

22CEM01

ENVIRONMENTAL SCIENCE
(Mandatory Course)

Instruction	2 L Hours per week
Duration of SEE	2 Hours
SEE	50 Marks
CIE	-
Credits	-

Prerequisites: None**COURSE OBJECTIVES:** This course aims to

1. Identify environmental problems arising due to engineering and technological activities and become aware of the importance of eco system and biodiversity for maintaining ecological balance.
2. Identify the threats and solve the issues of biodiversity, learn about various attributes of pollution management and waste management practices.
3. Contribute for capacity building of nation for arresting and/or managing environmental disasters.

COURSE OUTCOMES: After the completion of this course, the student will be able to

1. Identify the natural resources and realize the importance of water, food, forest, mineral, energy, land resources and effects of over utilization.
2. Understand the concept of ecosystems and realize the importance of interlinking food chains.
3. Contribute for the conservation of bio-diversity.
4. Suggest suitable remedial measure for the problems of environmental pollution and contribute for the framing of legislation for protection of environment.
5. Follow the environmental ethics and contribute to the mitigation and management of environmental disasters.

CO-PO Articulation Matrix

PO/PSO CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	SO 1	SO 2	SO 3
CO 1	1	-	-	-	-	-	3	-	-	-	-	1	-	-	-
CO 2	1	-	-	-	-	-	2	1	-	-	-	1	-	-	-
CO 3	1	-	-	-	-	-	2	1	-	-	-	1	1	-	-
CO 4	1	-	-	-	-	1	2	1	-	-	-	1	1	-	-
CO 5	1	-	-	-	-	1	2	1	-	-	-	1	-	-	-

1 - Slightly, 2 - Moderately, 3 - Substantially**UNIT -I****Environmental Studies:** Definition, Scope and importance, need for public awareness.**Natural resources:** Use and over utilization of Natural Resources - Water resources, Food resources, Forest resources, Mineral resources, Energy resources, Land resources.**UNIT -II****Ecosystems:** Concept of an ecosystem, structure and function of an ecosystem, role of producers, consumers and decomposers, energy flow in an ecosystem, food chains, food webs, ecological pyramids, Nutrient cycling, Bio-geo chemical cycles, Terrestrial and Aquatic ecosystems.**UNIT -III****Biodiversity:** Genetic, species and ecosystem biodiversity, Bio-geographical classification of India, India as a Mega diversity nation. Values of biodiversity, hot-spots of biodiversity, threats to biodiversity, endangered and endemic species of India, methods of conservation of biodiversity.**UNIT -IV****Environmental Pollution:** Cause, effects and control measures of air pollution, water pollution, marine pollution, soil pollution, noise pollution and Solid waste management, nuclear hazards

Environmental Legislations: Environment protection Act, Air, Water, Forest & Wild life Acts, issues involved in enforcement of environmental legislation, responsibilities of state and central pollution control boards

UNIT -V

Social issues and the environment: Water conservation methods: Rain water harvesting and watershed management, Environmental ethics, Sustainable development and Climate change: Global warming, Ozone layer depletion, forest fires, and Contemporary issues.

TEXT BOOKS:

1. Y. Anjaneyulu, "Introduction to Environmental Science", B S Publications, 2004.
2. Suresh K. Dhameja, "Environmental Studies", S. K. Kataria & Sons, 2009.

SUGGESTED READING:

1. C. S. Rao, "Environmental Pollution Control Engineering", Wiley, 1991.
2. S. S. Dara, "A Text Book of Environmental Chemistry & Pollution Control", S. Chand Limited, 2006

22EGM01**INDIAN CONSTITUTION & FUNDAMENTAL PRINCIPLES**

Instruction	2L Hours per week
Duration of SEE	-
SEE	50
CIE	-
Credits	NC

Prerequisites: Basic awareness of Indian Constitution and Government.

COURSE OBJECTIVES: This course aims to

1. Understand the history of framing of the Indian Constitution.
2. Awareness on Fundamental Rights, Duties and Directive Principles of State Policy.
3. Explore the organization of Union Government, and functions of President and Prime Minister.
4. Gain an insight into the inter-functionality of Union Legislature and Judiciary
5. Educate on the local governance and problems in development of rural and urban areas.

COURSE OUTCOMES: After the completion of this course, the student will be able to

1. Understand the history of framing of the Indian Constitution and its features.
2. Assess the realization of Fundamental Rights and Directive Principles of State Policy.
3. Analyze the challenges to federal system and position of the President and the Prime Minister in the Union Government.
4. Underline the role of the Legislature and the Judiciary in Union Government and their mutual relations.
5. Evolve the development of the local governments in India and assess the role of Collector in district administration.

