

1.3.1

Institution integrates cross-cutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability and other value framework enshrined in Sustainable Development Goals and National Education Policy – 2020 into the Curriculum

Scheme of Instructions & Detailed Syllabus

SEMESTER - I

| S. No. | Course Code | Course Title | Scheme of Instruction | | | | Scheme of Examination | | | Credits |
|---------------------------------------|-------------|--|-----------------------|----------|-----------|--------------------|-----------------------|------------|-----------------------|-----------|
| | | | L | T | P/D | Contact Hours/Week | CIE | SEE | SEE Duration in Hours | |
| Theory Course | | | | | | | | | | |
| Three Week Induction Program | | | | | | | | | | |
| 1 | SBS101MT | Mathematics – I | 3 | 1 | - | 4 | 40 | 60 | 3 | 4 |
| 2 | SBS903CH | Engineering Chemistry | 3 | - | - | 3 | 40 | 60 | 3 | 3 |
| 3 | SES101CS | Programming for Problem Solving | 3 | - | - | 3 | 40 | 60 | 3 | 3 |
| 4 | SES102EE | Fundamentals of Electrical Engineering | 3 | - | - | 3 | 40 | 60 | 3 | 3 |
| 5 | SMC903CE | Environmental Science | 2 | - | - | 2 | 40 | 60 | 3 | - |
| 6 | SAC901EE | Design Thinking for Engineers | 2 | - | - | 2 | 50 | - | - | - |
| Practical / Laboratory Courses | | | | | | | | | | |
| 7 | SBS913CH | Chemistry Lab | - | - | 4 | 4 | 40 | 60 | 3 | 2 |
| 8 | SES915ME | Engineering Graphics & Design | 1 | - | 4 | 5 | 40 | 60 | 3 | 3 |
| 9 | SES111CS | Programming for Problem Solving Lab | - | - | 4 | 4 | 40 | 60 | 3 | 2 |
| 10 | SES112EE | Fundamentals of Electrical Engineering Lab | - | - | 4 | 4 | 40 | 60 | 3 | 2 |
| | | TOTAL | 17 | 1 | 16 | 34 | 410 | 540 | 27 | 22 |

Scheme of Instructions & Detailed Syllabus

SEMESTER - II

| S. No. | Course Code | Course Title | Scheme of Instruction | | | | Scheme of Examination | | | Credits |
|---------------------------------------|-------------|---|--|----------|-----------|--------------------|-----------------------|------------|-----------------------|-----------|
| | | | L | T | P/D | Contact Hours/Week | CIE | SEE | SEE Duration in Hours | |
| Theory Courses | | | | | | | | | | |
| 1 | SHS901EG | English | 2 | - | - | 2 | 40 | 60 | 3 | 2 |
| 2 | SBS901PH | Engineering Physics | 3 | - | - | 3 | 40 | 60 | 3 | 3 |
| 3 | SBS201MT | Mathematics – II | 3 | 1 | - | 4 | 40 | 60 | 3 | 4 |
| 4 | SES201ME | Engineering Mechanics | 3 | - | - | 3 | 40 | 60 | 3 | 3 |
| 5 | SMC901PO | Indian Constitution | 2 | - | - | 2 | 40 | 60 | 3 | - |
| 6 | SMC902PY | Essence of Indian Traditional Knowledge | 2 | - | - | 2 | 40 | 60 | 3 | - |
| Practical / Laboratory Courses | | | | | | | | | | |
| 7 | SHS911EG | English Lab | - | - | 2 | 2 | 40 | 60 | 3 | 1 |
| 8 | SBS911PH | Engineering Physics Lab | - | - | 4 | 4 | 40 | 60 | 3 | 2 |
| 9 | SES914ME | Workshop | - | - | 6 | 6 | 40 | 60 | 3 | 3 |
| 10 | SES212EE | Simulation of Basic Electrical Concepts Lab | - | - | 2 | 2 | 40 | 60 | 3 | 1 |
| 11 | SPW211EE | Field Work | The students have to undergo a Field work of 2-week duration after II- Semester SEE or during semester breaks. | | | | 50 | - | - | 1 |
| TOTAL | | | 15 | 1 | 14 | 30 | 450 | 600 | 30 | 20 |

ENVIRONMENTAL SCIENCE

| Course Code | Course Title | | | | | Core / Elective | |
|---------------|------------------------|---|---|---|-----|-----------------|---------|
| SMC903CE | Environmental Science | | | | | Core | |
| Pre Requisite | Contact Hours per Week | | | | CIE | SEE | Credits |
| | L | T | D | P | | | |
| - | 2 | - | - | - | 40 | 60 | 0 |

Course Objectives :

1. To create awareness and impart basic knowledge about the environment and its allied problems.
2. To know the functions of ecosystems.
3. To understand importance of biological diversity.
4. To study different pollutions and their impact on environment.
5. To know social and environment related issues, disasters and their preventive measures

Course Outcomes :

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

1. Explain the uses of natural resources and the problems and effects of their over exploitation
2. Define ecosystem and relate the various elements of its structure and their functions
3. Classify the different levels of biodiversity and infer its importance.
4. Explain the causes and effects of environmental pollution, and the environmental protection acts.
5. Describe the social issues and the relevant environmental ethics, and the disaster management principles.

