwell's equations. The course will also cover important topics such as electric potential, polarization, magnetostatics, and electromagnetic waves.			

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Detailed Syllabus

UG0803-PHY-52T-103-Electromagnetism

Unit I

Scaler and Vector Fields: Concept of Field, Scalar and Vector Fields, Gradient of scalar field,Physical significance and formalism of Gradient, Divergence and Curl of a vector field Cartesian co-ordinates system, Problems based on Gradient, Divergence and curl operators. Concept of Solid angle, Gauss divergence and Stoke's theorem. Gauss law from inverse square law. Differential form of Gauss law.

Electric Field and Potential Energy: Invariance of Charge, Potential energy of system of (i) Discrete N-charges (ii) Continuous charge distribution. Energy required to built a uniformly charged sphere, classical radius of electron, Electric field due to a short electric dipole, Interaction of electric dipole with external uniform and non-uniform electric field, potential due to a uniformly charged spherical shell.

Poisson's and Laplace equations in Cartesian co-ordinates and their applications to solve the problems of electrostatics.Electric field measured in moving frames, Electric field of a point charge moving with constant velocity.**(15 Lectures)**

Unit II

Electric field in matter: Multipole expansion, defination of moments of charge distribution, Dielectrics, Induced dipole moments, polar non polar molecules, Free and bound charges. Polarization, Atomic polarizabilty, electric displacement vector, electric susceptibility, dielectric constant, relation between them.

Electric potential and electric field due to a uniformly polarized sphere (i) out side the sphere (ii) at the surface of the sphere (iii) inside the sphere, Electric field due to a dielectric sphere placed in a uniform electric field (a) out side the sphere (b) inside the sphere, Electric field-due to a charge placed in dielectric medium and Gauss law. Clausius-Mossotti relation in dielectrics.**(15 Lectures)**

Unit III

Magnetostatics and Magnetic field in matter: Lorentz force, properties of magnetic field, Ampere's law, field due to a current carrying solid conducting cylinder (a) out side (b) at the surface and (ii) inside the cylinder. Ampere's law in differential form, Introduction of Magnetic Vector potential, Poisson's equation for vector potential, Deduction of Bio-Savart law using Magnetic Vector potentials, Differential form of Ampere's law, Atomic magnet, Gyromagnetic ratio, Bohr-magneton, Larmor frequency, induced magnetic moment and dia-magnetism, spin magnetic moment, para and ferro. magnetism, Intensity of Magnetization, Magnetic permeability and Susceptibility, free and bound current densities, Magnetic field due to a uniformly magnetized material and Non-uniformly magnetized material.**(15 Lectures)**

Unit IV

Maxwell's Equations and Electromagnetic waves:Displacement current, Maxwell's Equations, Electromagnetic waves, Electromagnetic waves in an Isotropic medium, Properties of electromagnetic waves, Energy density of Electromagnetic waves, Pointing vector, Radiation pressure of free space, Electromagnetic waves in Dispersive medium, Spectrum of Electromagnetic waves.**(15 Lectures)**

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Suggested Books and References –

1. Electricity & Magnetism; A.S. Mahajan & Abbas A. Rangwala, Tata McGraw-Hill
2. Introduction to Electrodynamics; David J. Griffiths, Prentice Hall

3. Berkley Physics Course, Vol. II, Edward M. Purcell
4. Fundamental University Physics Vol II: Fields and Waves; M. Alonso and E.J. Finn: Addison-Wesley Publishing Company

Suggested E-resources-

1. MIT OpenCourseWare: Electricity and Magnetism - This resource offers lecture notes, assignments, and exams for a complete course on electricity and magnetism: https://ocw.mit.edu/courses/physics/8-02sc-physics-ii-electricity-and-magnetism-spring-2011/
2. HyperPhysics - This online resource provides concise explanations and interactive simulations for various topics in electrostatics and electric fields: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Understand the concept of scalar and vector fields and their physical significance.
2. Demonstrate knowledge of gradient, divergence, and curl operators and their applications in electromagnetism.
3. Apply Gauss divergence and Stoke's theorems to analyze electric and magnetic fields.
4. Explain the behavior of electric fields and potential energy in different charge distributions.
5. Analyze the interaction of electric dipoles with external electric fields and calculate the resulting potentials.
6. Solve problems related to Poisson's and Laplace's equations in electrostatics.
7. Describe the behavior of electric fields in different types of matter, including dielectrics and polarized spheres.
8. Understand the concept of electric displacement, susceptibility, and dielectric constant.
9. Analyze the behavior of magnetic fields in various materials and the effects of currents on magnetic fields.
10. Apply Ampere's law and the magnetic vector potential to calculate magnetic fields in different scenarios.
11. Explain the properties of electromagnetic waves and their behavior in isotropic and dispersive media.
12. Calculate the energy density and radiation pressure of electromagnetic waves.
13. Understand the spectrum of electromagnetic waves and its implications.