CO-PO Articulation Matrix

PO/PSO CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	-	-	1	-	-	1	1	1	1	-	-	-	-	-	-
CO 2	-	-	2	-	-	3	2	2	1	-	-	-	1	1	1
CO 3	-	-	1	-	-	1	1	-	-	-	-	-	-	-	-
CO 4	-	-	1	-	-	1	1	-	-	-	-	-	-	-	-
CO 5	-	-	2	-	-	3	2	1	1	-	-	-	1	1	1

1 - Slightly, 2 - Moderately, 3 - Substantially

UNIT-I

Constitutional History and Framing of Indian Constitution: East India Company rule (1757-1857): Social, Economic, Political and Administrative impact of Company rule in India. British Rule (1858-1947): Indian National Movement, Government of India Acts 1909, 1919 and 1935, and Indian Independence Act 1947. Framing of the Indian Constitution: Constituent Assembly, Preamble and Salient Features.

UNIT-II

Fundamental Rights, Duties and Directive Principles of State Policy: The Fundamental Rights: Features and significance of Rights. Fundamental Duties: Importance and the legal status of Duties. Directive Principles of State Policy: Socialist, Gandhian and Liberal-intellectual principles, importance and relevance.

UNIT-III

Union Government and its Administration: Federalism: Division of legislative and financial powers between the Union and the State. Union Executive: Role and position of President, Prime Minister and Council of Ministers. Emergency Provisions: National Emergency, Constitutional Emergency and Financial Emergency.

UNIT-IV

Union Legislature and Judiciary: Union Legislature: Parliament of India-Composition and functions of Parliament, and Parliamentary Committees. Union Judiciary: Supreme Court of India-Composition and Functions.

UNIT-V

Local Self Governments: Rural Local Governments: Zilla Parishad- CEO and functions of Zilla Parishad, Mandal Parishad- Role of Elected and Officials, Gram Panchayat- Sarpanch, Secretary and Gram Sabha. Urban Local Governments: Structure and functions of Municipalities and Municipal Corporations. District Collector: Powers and functions of Collector.

TEXT BOOKS:

1. Sastry Ravindra, (Ed), "Indian Government & Politics", Telugu Akademy, 2nd edition, 2018.
2. "Indian Constitution at Work", NCERT, First edition 2006, Reprinted in 2022.

SUGGESTED READING:

1. D.D. Basu, "Introduction to the Constitution of India", Lexis Nexis, 2015.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar, "Framing of Indian Constitution", 1st Edition, 2015.
3. Granville Austin, "The Indian Constitution: The Cornerstone of a Nation", OUP, 2nd Edition, 1999.
4. M.V. Pylee, "India's Constitution", S. Chand Publishing, 16th Edition, 2017.
5. Rajeev Bhargava (ed), "Politics and Ethics of the Indian Constitution", OUP, 2008.

ONLINE RESOURCES:

1. <http://www.nptel.ac.in/courses/103107084/Script.pdf>

22EEM01

UNIVERSAL HUMAN VALUES-II: UNDERSTANDING HARMONY
(B.E/B. Tech - Common to all Branches)

Instruction	1T Hours per week
Duration of SEE	-
SEE	-
CIE	50 Marks
Credits	1

INTRODUCTION:

This course discusses the role of human values in one's family, in society and in nature. During the Induction Program, students would get an initial exposure to human values through Universal Human Values-I. This exposure is to be augmented by this compulsory full semester foundation course.

COURSE OBJECTIVES: This course aims to

1. Understand the concept of universal human values
2. Cultivate empathy and respect for diversity
3. Inspire the social responsibility and global citizenship

COURSE OUTCOMES After the completion of this course, the student will be able to

1. Become familiar about themselves, and their surroundings (family, society, nature).
2. Develop empathy and respect for diversity by gaining an appreciation for different cultures, perspectives, and identities
3. Exhibit responsible and ethical behavior by adhering to principles of integrity, honesty, compassion, and justice.
4. Recognize their role as global citizens.
5. Exhibit a sense of social responsibility.