Unit - I

The Multidisciplinary Nature of Environmental Studies: Definition, scope and importance, need for public awareness.

Natural Resources: Water Resources – Use and over utilization of surface and ground water, flood, drought, conflicts over water, Dams: Benefits and Problems. Food Resources - World Food Problems, effects of modern agriculture, fertilizer-pesticides problems, water logging, salinity, Forest Resources – Use and over exploitation, deforestation & its effect on tribal people. Land Resources –Land Degradation, environmental effect of mining, man induced landslides, soil erosion and desertification. Energy Resources - Growing energy needs, Renewable and Non-renewable energy resources.

Scheme of Instructions & Detailed Syllabus

Unit - II

Ecosystems : Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in ecosystem, food chains, ecological pyramids, ecological succession, types of ecosystems (marine, pond, river, forest, grassland, desert)

Unit - III

Biodiversity : Levels of Biodiversity, Bio-geographical classification of India, Value of biodiversity, Threats to biodiversity, endangered and endemic species of India, Conservation of biodiversity, global and national efforts.

Unit - IV

Environmental Pollution : Definition, Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution, thermal pollution, solid waste management.

Environment Protection Act: Air, water, forest and wildlife Acts, issues in the enforcement of environmental legislation

Unit - V

Social Issues and the Environment : Watershed management and environmental ethics. Climate change, global warming, acid rain, ozone layer depletion.

Environmental Disaster Management : Types of disasters, impact of disasters on environment, infrastructure, and development. Basic principles of disaster mitigation, disaster management, and methodology. Disaster management cycle and disaster management in India.

Field Work : Visit to a local area to document environmental issues- agricultural area/ pond/ lake/terrestrial ecosystem. Visit to a local polluted area- market/slum area/Industrial area/ traffic area.

TEXT / REFERENCE / ADDITIONAL BOOKS :

1. De Anil Kumar, "*Environmental Chemistry*", New Age Publisher International Pvt Ltd, New Delhi , 2016
2. E.P. Odum, '*Fundamentals of Ecology*', W.B. Saunders Co., USA.,1971
3. M.N. Rao and A.K. Datta, "*Waste Water Treatment*", Oxford and IBK Publications, New Delhi, 2009.
4. Benny Joseph, "*Environmental Studies*", Tata McGraw Hill, New Delhi, 2009
5. V.K. Sharma, "*Disaster Management*", National Centre for Disaster Management, IPE, New Delhi, 1999

ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE

| Course Code | Course Title | | | | | Core / Elective | |
|---------------|--------------------------------------|---|---|---|-----|-----------------|---------|
| SMC902PY | Essece of Indian Tradional Knowledge | | | | | Core | |
| | Contact Hours per Week | | | | CIE | SEE | Credits |
| Pre Requisite | L | T | D | P | | | |
| - | 2 | - | - | - | 40 | 60 | 0 |

Course Objectives :

1. To get a knowledge in Indian Culture
2. To Know Indian Languages and Literature and the fine arts in India.
3. To explore the Science and Scientists of Medieval and Modern India

Course Outcomes :

1. Understand philosophy of Indian culture.
2. Distinguish the Indian languages and literature.
3. Learn the philosophy of ancient, medieval and modern India.
4. Acquire the information about the fine arts in India.
5. Know the contribution of scientists of different eras.

UNIT - I

Introduction to Culture : Culture, civilization, culture and heritage, general characteristics of culture, importance of culture in human literature, Indian Culture, Ancient India, Medieval India, Modern India.

UNIT - II

Indian Languages, Culture and Literature: Indian Languages and Literature - I : the role of Sanskrit, significance of scriptures to current society, Indian philosophies, other Sanskrit literature, literature of south India.

Indian Languages and Literature-II: Northern Indian languages & literature

UNIT - III

Religion and Philosophy: Religion and Philosophy in ancient India, Religion and Philosophy in Medieval India, Religious Reform Movements in Modern India (selected movements only)

UNIT - IV

Fine Arts in India (Art, Technology & Engineering): Indian Painting, Indian handicrafts, Music, divisions of Indian classic music, modern Indian music, Dance and Drama, Indian

Scheme of Instructions & Detailed Syllabus

Architecture (ancient, medieval and modern), Science and Technology in India, development of science in ancient, medieval and modern India.

UNIT – V

Education System in India: Education in ancient, medieval and modern India, aims of education, subjects, languages, Science and Scientists of Ancient India, Science and Scientists of Medieval India, Scientists of Modern India

Suggested Reading :

1. Kapil Kapoor, "Text and Interpretation: The India Tradition", D. K. Print world, 2005
2. Gopala Krishnan , "Science in Samskrit", Samskrita Bharti Publisher, New Delhi, 2017.
3. NCERT, "Position paper on Arts, Music, Dance and Theatre" NCERT, New Delhi, 2010.
4. S. Narain, "Examinations in Ancient India", Arya Book Depot, New Delhi, 1993
5. Satya Prakash, "Founders of Sciences in Ancient India", Vijay Kumar Publisher, New Delhi, 1989
6. M. Hiriyanna, "Essentials of Indian Philosophy", Motilal Banarsidass Publishers, New Delhi, 2005