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Semester	Code of the Course	Title of the Course/Paper	NHEQF Level	Credits
II	UG0803-PHY-52P-104	Physics Lab-II	5	2
Level of Course	Type of the Course	Delivery Type of the Course		
Introductory	Major/Minor	Practical, Sixty hours of practical including diagnostic and formative assessment during practical hours.		
Prerequisites	Physics and Mathematics courses of Central Board of Secondary Education or equivalent.			
Objectives of the Course:	1. To provide hands-on experience in conducting experiments related to electricity and magnetism. 2. To develop practical skills in using various electrical components and instruments. 3. To reinforce theoretical concepts learned in the corresponding lecture course through practical applications. 4. To enhance problem-solving and analytical skills by analyzing experimental data and interpreting results. 5. To promote scientific inquiry, critical thinking, and the ability to design and execute experiments. 6. To foster teamwork and collaboration in conducting experiments and analyzing results. 7. To develop skills in accurately measuring and recording experimental data.			

UG0803-PHY-52P-104: Physics Lab-II

The colleges are free to set new experiments of equivalent standards. This should be intimated and approved by the Convener, Board of Studies before the start of the academic session. It is binding on the college to have an experimental set-up of at least ten experiments listed below. In case the number of experiments performed by the student is less than eight, his marks shall be scaled down in the final examination on a pro-rata basis. Laboratory examination paper will be set by the external examiner out of eight or more experiments available at the centre

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List of Experiments –

1. To study the Faradays Law of electromagnetic induction.
2. To study the variation of power transfer by two different loads by a D.C. source and to verify the maximum power transfer theorem.
3. To study the variation of charge and current in an RC circuit with a different time constant (using a DC source).
4. To study the behaviour of an RC circuit with varying resistance and capacitance using ACmains as a power source and also to determine the impedance and phase relations.
5. To study the rise and decay of current in an LR circuit with a source of constant emf.
6. To study the voltage and current behaviour of an LR circuit with an AC power source. Also determine power factor, impedance and phase relations.
7. To study the magnetic field along the axis of a current-carrying circular coil. Plot the necessary graph and hence find the radius of the circular coil.
8. To study the frequency response of a series LCR series circuit and to estimate the resonant frequency and find out Q-factor and band width.

9. To study the frequency response and to find resonant frequencies of L-C-R parallel circuits. Also to find the quality factor and band width in L-C-R series circuit.
10. To determine the specific resistance of a material and determine the difference between two small resistance using Carey Fosters Bridge.
11. To convert a galvanometer into an ammeter of a given range.
12. To convert a galvanometer into a voltmeter of a given range.

Suggested Books and Reference –

Suggested E-resources.

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Demonstrate proficiency in using various electrical components and instruments required for conducting experiments.
2. Apply theoretical concepts of electricity and magnetism to design and execute experiments.
3. Analyze experimental data using appropriate mathematical and statistical techniques.
4. Interpret experimental results and draw conclusions based on data analysis.
5. Develop skills in accurately measuring physical quantities and recording experimental observations.
6. Communicate experimental procedures, results, and conclusions effectively in written reports.

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SYLLABUS

(Three/Four Year Under Graduate Programme in Science)

I & II Semester

Examination-2023-24

As per NEP - 2020

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UNIVERITY OF RAJASTHAN

JAIPUR-302004

FOUR-YEAR UNDERGRADUATE PROGRAMME
FACULTY OF SCIENCE

Programme: UG0802/03 – Four Year Bachelor of Science

B.Sc. Pass Course (Bio and Maths Group)

Subject/Discipline – Chemistry

(Syllabus as per NEP-2020 and Choice Based Credit System)

(Academic Year 2023-24 onwards)

1A

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PROGRAMME PREREQUISITES/ELIGIBILITY
12th standard pass in science from CBSE, RBSE or a recognized board of education.
PROGRAMME OUTCOMES (POs)

1. Basic Knowledge of Science: Students will get acquainted with the knowledge of chemical science which helps them to understand various phenomena happening in their surroundings.
2. Dealing with untoward incidence: The knowledge of science will help them to deal with untoward incidents in the neighborhood. For example, sudden explosion by chemicals and excessive misuse of unwanted substances can be managed with basic knowledge of chemistry and environmental pollution can be controlled by the students by spreading awareness in the society about the harmful pollutants.
3. Proficiency in Scientific Principles: Students will demonstrate a strong understanding of fundamental scientific principles in chemistry and they will be able to apply these principles to analysis and solution.
4. Quantitative and Computational Skills: Students will acquire proficiency in quantitative, analytical and computational principles. They will be able to perform calculations, manipulate mathematical expressions, and use computational tools to solve scientific problems.
5. Experimental and Laboratory Skills: Students will gain practical experience conducting experiments, using laboratory apparatus and equipment, and performing experimental data analysis. They will understand the importance of accurate measurement, data interpretation, and documentation.
6. Employability: Students will get employment in the following sectors:
   - The students can go in chemical and related industries viz. Pharmaceutical, Agrochemicals, Metallurgical, Fertilizer, Biofertilizer, Organic fertilizer, Textile, Food ceramic, Cement, Petrochemicals, Pesticides Plastics and Polymers etc.
   - The students can go for Ballistics, Forensic Lab, Bio Warfare Labs, CBIR Labs, DRDO, Industrial Chemistry etc.
   - They can opt a career in Petroleum, Soil Testing Labs environment conservation, preservation, and as Analytical Chemist, Chemical Product Officer, Radiologist and Toxicologist.
7. Development of communication skills: Students will develop effective oral and written communication skills. They will be able to clearly and concisely communicate scientific ideas, principles and experimental results to both technical and non-technical audiences.
8. Development of Teamwork and Collaboration Skills: Students will develop teamwork and collaboration skills through group projects, laboratory work, and research activities. They will be able to work effectively in diverse teams and contribute to collective goals.