CO-PO Articulation Matrix

PO/PSO CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	-	-	1	-	-	1	-	-	1	-	-	1	-	1	1
CO 2	-	-	1	-	-	1	1	-	1	-	1	1	-	1	1
CO 3	--	-	-	-	-	1	-	-	-	1	-	-	-	1	1
CO 4	-	-	-	-	-	1	1	1	-	-	-	-	-	1	1
CO 5	-	-	-	-	-	1	1	1	-	-	-	-	-	1	1

1 - Slightly, 2 - Moderately, 3 - Substantially

MODULE -1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

- Purpose and motivation for the course, recapitulation from Universal Human Values-I
- Self-Exploration-what is it? - Its content and process; 'Natural Acceptance' and
- Experiential Validation- as the process for self-exploration.
- Natural acceptance of human values.
- Definitiveness of Ethical Human Conduct.
- Continuous Happiness and Prosperity- A look at basic Human Aspirations.
- Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority.
- Understanding Happiness and Prosperity correctly- A critical appraisal of the current Scenario.
- Method to fulfil the above human aspirations: understanding and living in harmony at various levels.

Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking.

MODULE- 2: Understanding Harmony in the Human Being - Harmony in Myself

- Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
- Understanding the needs of Self ('I') and 'Body' - happiness and physical facility
- Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
- Understanding the characteristics and activities of 'I' and harmony in 'I'
- Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail.
- Programs to ensure Sanyam and Health.

Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one's own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease.

MODULE-3: Understanding Harmony in the Family and Society- Harmony in Human- Human Relationship

- Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship.
- Understanding the meaning of Trust; Difference between intention and competence.
- Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship.
- Understanding the harmony in society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co -existence as comprehensive Human Goals.
- Strategy for transition from the present state to Universal Human Order:
 - a. At the level of individual: as socially and ecologically responsible engineers, technologists, and managers.
 - b. At the level of society: as mutually enriching institutions and organizations.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss scenarios. Elicit examples from students' lives.

MODULE -4: Understanding Harmony in Nature and Existence - Whole existence as Coexistence.

- Understanding the harmony in Nature.
- Interconnectedness and mutual fulfilment among the four orders of nature - recyclability and self-regulation in nature.
- Understanding Existence as Co-existence of mutually interacting units in all - pervasive space.
- Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order.
- Holistic perception of harmony at all levels of existence.
- Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability Identify the scope and characteristics of people friendly and eco-friendly production systems, c. Ability Identify and develop appropriate technologies and management patterns for above production systems.
- Case studies of typical holistic technologies, management models and production systems.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc. Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions e.g. To discuss the conduct as an engineer or scientist etc.

MODE OF CONDUCT (L-T-P-C 0-1-0-0)

- While analyzing and discussing the topic, the faculty mentor's role is in pointing to essential elements to help in sorting them out from the surface elements. In other words, help the students explore the important or critical elements.
- In the discussions, particularly during practice sessions (tutorials), the mentor encourages the student to connect with one's own self and do self-observation, self-reflection, and self- exploration.

- Scenarios may be used to initiate discussion. The student is encouraged to take up “ordinary” situations rather than “extra-ordinary” situations. Such observations and their analyses are shared and discussed with other students and faculty mentors, in a group sitting.
- **Tutorials (experiments or practical) are important for this course.** The difference is that the laboratory is everyday life, and practical are how you behave and work in real life. Depending on the nature of topics, worksheets, home assignments and/or activities are included.
- The practice sessions would also provide support to a student in performing actions commensurate to his/her beliefs. It is intended that this would lead to the development of commitment, namely behaving and working based on basic human values.
- **It is advised to share the experience of the Faculty to the class in a capsule form.**
- **Involve more in evaluating the student by different activities with proper RUBRCCS**

ASSESSMENT:

This is a compulsory credit course. The assessment is to provide a fair state of development of the student, so participation in classroom discussions, self- assessment, peer assessment etc. will be used in evaluation.

EXAMPLE:

Module-1:	10 M
Module -2:	10 M
Module- 3:	10 M
Module-4:	10 M
Attendance & Attitude:	10 M

The overall pass percentage is 50%. In case the student fails, he/she must repeat the course.

TEXTBOOKS

1. “A Foundation Course in Human Values and Professional Ethics” by R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2022.
2. “Teacher’s Manual for A Foundation Course in Human Values and Professional Ethics” by R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2022.