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SEMESTER-WISE PAPER TITLES WITH DETAILS

UG0802/03 – Four Year Bachelor of Science (B.Sc. Pass Course) Subject/Discipline - Chemistry						
Credit Framework for Four Year Bachelor of Science under NEP – 2020						
Academic Session 2023-2024						
S. No.	Semester	Course Code	Course Title	Credits		Marks
				L	P	
1.	I	CHM-51T-101	Structure-bonding, Mathematical concept and States of matter	4	0	100
2.	I	CHM-51P-102	Chemistry Lab-I	0	2	50
3.	II	CHM-52T-103	Reaction mechanism, Stereochemistry, Aromatic hydrocarbon and Chemical kinetics.	4	0	100
4.	II	CHM-52P-104	Chemistry Lab-II	0	2	50

Scheme of Examination:

1 credit = 25 marks for examination/evaluation

Notes:

Continuous assessment, in which sessional work and the terminal examination will contribute to the final grade. Each course in Semester Grade Point Average (SGPA) has two components- Continuous assessment (20% weightage) and (End of Semester Examination) EoSE (80% weightage).

1. Sessional work will consist of class tests, mid-semester examination(s), homework assignments, etc., as determined by the faculty in charge of the courses of study.
2. Each Paper of EoSE shall carry 80% of the total marks of the course/subject. The EoSE will be of 3 hours duration.
   - **Part-A** of the paper shall have multiple questions of equal marks. This first question shall be based on knowledge, understanding and applications of the topics/texts covered in the syllabus.
   - **Part B** of the paper shall consist of 4 questions with an internal choice of each. The four questions will be set with one from each of the units with internal choice. Third to fourth questions shall be based on applications of the topics/texts covered in the syllabus (60% weightage) and shall involve solving Problems (40% weightage) if applicable.
3. 75% Attendance is mandatory for appearing in EoSE.
4. To appear in the EoSE examination of a course/subject student must appear in the mid-semester examination and obtain at least a C grade in the course/subject.

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5. Credit points in a Course/Subject will be assigned only if, the student obtains at least a C grade in midterm and EoSE examination of a Course/Subject.

Syllabus: UG0802/03 - B.Sc. (Pass Course)

CHEMISTRY

Semester – I (2023-2024)

Course Code	Course Title	Duration	Maximum Marks	Minimum Marks
CHM-51T-101	Structure-bonding, Mathematical concept and States of matter	MT - 1 Hr. EoSE - 3 Hrs.	MT - 20 EoSE - 80	MT - 08 EoSE - 32
CHM-51P-102	Chemistry Lab-I	MT - 2 Hrs. EoSE - 4 Hrs.	MT - 10 EoSE - 40	MT - 04 EoSE - 16
Prerequisites/Eligibility	12^{th} standard pass in science from CBSE, RBSE or a recognized board of education.			
Course Objectives: The aim of this course is to provide students with a theoretical understanding of the basic constituents of matter; atoms, ions and molecules in terms of their electronic structure and chemical bonding of these are to be explained by applying basic quantum chemistry. The objective of this course is to explain the basic concepts of mathematics and to explain the structural differences and transformations between states of matter. In addition, the laboratory course is designed to provide students with practical experience in basic qualitative analytical techniques, the use of laboratory techniques, and the determination of physical properties of matter.				
Course Outcomes: By the end of this course, students will have a clear understanding of various concepts related to atomic and molecular structure, chemical bonding, mathematical concepts, and states of matter. Students will also have practical experience in calibration of glassware, qualitative analysis of radicals, identification of functional groups in organic compounds, determination of various physical properties of substances, crystallization and preparation of standard solutions of different concentrations.				

Syllabus

CHM-51T-101: (4 Hrs./week) Structure-bonding, Mathematical concept and States of matter.

Duration	Maximum Marks	Minimum Marks
1 Hour	Midterm – 20 Marks	Midterm – 08 Marks
3 Hours	EoSE – 80 Marks	EoSE – 32 Marks

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Unit-I

Ionic Solids: General characteristics of ionic bonding, Ionic structures, radius ratio effect and coordination number, limitation of radius ratio rule, Lattice enthalpy and Born-Lande equation for calculation of Lattice Enthalpy (no derivation), Born-Haber cycle and its applications, Solvation enthalpy and solubility of ionic solids, polarizing power and polarizability, Fajan's rule. lattice defects, semiconductors.

Metallic bond: Free electron, valence bond and band theories.

Weak Interactions: Hydrogen bonding, Van der Waals forces. **15 Lecture**

Unit-II

Covalent Bond: Valence bond theory and its limitations, Directional character, Hybridization. Valence shell electron pair repulsion (VSEPR) theory to NH_3, H_3O^+, SF_4, ClF_3, ICl_2^-, H_2O.

Molecular Orbital Theory: LCAO method, bonding, nonbonding and antibonding MOs and their characteristics for combinations of atomic orbitals, MO treatment of homonuclear and heteronuclear (CO and NO) diatomic molecules. Comparison of VB and MO approaches.

Multicenter bonding in electron deficient molecules, bond strength and bond energy, ionic character in covalent compounds, calculation of percentage ionic character from dipole moment and electronegativity difference. **15 Lecture**

Unit-III

Mathematical Concepts: Logarithmic relations, curve sketching, linear graphs and calculations of slopes, differentiation of functions like k_x, e^x, x^n, sinx and log x; maxima and minima, partial differentiation and reciprocity relations, integration of some useful/relevant functions; permutations and combinations, factorials, probability. Matrices and Determinant.

Liquid State: Intermolecular forces, structure of liquids (a qualitative description). Structural differences between solids, liquids and gases. Liquid crystals: Difference between liquid crystal, solid and liquid.

Solid State: Definition of space lattice, unit cell.

Laws of crystallography- (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Law of symmetry. Symmetry elements in crystals.

Basic concept of X-ray diffraction by crystals. Derivation of Bragg's equation. Determination of crystal structure of NaCl and CsCl (Laue's method and powder method.). Defects in solids.

15 Lecture

Unit- IV

Gaseous State: Postulates of kinetic theory of gases, deviation from ideal behavior, van der Waals equation of state.

Critical Phenomenon: PV isotherms of real gases, continuity of states, the isotherms of van der Waals equation, relationship between critical constants and van der Waals constants, the law of corresponding states, reduced equation of state.

Molecular Velocities: Root mean square, average and most probable velocities. Qualitative

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discussion of the Maxwell's distribution of molecular velocities, collision number, mean free path and collision diameter. Liquification of gases (based on Joule-Thomson effect.)
Colloidal State: Definition of colloids, classification of colloids.
Solids in liquids (sols): properties - kinetic, optical and electrical, stability of colloids. Protective action, Hardy-Schulze law, gold number.
Liquids in solids (gels): classification, preparation and properties, inhibition, general applications of colloids.
Liquids in liquids (emulsions): types of emulsions, preparation. Emulsifier.

15 Lecture

Suggested Books and References:

1. Lee, J.D. Concise Inorganic Chemistry Wiley, India.
2. Housecroft, Catherine E. & Sharpe, Alan G. Inorganic Chemistry, Pearson Education Ltd.
3. Tuli, G. D. Advanced Inorganic Chemistry, S. Chand, New Delhi.
4. Satya Prakash Advanced Inorganic Chemistry, S. Chand, New Delhi.
5. Adams, D. M. Inorganic Solids – Introduction to Concepts in Solid-state Structural Chemistry, John Wiley, London.
6. Puri, Sharma & Kalia, Principles of Inorganic Chemistry, S. Chand, New Delhi.
7. Puri, B. R., Sharma, L. R. & Pathania, M. S. Principles of Physical Chemistry, Vishal Publishing Co.
8. Gurdeep Raj, Advanced Physical Chemistry, Goel Publishing House.
9. Atkins, W. Physical Chemistry, Oxford University Press.
10. Silby, R. J. & Alberty, R. A. Physical Chemistry, John Wiley & Sons.
11. Barrow, G.M. Physical Chemistry, Tata McGraw-Hill.
12. Kapoor, K. L. A Textbook of Physical Chemistry, (Volume I) Macmillan India Ltd.

Syllabus

CHM-51P-102: Chemistry Lab I (4 Hrs./week)

Duration	Maximum Marks	Minimum Marks
2 Hours	Midterm – 10 Marks	Midterm – 04 Marks
4 Hours	EoSE – 40 Marks	EoSE – 16 Marks

Inorganic Chemistry **10 marks**

Separation and identification of six radicals (3 cations and 3 anions) in the given inorganic mixture including special combinations.

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Organic Chemistry

Laboratory Techniques **3 marks**

(a) Determination of melting point (naphthalene, benzoic acid, urea, etc.); boiling point (methanol, ethanol, cyclohexane, etc.): mixed melting point (urea-cinnamic acid, etc.).

(b) Crystallization of phthalic acid and benzoic acid from hot water, acetanilide from boiling water, naphthalene from ethanol etc.; Sublimation of naphthalene, camphor, etc.

Qualitative Analysis **7 marks**

Identification of functional groups (unsaturation, phenolic, alcoholic, carboxylic, carbonyl, ester, carbohydrate, amine, amide, nitro and hydrocarbon) in simple organic compounds (solids or liquids) through element detection (N, S and halogens).

Physical Chemistry

Viscosity and Surface Tension: **10 marks**

a) To determine the viscosity/surface tension of a pure liquid (alcohol etc.) at room temperature. (Using the Ostwald viscometer/stalagmometer).

b) To determine the percentage composition of a given binary mixture (acetonc and ethyl methyl ketone) by surface tension method.

c) To determine the percentage composition of a given mixture (non- interacting systems) by viscosity method.

d) To determine the viscosity of amyl alcohol in water at different concentration and calculate the excess viscosity of these solutions.