REFERENCE BOOKS

1. Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2. Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3. The Story of Stuff (Book).
4. The Story of My Experiments with Truth – by Mohandas Karamchand Gandhi

20EGM02**INDIAN TRADITIONAL KNOWLEDGE**

Instruction	2 Hours per week
Duration of End Examination	2 Hours
Semester End Examination	50 Marks
Continuous Internal Evaluation	-
Credits	No Credits

Prerequisite: Knowledge on Indian Culture

Course Objectives: The objectives of this course are

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: On Successful completion of the course, students will be able to

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

Culture and Civilization: Culture, civilization and heritage, general characteristics of culture, importance of culture in human life, Cultural diversity, Aesthetics, Women seers, Indus culture, Indian cuisine, Martial arts

UNIT-II

Education System: Education in ancient, medieval and modern India, aims of education, subjects, Languages, Science and Scientists of ancient, medieval and modern India

UNIT-III

Linguistic Wealth: Indian Languages and Literature: the role of Sanskrit, Paleography, Significance of scriptures to current society, Indian semantics and lexicography, Bhakti literature, Darsanas

UNIT-IV

Art, Technology & Engineering: Sculpture, Painting and Handicrafts, Indian Music, Dance Drama and Theatre, Introduction to Mayamatam, Iron and steel technology, Use of metals in medicinal preparations

UNIT-V

Science and Logic: Helio-centric system, Sulbasutras, Katapayadi, Hindu calendar, 6 pramanas in Indian logic, Scientific method applied to therapeutics, Fallacies, Tarka – Induction & Deduction, Ayurvedic biology, Definition of health

Text Books:

1. Kapil Kapoor, "Text and Interpretation: The Indian Tradition", ISBN: 81246033375, 2005
2. Samskrita Bharati, "Science in Samskrit", ISBN-13: 978-8187276333, 2007
3. Satya Prakash, "Founders of sciences in Ancient India", Govindram Hasanand, ISBN-10: 8170770009, 1989
4. Brajendranath Seal, "The Positive Sciences of the Ancient Hindus", Motilal Banarasidass, ISBN-10: 8120809254, 1915
5. Kancha Ilaiah, "Turning the Pot, Tilling the Land: Dignity of Labour in Our Times"

Suggested Reading:

1. Swami Vivekananda, Caste, Culture and Socialism, Advaita Ashrama, Kolkata ISBN-9788175050280
2. Swami Lokeshwarananda, Religion and Culture, Advaita Ashrama, Kolkata ISBN-9788185843384
3. Kapil Kapoor, Language, Linguistics and Literature: The Indian Perspective, ISBN-10: 8171880649, 1994.
4. Karan Singh, A Treasury of Indian Wisdom: An Anthology of Spiritual Learn, ISBN: 978-0143426158, 2016
5. Swami Vivekananda, The East and the West, Advaita Ashrama, Kolkata 9788185301860

6. Srivastava R.N., Studies in Languages and Linguistics, Kalinga Publications ISBN-13: 978-8185163475
7. Subhash Kak and T.R.N. Rao, Computation in Ancient India, Mount Meru Publishing ISBN-1988207126
8. R.N Misra, Outlines of Indian Arts Architecture, Painting, Sculpture, Dance and Drama, IAS, Shimla & Aryan Books International, ISBN 8173055149
9. S. Narain, Examinations in ancient India, Arya Book Depot, 1993
10. M. Hiriyanna, Essentials of Indian Philosophy, Motilal Banarsidass Publishers, ISBN-13: 978-8120810990, 2014
11. Ravi Prakash Arya, Engineering and Technology in Ancient India, Indian Foundation for Vedic Science, ISBN-10: 1947593072020
12. Shashi Tharoor, The Hindu Way
13. Amartya Sen, Argumentative Indian

Online Resources:

1. History of Indian Science and Technology - https://onlinecourses.swayam2.ac.in/arp20_ap35/preview
2. Introduction to Ancient Indian Technology – https://onlinecourses.nptel.ac.in/noc19_ae07/preview
3. Indian Culture & Heritage - https://onlinecourses.swayam2.ac.in/nos21_sc11/preview
4. Language and Society - <https://nptel.ac.in/courses/109/106/109106091/>
5. Science, Technology & Society - <https://nptel.ac.in/courses/109/103/109103024/>
6. Introduction to Indian Philosophy - <https://nptel.ac.in/courses/109/106/109106059/>
7. Introduction to Indian Art - An appreciation - https://onlinecourses.nptel.ac.in/noc20_hs09/preview

GENDER SENSITIZATION

Instruction	2	Hours per week
Duration of SEE	2	Hours
SEE	50	Marks
CIE	0	Marks
Credits	0	

Course Objectives

This course will introduce the students to:

1. Sensibility regarding issues of gender in contemporary India.
2. A critical perspective on the socialization of men and women.
3. Popular debates on the politics and economics of work while helping them reflect critically on gender violence.