Viva voce **5 marks**

Practical Record **5 marks**

Syllabus: UG0802/03-B.Sc. (Pass Course)

CHEMISTRY

Semester – II (2023-2024)

Course Code	Course Title	Duration	Maximum Marks	Minimum Marks
CHM-52T-103	Reaction mechanism, Stereochemistry, Aromatic hydrocarbons and Chemical kinetics.	MT - 1 Hr. EoSE - 3 Hrs.	MT - 20 EoSE - 80	MT - 08 EoSE - 32
CHM-52P-104	Chemistry Lab-II	MT - 2 Hrs. EoSE - 4 Hrs.	MT - 10 EoSE - 40	MT - 04 EoSE - 16
Course Objectives: The objective of this course is to provide students with a theoretical understanding of the types of organic reactions and their mechanisms, generation and stability				

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of various intermediates, determination of rection mechanism, stereochemistry of organic compounds with an understanding of the enantiomers, diastereomers, D/L and R/S nomenclature. The aim of this course is to explain the structure and reactivity of aromatic hydrocarbons, and to explain the order and molecularity of the reactions, the rate law and order of reactions determination. In addition, the laboratory course is designed to provide students with practical experience in basic quantitative analytical techniques including volumetric analysis, qualitative analytical techniques, and the determination of kinetic parameters of reactions.
Course Outcomes: By the end of this course, students will have a clear understanding of drawing logical and detailed reaction mechanisms for various fundamental reactions of aliphatic and aromatic hydrocarbons, methods of determining the reaction mechanisms, classifying the molecules as chiral or achiral, determining the D/L and R/S nomenclature of stereoisomers and identifying the formation of racemic mixture or optically active compounds during the reactions. Students will also have an understanding about order and molecularity of reactions, rate law and methods determining of order and kinetic parameters of reactions. Students will also have practical experience in quantitative analytical techniques including volumetric analysis, identification of organic compounds by determination of functional groups, determination of order and rate constant of various reactions.

Syllabus

CHM-52T-103: Reaction mechanism, Stereochemistry, Aromatic hydrocarbons and Chemical kinetics. (4 Hrs./week)

Duration	Maximum Marks	Minimum Marks
1 Hour	Midterm – 20 Marks	Midterm – 08 Marks
3 Hours	EoSE – 80 Marks	EoSE – 32 Marks

Unit-I

Introductory Concept and Mechanism of Organic Reactions: IUPAC nomenclature of organic compounds, Dipole moment, Inductive and field effects, electromeric effect, conjugation, resonance and resonance energy, hyperconjugation. Homolytic and heterolytic bond cleavage. Type of reagents, electrophiles and nucleophiles. Reactive intermediates - carbocations, carbanions, free radicals, carbenes, arynes and nitrenes (generation, reactions and stability). Types of organic reactions. Markovnikov's rule, Anti-Markovnikov's rule, Saytzeff's rule and Hofmann elimination. Energy considerations. Methods of determination of reaction mechanism (product analysis, intermediates, isotope labelling, kinetic and stereochemical studies), isotope effects.

15 Lecture

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Unit-II

Stereochemistry of Organic Compounds: Concept of isomerism, Types of isomerism, Difference between configuration and conformation, Flying wedge and Fischer projection formulae.

Optical Isomerism: Elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity. Properties of enantiomers, chiral and achiral molecules with two stereogenic centres. Diastereomers, threo and erythro isomers, meso compounds. Resolution of enantiomers. Inversion, retention and racemization (with examples).

Relative and absolute configuration, sequence rules, D / L and R / S systems of nomenclature.

Geometrical Isomerism: Determination of configuration of geometric isomers - cis / trans and E / Z systems of nomenclature. Geometrical isomerism in oximes and alicyclic compounds.

Conformational Isomerism: Newman projection and Sawhorse formulae, Conformational analysis of ethane, *n*-butane and cyclohexane. **15 Lecture**

Unit-III

Arenes and Aromaticity: Nomenclature of benzene derivatives. The aryl group, aromatic nucleus and side chain. Structure of benzene: molecular formula and Kekule structure. Stability and carbon-carbon bond lengths of benzene, resonance structure, MO diagram.

Aromaticity: Huckel rule, aromatic ions-three to eight membered.

Aromatic electrophilic substitution: General pattern of the mechanism, role of sigma and pi complexes. Mechanism of nitration, halogenation, sulphonation, mercuration, chloromethylation and Friedel crafts reactions. Energy profile diagrams. Activating and deactivating substituents. Directive influence orientation and ortho/para ratio. Side chain reactions of benzene derivatives. Birch reduction. **15 Lecture**

Unit- IV

Chemical Kinetics: Chemical kinetics and its scope, rate of a reaction, factors influencing the rate of a reaction: concentration, temperature, pressure, solvent, light, catalyst. Concentration dependence of rates, mathematical characteristics of simple chemical reactions - zero order, first order, second order and pseudo-order; half-life and mean-life.' Determination of the order of reaction - differential method, method of integration, method of half-life period and isolation method.

Radioactive decay as a first order phenomenon.

Experimental methods of chemical kinetics: conductometric, potentiometric, optical methods, (polarimetry) and spectrophotometric method. Theories of chemical kinetics. Effect of temperature on rate of reaction, Arrhenius equation, concept of activation energy.