Course Outcomes

After successful completion of the course the students will be able to:

1. Understand the difference between “Sex” and “Gender” and be able to explain socially constructed theories of identity.
2. Recognize shifting definitions of “Man” and “Women” in relation to evolving notions of “Masculinity” and “Femininity”.
3. Appreciate women’s contributions to society historically, culturally and politically.
4. Analyze the contemporary system of privilege and oppressions, with special attention to the ways gender intersects with race, class, sexuality, ethnicity, ability, religion, and nationality.
5. Demonstrate an understanding of personal life, the workplace, the community and active civic engagement through classroom learning.

UNIT – I**Understanding Gender:**

Gender: Why Should We Study It? (*Towards a World of Equals*: Unit -1)

Socialization: Making Women, Making Men (*Towards a World of Equals*: Unit -2)

Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste. Different Masculinities.

UNIT – II**Gender And Biology:**

Missing Women: Sex Selection and Its Consequences (*Towards a World of Equals*: Unit -4)

Declining Sex Ratio. Demographic Consequences.

Gender Spectrum: Beyond the Binary (*Towards a World of Equals*: Unit -10)

Two or Many? Struggles with Discrimination.

UNIT – III

Gender and Labour:

Housework: the Invisible Labour (*Towards a World of Equals*: Unit -3)

“My Mother doesn’t Work.” “Share the Load.”

Women’s Work: Its Politics and Economics (*Towards a World of Equals*: Unit -7)

Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT-IV

Issues Of Violence

Sexual Harassment: Say No! (*Towards a World of Equals*: Unit -6)

Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further Reading: “Chupulu”.

Domestic Violence: Speaking Out (*Towards a World of Equals*: Unit -8)

Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional Reading: New Forums for Justice.

Thinking about Sexual Violence (*Towards a World of Equals*: Unit -11)

Blaming the Victim-“I Fought for my Life....” - Additional Reading: The Caste Face of Violence.

UNIT – V

Gender: Co - Existence

Just Relationships: Being Together as Equals (*Towards a World of Equals*: Unit -12)

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Additional Reading: Rosa Parks-The Brave Heart.

Textbook:

1. A. Suneetha, Uma Bhugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu “**Towards a World of Equals: A Bilingual Textbook on Gender**” published by Telugu Akademi, Hyderabad, Telangana State, 2015.

Suggested Reading:

1. Menon, Nivedita. *Seeing like a Feminist*. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. “**I Fought For My Life...and Won.**” Available online at: <http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulali/>

Web Resources:

1. <https://aifs.gov.au/publications/gender-equality-and-violence-against-women/introduction>
2. <https://theconversation.com/achieving-gender-equality-in-india>

Note: Since it is an Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

23EEA101

SANSKRIT FOR TECHNICAL KNOWLEDGE

Instruction	2 Hours per Week
Duration of SEE	2 Hours
SEE	50 Marks
CIE	-
Credits	-

Prerequisite: None**COURSE OBJECTIVES:** This course aims to

1. Get a working knowledge in illustrious Sanskrit, the scientific language in the world.
2. Make the novice Learn the Sanskrit develop the logic in mathematics, science & other subjects.
3. Explore the huge knowledge from ancient literature.

COURSE OUTCOMES: After the completion of this course, the student will be able to

1. Develop passion towards Sanskrit language.
2. Decipher the latent engineering principles from Sanskrit literature.
3. Correlates the technological concepts with ancient Sanskrit history.
4. Develop knowledge for technological progress.
5. Explore the avenue for research in engineering with the aid of Sanskrit.

CO-PO Articulation Matrix

PO CO	PO 1	PO 2	PO 3	PO 4
CO 1	-	1	1	1
CO 2	2	1	1	1
CO 3	2	1	1	1
CO 4	2	1	1	1
CO 5	2	1	1	1

1 - Slightly; 2 - Moderately; 3 - Substantially

UNIT - I

Introduction Sanskrit language: Sanskrit Alphabets- Vowels-consonants- significance of Amarakosa-parts of speech - Morphology - creation of new words - significance of synonyms-sandhi-samasa-sutras-active and passive voice-Past/Present/Future Tense - syntax - Simple Sentences (elementary treatment only)

UNIT - II

Role of Sanskrit in Basic sciences: Brahmagupthas lemmas (second degree indeterminate equations), sum of squares of n-terms of AP- sulba_sutram or baudhayana theorem (origination of pythagorous theorem)- Value of pie- Madhavas sine and cosine theory (origination of Taylors series). The measurement system-time-mass-length-temp, Matter elasticity-optics-speed of light (origination of michealson and morley theory).