Simple collision theory based on hard sphere model transition state theory (equilibrium hypothesis). Expression for the rate constant bases on equilibrium constant and thermodynamic

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aspects. **15 Lecture**

Suggested Books and References:

1. Gupta, S. S. Organic Chemistry, Oxford University Press.
2. Ahluwalia, V. K. Organic Reaction Mechanisms, Narosa Publishing House, New Delhi.
3. Agarwal, O. P. Organic Chemistry – Reactions and Reagents: Covering Complete Theoretical Organic Chemistry, Goel Publishing House, Meerut.
4. Morrison R. T. & Boyed R. N. Organic Chemistry, Prentice Hall.
5. Finar, I. L. Organic Chemistry (Vol. I & II) ELBS.
6. Bahl A. & Bahl B. S. Advanced Organic Chemistry, S. Chand.
7. Jain, M.K. & Sharma, S.C. Modera Organic Chemistry, Vishal Publishing Co.
8. March, J. & Smith, M. B. March's Advanced Organic Chemistry: Reactions, Mechanisms and Structure, Wiley.
9. Ahluwalia, V. K. Stereochemistry of Organic Compounds, Springer.
10. Puri, B. R., Sharma, L. R. & Pathania, M. S. Principles of Physical Chemistry, Vishal Publishing Co.
11. Gurdeep Raj, Advanced Physical Chemistry, Goel Publishing House.
12. Kapoor, K. L. A Textbook of Physical Chemistry, (Volume 5) Macmillan India Ltd.

Syllabus

CHM-52P-104: Chemistry Lab II **4 Hrs./week**

Duration	Maximum Marks	Minimum Marks
2 Hours	Midterm – 10 Marks	Midterm – 04 Marks
4 Hours	EoSE – 40 Marks	EoSE – 16 Marks

Inorganic Chemistry

Volumetric Analysis **10 marks**

(a) Determination of acetic acid in commercial vinegar using NaOH
(b) Determination of alkali content in antacid tablet using HCl
(c) Estimation of calcium content in chalk as calcium oxalate by permanganometery.
(d) Estimation of hardness of water by EDTA
(e) Estimation of ferrous and ferric by dichromate/permanganate method.
(f) Estimation of copper using thiosulphate by iodometric method.

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Organic Chemistry

Qualitative Analysis **10 marks**

Identification of organic compound through the functional group analysis, determination of melting point, boiling point and specific test.

Physical Chemistry

Chemical Kinetics: **10 marks**

a) To determine the specific reaction rate of the hydrolysis of methyl acetate/ ethyl acetate catalyzed by hydrogen ions at room temperature.
b) To study the effect of acid strength on the hydrolysis of an ester.
c) To compare the strengths of HCl and H_2SO_4 by studying the kinetics of hydrolysis of ethyl acetate.
d) To study kinetically the reaction rate of decomposition of iodide by H_2O_2.

Viva voce **5 marks**

Practical Record **5 marks**

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SYLLABUS

(Three/Four Year Under Graduate Programme in Science)

I & II Semester

Examination-2023-24

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As per NEP - 2020

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(NEP-2020)

SYLLABUS

SCHEME OF EXAMINATION AND COURSE OF STUDY

UNDER NEP 2020

for

(SEMESTER SCHEME: I & II Semester)

FACULTY OF SCIENCE

UG0803-Three/Four Year Bachelor of Science (Maths Group)

Medium of Instruction: Hindi and English

Dy. Registrar (Acad.)
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EXAMINATION 2023-2024 AND ONWARDS

Name of University	University of Rajasthan, Jaipur
Name of Faculty	Science
Name of Programme	UG0803-Three/Four Year Bachelor of Science (Maths Group)
Name of Discipline	Mathematics

PROGRAMME PREREQUISITES
Mathematics course of XIIth std. of Central Board of Secondary Education or equivalent.
PROGRAMME OUTCOMES (PO)
The program would enable students to take on advanced courses in Mathematics with global needs and to serve as a formidable skill-force in research, academia, industry, government, and other sectors where Mathematics is reckoned as a strong devising and design tool with diverse interdisciplinary applications.

Scheme of Examination-

1 credit = 25 marks for examination/evaluation

Continuous assessment, in which sessional work and the terminal examination will contribute to the final grade. Each course in Semester Grade Point Average (SGPA) has two components- Continuous Assessment (CA) (20% weightage) and End of Semester Examination (EoSE) (80% weightage).

1. Continuous Assessment will consist of class tests, mid-semester examination(s), homework assignments, etc., as determined by the faculty in charge of the courses of study.
2. Each Paper of EoSE shall carry 80% of the total marks of the course/subject. The EoSE will be of 3 hours duration. Each question will carry equal marks and have two parts as -
   - Part-A of the question paper shall consist first question with 08 short answer type questions of 3 marks each, two from each of the units. The first question shall be based on knowledge, understanding and applications of the topics/texts covered in the syllabus.
   - The Part-B of the question paper shall consist four questions of 24 marks each, one from each unit. Each Question will have four parts. A Candidate is required to attempt all four units by taking any two parts from each question.
3. 75% Attendance is mandatory for appearing in EoSE.
4. To appear in the EoSE examination of a course/subject student must appear in the Continuous Assessment (CA) and obtain at least a "C" grade in the course/subject.
5. Credit points in a Course/Subject will be assigned only if, the student obtains at least a C grade in CA and EoSE examination of a Course/Subject

Contact Hours –

15 Weeks per Semester

L – Lecture	(1 Credit = 1 Hour/Week)
T – Tutorial	(1 Credit = 1 Hour/Week)
S – Seminar	(1 Credit = 2 Hours/Week)
P – Practical/Practicum	(1 Credit = 2 Hours/Week)
F – Field Practice/Projects	(1 Credit = 2 Hours/Week)
SA – Studio Activities	(1 Credit = 2 Hours/Week)
I – Internship	(1 Credit = 2 Hours/Week)
C – Community Engagement and Service	(1 Credit = 2 Hours/Week)

Exit and Entrance Policy

1. Students who opt to exit after completion of the first year and have secured 48 credits will be awarded a **UG Certificate** if, in addition, they complete one internship of 4 credits during the summer vacation of the first year. These students are allowed to re-enter the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years.
2. Students who opt to exit after completion of the second year and have secured 96 credits will be awarded the UG diploma if, in addition, they complete one internship of 4 credits during the summer vacation of the second year. These students are allowed to re-enter within a period of three years and complete the degree programme within the maximum period of seven years.
3. Students who wish to undergo a 3-year UG programme will be awarded UG Degree in the Major discipline after successful completion of three years, securing 150 credits and satisfying the minimum credit requirement.
4. A four-year UG Honours degree in the major discipline will be awarded to those who complete a four-year degree programme with 200 credits and have satisfied the minimum credit requirements.
5. Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year. They should do a research project or dissertation under the guidance of a faculty member of the University/College. The research project/dissertation will be in the major discipline. The students who secure 200 credits, including 12 credits from a research project/dissertation, are awarded UG Degree (Honours with Research).

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Letter Grades and Grade Points

Letter Grade	Grade Point	Marks Range (%)
O (outstanding)	10	91 - 100
A+ (Excellent)	9	81 - 90
A (Very good)	8	71 - 80
B+ (Good)	7	61 - 70
B (Above average)	6	51 - 60
C (Average)	5	40 - 50
P (Pass)	4	
F (Fail)	0	
Ab (Absent)	0	

When students take audit courses, they may be given a pass (P) or fail (F) grade without any credits.

Name of University	**University of Rajasthan, Jaipur**
Name of Faculty	**Science**
Name of Programme	**UG0803-Three/Four Year Bachelor of Science (Maths Group)**
Name of Discipline	**Mathematics**

Syllabus: UG0803-Three/Four Year Bachelor of Science (Maths Group)

I-Semester-Mathematics (2023-2024 & onwards)

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (CA + EoSE)	Minimum Passing Marks (CA + EoSE)
Theory	**UG0803-MAT-51T-101-Discrete Mathematics & Optimization Techniques**	**1 Hrs-CA 3 Hrs-EoSE**	**30 Marks-CA 120 Marks-EoSE**	**12 Marks-CA 48 Marks-EoSE**

Semester	Code of the Course	Title of the Course/Paper	NHEQF Level	Credits
I	UG0803-MAT-51T-101	Discrete Mathematics & Optimization Techniques	5	6
Level of Course	**Type of the Course**	**Delivery Type of the Course**		
Introductory	UG	Lecture, Ninety lectures		
Prerequisites	Mathematics course of XII std. of Central Board of Secondary Education or equivalent.			
Objectives of the Course:	The objective of the course is to expose discrete structures and involved topology, an optimization of real world problems.			

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Syllabus

UG0809-MAT-51T-101-Discrete Mathematics & Optimization Techniques

Teaching: 6 Hours per Week **Duration of Examination: 3 Hours**

Maximum Marks (CA + EoSE): 30 Marks-CA and 120 Marks-EoSE

Minimum Passing Marks (CA + EoSE): 12 Marks-CA and 48 Marks-EoSE

The Question Paper will be divided into two parts, Part-A and Part-B.

Part-A: Part-A contains one compulsory question consisting of 8 short answer type questions, each carrying 3 marks. These 8 short answer questions are selected from all the units, with two questions from each unit. The Part-A of the question paper evaluates the candidate's knowledge, understanding, and application of the topics/texts covered in the syllabus.

Part-B: Part-B comprises four questions with one question from each unit, each carrying 24 marks. Each question in Part-B has four subparts. The candidate must attempt all four units by selecting any two subparts from each question. Each subpart within a question carries equal marks.

Note: The question Paper will be set in both Hindi and English.

Unit –I

Relations on a set, Equivalence class, partial order relations, Chains and Anti-chains. Lattices, Distributive and Complemented Lattices. Boolean algebra, conjunctive normal form, disjunctive normal form. Pigeon hole principle. Principle of inclusion and exclusion. Propositional calculus, Basic logical operations, Truth tables, Tautologies and contradictions.

Unit -II

Discrete numeric functions, Generating functions, Recurrence relations, linear recurrence relation with constant coefficients and their solutions, Total solutions, Solution by the method of generating functions. Basic concepts of graph theory, Types of graphs, Planar graphs, Walks, Paths & Circuits, Shortest path problem.

Unit –III

Planar graphs, Operations on graphs (union, join, products). Matrix representation of graphs, Adjacency matrices, Incidence matrices. Hamiltonian and Eulerian graphs. Tree, Spanning tree, Minimum spanning tree, Distance between vertices, Center of tree, Binary tree, Rooted tree.