UNIT - III

Role of Sanskrit in Engineering- I (Civil, Mechanical, Electrical and Electronics Engineering): Building construction-soil testing-mortar-town planning-Machine definition-crucible-furnace-air blower - Generation of electricity in a cell- magnetism - Solar system - Sun: The source of energy, the earth-Pingala chandasutram (origination of digital logic system)

UNIT - IV

Role of Sanskrit in Engineering- II (Computer Science Engineering & Information Technology): Computer languages and the Sanskrit languages-computer command words and the vedic command words-analogy of pramana in memamsa with operators in computer language-sanskrit analogy of physical sequence and logical sequence, programming.

UNIT - V

Role of Sanskrit in Engineering- III (Biotechnology and Chemical Engineering): Classification of plants-plants, the living-plants have senses-classification of living creatures- Chemical laboratory location and layout-equipment-distillation vessel-kosthiyanthram

TEXT BOOKS:

1. M Krishnamachariar, “History of Classical Sanskrit Literature”, TTD Press, 1937.
2. Kpail Kapoor, Language, “Linguistics and Literature: The Indian Perspective”, ISBN-10: 8171880649, 1994.
3. “Pride of India”, Samskrita Bharti Publisher, ISBN: 81-87276-27-4, 2007
4. Shri Rama Verma, “Vedas the source of ultimate science”, Nag publishers, ISBN: 81-7081-618-1, 2005

SUGGESTED READING:

1. “The Wonder that is Sanskrit”, Auro Publications, ISBN: 978-8170601821, 2017. 2.“Science in Sanskrit”, Samskrita Bharti Publisher, ISBN-13: 978-8187276333, 2007
2. “A Treasury of Indian Wisdom: An Anthology of Spiritual Learn”, ISBN: 978-0143426158, 2016.

23ECA101

VALUE EDUCATION

(Audit Course)

Instruction	2 L Hours per Week
Duration of SEE	2 Hours
SEE	50 Marks
CIE	-
Credits	0

Prerequisite: Knowledge about universal human values.

COURSE OBJECTIVES: This course aims to

1. Understand Value Education, self-development and National development.
2. Imbibe good human values and Morals in students.
3. Let the student know about the importance of character.

COURSE OUTCOMES: After the completion of this course, the student will be able to

1. Summarize classification of values and values for self-development.
2. Identify the importance of values in personal and professional life.
3. Apply the importance of social values for better career and relationships.
4. Compile the values from holy books for personal and social responsibility.
5. Discuss concept of soul and reincarnation, values Dharma, Karma and Guna.

CO-PO Articulation Matrix

PO CO	PO 1	PO 2	PO 3	PO 4
CO 1	1	1	1	3
CO 2	1	1	1	3
CO 3	1	1	1	3
CO 4	1	1	1	3
CO 5	1	1	1	3

1 - Slightly; 2 - Moderately; 3 - Substantially

UNIT - I

Human Values, Ethics and Morals: Concept of Values, Human Values, Indian concept of humanism, Values for self-development, social values, Individual attitudes, Work ethics, Moral and non- moral behavior, Standards and Principles based on religion, Culture and Tradition.

UNIT - II

Value Cultivation, and Self-Management: Need for and Importance of cultivation of values such as Sense-of Duty, Devotion work, Self-reliance, Confidence, Concentration, Integrity & discipline, and Truthfulness.

UNIT - III

Spiritual Outlook and Social Values: Personality and Behavior Development, Scientific attitude and Spiritual (soul) outlook, Cultivation of Social Values Such as Positive Thinking, Punctuality, Love & Kindness, avoiding fault finding in others, Reduction of anger, Forgiveness, Dignity of labor, True friendship, Universal brotherhood and religious tolerance., Happiness Vs Suffering, Love for truth, Aware of self-destructive habits, Appreciation and co-operation.

UNIT - IV

Values in Holy Books: Self-management, good health and internal & external cleanliness, Holy books versus Blind faith, Character and Competence, Equality, Nonviolence, Humility, Role of Women.

UNIT - V

All religions and same message: Mind your mind, Self-control, Concept of soul, Science of Reincarnation, Character and Conduct, Concept of Dharma, Cause and Effect based Karma Theory, The qualities of Devine and Devilish, Satwic, Rajasic and Tamasic gunas.

TEXT BOOK:

1. Chakroborty, S.K. “Values & Ethics for organizations Theory and practice”, Oxford University Press, New Delhi, 1998.

SUGGESTED READING:

1. Jaya DayalGoyandaka, “Srimad Bhagavad Gita”, with Sanskrit Text, Word meaning and Prose meaning, Gita Press, Gorakhpur, 2017.

23EGA102

CONSTITUTION OF INDIA

Instruction	2 L Hours per Week
Duration of SEE	2 Hours
SEE	50 Marks
CIE	-
Credits	0

Prerequisite: Knowledge on basics of the Constitution and the Government.