Unit-IV

Linear programming problems. Basic solution. Some basic properties and theorems on convex sets. Simplex algorithm, Two-phase method. Duality. Solution of dual problems. Transportation problems. Assignment problems.

Suggested Books and References –

1. V.K.Balakrishnan, Introductory Discrete Mathematics, Prentice-Hall, 1996.
2. N. Deo, Graph Theory with Applications to Computer Science, Prentice-Hall of India.
3. C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, 1986.
4. Kenneth H. Roson, Discrete Mathematics and Its Applications, Tata Mc-GrawHiils, New Delhi, 2003.
5. G. Hadley, Linear Programming, Narosa Publishing House, New Delhi, 2002.
6. Hamdy A. Taha, Operations Research, An Introduction (9th edition), Prentice-Hall, 2010.

Course Learning Outcomes:

The course would enable the student

1. To understand the ideas in discrete structures viz. Partially ordered sets, Lattices ,Graphs etc. and allied conceptual intricacies with applications.
2. To understand mathematical formulation of optimization problems and allied theoretical concepts for solution methodologies.

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Syllabus: UG0803-Three/Four Year Bachelor of Science (Maths Group)

II-Semester-Mathematics (2023-2024 & onwards)

Type	Paper code and Nomenclature	Duration of Examination	Maximum Marks (CA + EoSE)	Minimum Passing Marks (CA + EoSE)
Theory	UG0803-MAT-52T-103-Calculus	1 Hrs-CA 3 Hrs-EoSE	30 Marks-CA 120 Marks-EoSE	12 Marks-CA 48 Marks-EoSE

Semester	Code of the Course	Title of the Course/Paper	NHEQF Level	Credits
II	UG0803-MAT-52T-103	CALCULUS	5	6
Level of Course	**Type of the Course**	**Delivery Type of the Course**		
Introductory	**UG**	**Lecture, Ninety Lectures**		
Prerequisites	Mathematics course of XII std. of Central Board of Secondary Education or equivalent.			
Objectives of the Course:	The objective of the course is to provide students with a comprehensive understanding of the fundamental concepts of calculus as a tool for dynamic systems.			

Syllabus

UG0809-MAT-52T-103-Calculus

Teaching: 6 Hours per Week **Duration of Examination: 3 Hours**

Maximum Marks (CA + EoSE): 30 Marks-CA and 120 Marks-EoSE
Minimum Passing Marks (CA + EoSE): 12 Marks-CA and 48 Marks-EoSE

The Question Paper will be divided into two parts, Part-A and Part-B.
Part-A: Part-A contains one compulsory question consisting of 8 short answer type questions, each carrying 3 marks. These 8 short answer questions are selected from all the units, with two questions from each unit. The Part-A of the question paper evaluates the candidate's knowledge, understanding, and application of the topics/texts covered in the syllabus.
Part-B: Part-B comprises four questions with one question from each unit, each carrying 24 marks. Each question in Part-B has four subparts. The candidate must attempt all four units by selecting any two subparts from each question. Each subpart within a question carries equal marks.

Note: The question Paper will be set in both Hindi and English.

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Unit I

Taylor's theorem. Maclaurin's theorem. Power series expansion of a function. Power series expansion of $\sin x$, $\cos x$, e^x, $\log(1+x)$, $(1+x)^n$. Derivative of the length of an arc. Pedal equations

homogeneous functions. Chain rule of partial differentiation. Total differentiation, Differentiation of implicit functions.

Unit II

Envelopes: One parameter family of curves when two parameters are connected by a relation. Maxima and Minima of functions of two variables. Lagrange's method of undetermined multipliers. Asymptotes: Definition, Parallel to coordinate axes, General rational algebraic curves, inspection method, Intersection of a curve and its asymptotes. Multiple points. Curve tracing of standard curves (Cartesian and Polar curves).

Unit III

Beta and Gamma functions, Reduction formulae (simple standard formulae), Double integrals in Cartesian and Polar Coordinates, Change of order of integration. Triple integrals. Dirichlet's integral. Rectification, Area, Volume and Surface of solids of revolution.

Unit IV

Scalar and Vector point functions. Differentiation of vector point functions Directional derivative. Differential operators. Gradient, Divergence and Curl. Integration of vector point functions. Line, Surface and Volume integral, Theorems of Gauss, Green, Stokes (without proof) and problems based on these theorems.

Suggested Books and References –

1. Shanti Narayan and P.K. Mittal, Integral Calculus, S. Chand & Co., N. D., 2013.
2. H.S.Dhami, Differential Calculus, Age Int. Ltd., New Delhi, 2012.
3. M. J. Strauss, G. L. Bradley and K. J. Smith, Calculus (3rd Edition), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), Delhi, 2007.
4. H. Anton, I. Bivens and S. Davis, Calculus (7th Edition), John Wiley and sons (Asia), Pt Ltd., Singapore, 2002.
5. G.B. Thomas, R. L. Finney, M. D. Weir, Calculus and Analytic Geometry, Pearson Education Ltd, 2003.

Course Learning Outcomes:

By the end of the course, students should be able to:

1. Understand the concept of curvature and padel equations.
2. Understand the concept of maxima-minima, double triple integration and its allpications.
3. Understand the concept of vector calculus viz. operators, vector integration.

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