COURSE OBJECTIVES: This course aims to

1. The history of Indian Constitution and its role in the Indian democracy.
2. Address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
3. Have knowledge of the various Organs of Governance and Local Administration.

COURSE OUTCOMES: After the completion of this course, the student will be able to

1. Understand the making of the Indian Constitution and its features.
2. Understand the Rights of equality, the Right of freedom and the Right to constitutional remedies.
3. Have an insight into various Organs of Governance - composition and functions.
4. Understand powers and functions of Municipalities, Panchayats and Co-operative Societies.
5. Understand Electoral Process, special provisions.

CO-PO Articulation Matrix

PO/PSO CO	PO1	PO2	PO3	PO4
CO 1	2	1	-	1
CO 2	2	1	-	1
CO 3	2	1	-	1
CO 4	2	1	-	1
CO 5	2	1	-	1

UNIT-I

History of making of the Indian constitutions - History, Drafting Committee (Composition & Working).

Philosophy of the Indian Constitution: Preamble, Salient Features.

UNIT-II

Contours of Constitutional Rights and Duties - Fundamental Rights, Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies, Directive Principles of State Policy, Fundamental Duties.

UNIT-III

Organs of Governance - Parliament : Composition, Qualifications, Powers and Functions

Union executives : President, Governor, Council of Ministers, Judiciary, appointment and transfer of judges, qualifications, powers and functions.

UNIT-IV

Local Administration - District's Administration head: Role and importance. Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation. Panchayati Raj: Introduction, PRI: Zilla Panchayat, Elected Officials and their roles, CEO Zilla Panchayat: positions and role.

Block level: Organizational Hierarchy (Different departments) Village level: role of elected and appointed officials. Importance of grass root democracy.

UNIT-V

Election commission: Election Commission: Role and functioning, Chief Election Commissioner and Election Commissioners, State Election Commission: Role and functioning. Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXT BOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Busi, S. N., Dr. B. R. Ambedkar, Framing of Indian Constitution”, 1st Edition, Ava Publishers, New Delhi, 2015.
3. Jain, M. P., “Indian Constitution Law”, 7th Edition, Lexis Nexis, New Delhi, 2014.
4. Basu, D.D. “Introduction to the Constitution of India”, Lexis Nexis, New Delhi., 2015.

SUGGESTED READING:

1. Bhargava, Rajeev. (ed), “Politics and Ethics of the Indian Constitution”, OUP, 2008.
2. NCERT, Indian Constitution at Work, 1st Edition, Government of India, New Delhi 2006, reprinted in 2022.
3. Ravindra Sastry, V. (ed.), Indian Government & Politics, 2nd edition, Telugu Akademy, 2018.

Online Resources:

1. <http://www.nptel.ac.in/courses/103107084/Script.pdf>

23EGA101

ENGLISH FOR RESEARCH PAPER WRITING

Instruction	2 L Hours per Week
Duration of SEE	2 Hours
SEE	50 Marks
CIE	-
Credits	0

Prerequisite: Writing to express on science and technological concepts with good taste for research and development.

COURSE OBJECTIVES: This course aims to

1. Motivate learners for academic writing and thus encourage them for continuous professional updating and up-gradation.
2. Facilitate a practical understanding of the multiple purposes of Writing Research Papers and help them infer the benefits and limitations of research in science and technology.
3. Brainstorm and develop the content, formulating a structure and illustrating the format of writing a research paper.
4. Survey and select a theme/topic for a thorough reading and to writing a research paper.
5. Understand to implement the intricacies of writing and publishing a research paper.

COURSE OUTCOMES: After the completion of this course, the student will be able to

1. Improve work performance and efficiency, illustrate the nuances of research paper writing and draw conclusions on professional usefulness.
2. Classify different types of research papers and organize the format and citation of sources.
3. Explore various formats of APA, MLA and IEEE and set up for writing a research paper.
4. Draft paragraphs and write theme based thesis statements in a scientific manner.
5. Develop an original research paper while acquiring the knowledge of how and where to publish their papers.

CO-PO Articulation Matrix

PO/PSO	CO	PO1	PO2	PO3	PO4
	CO 1	1	2	1	2
	CO 2	1	1	1	-
	CO 3	2	2	2	1
	CO 4	2	2	1	1
	CO 5	3	3	1	2

UNIT - I

Academic Writing: Meaning & Definition of a research paper; Purpose of a research paper - Scope, Benefits, Limitations and outcomes for professional development, An introduction to methods and Approaches of Research.

UNIT - II

Research Paper Format: Title - Abstract - Introduction - Discussion - Findings - Conclusion - Style of Indentation - Font size/Font types - Indexing - Citation of sources.

UNIT - III

Process of Writing a Research Paper, Writing to Draft a Format, Develop Content, Adapting, Reviewing, Paraphrasing & Plagiarism Checks.

UNIT - IV

Choosing a topic - Thesis Statement - Outline - Organizing notes - Language of Research - Word order, Paragraphs - Writing first draft-Revising/Editing - The final draft and proof reading. Understanding APA, MLA, IEEE formats.

UNIT - V

Research Paper Publication Reputed Journals –Paid, Free and peer reviewed journals, National/International - ISSN No, No. of volumes, Scopus Index/UGC Journals. Getting Papers Published.

TEXTBOOKS:

1. Kothari, C. R. and Gaurav, Garg, “Research Methodology Methods and Techniques”, 4th Edition, New Age International Publishers, New Delhi, 2019.
2. Ellison, Carroll. “Writing Research Papers”, McGraw Hill’s Concise Guide, 2010.
3. Lipson, Charles. “Cite Right: A Quick Guide to Citation Styles-- MLA, APA, Chicago, the Sciences, Professions, and More”, 2nd Edition,. University of Chicago Press. Chicago, 2018.

SUGGESTED READING:

1. Day, Robert A. “How to Write and Publish a Scientific Paper”, Cambridge University Press, 2006
2. Girden, E. R. “MLA Handbook for Writers of Research Papers”, 7th Edition, East West Press Pvt. Ltd, New Delhi, 2009
3. Bailey, Stephen. “Academic Writing: A Handbook for International Students”, Routledge, 2018

Online Resources:

1. https://onlinenptel.ac.in/noc_18_mg13/preview
2. <https://nptel.ac.in/courses/121/106/121106007/>
3. <https://www.classcentral.com/course/swayam-introduction-to-research-5221>

NPTEL Courses:

S.No.	NPTEL Course Name	Instructor	Host Institute
1	Introduction to Research (Research Methodology)	Dr. Prathap Haridoss, Dr. G. Phanikumar, Dr. Arun K. Tangirala, Prof. M.S. Ananth, Prof. C. Balaji, Dr. Abhijit P. Deshpande, Prof. Edamana Prasad	IIT Madras

Other Writing Tools:

1	https://owl.purdue.edu/owl_exercises/index.html - The Owl writing lab
2	https://www.turnitin.com/login_page.asp?lang=en_us –Turnitin software

With effect from AY 2023-24

23MEO202

**HUMAN VALUES AND PROFESSIONAL ETHICS
(OPEN ELECTIVE-I)**

Instruction	3L Hours per week
Duration of Semester End Examination	3 Hours
Semester End Examination	60 Marks
Continuous Internal Evaluation	40 Marks
Credits	3

Pre-requisites: No formal pre-requisites

COURSE OBJECTIVES: This course aims to

1. Understand the significance of values in life.
2. Understand the need for value adoption and prepare them meet the challenges.
3. Develop the potential to adopt values, develop a good character and personality and lead a happy life.
4. Practice the values in life and contribute for the society around them and for the development of the Institutions/organization.
5. Understand the professional ethics and their applications to engineering profession.

COURSE OUTCOMES: After completion of this course, student will be able to

After completion of the course, students would be able to:

1. State basic values and the need for value education.
2. Analyze the situation and prioritize values for making right decisions in their personal as well as professional life.
3. Understand the role of a human being in ensuring harmony in society and nature.
4. Demonstrate the knowledge of ethics at their work place and apply different theoretical approaches to solve ethical dilemmas.
5. Apply risk and safety measures in the engineering practice.

Mapping of Course Outcomes with Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	1	1	1	1	1	1
CO2	1	1	1	2	1	1
CO3	1	1	1	1	1	1
CO4	1	1	1	3	1	1
CO5	1	1	1	1	1	1

UNIT-I

Concepts and classification of values –need and challenges for value adoption: Definition of values , concept of values, classification of values, hierarchy of values, types of values, espoused and applied values, value judgment based on culture , value judgment based on tradition , interdependence of values, need for value education ,findings of commissions and committees, corruption and illegal practices , science and technology without values, exploitation of nature, increasing use of violence and intoxicants , lack of education in values ,implications of education in values , vision for a better India, challenges for value adoption ,cultural, social, religious, intellectual and personal challenges.

UNIT-II

Personality development and values in life: Enlightened self-interest, accountability and responsibility , desires and weaknesses , character development, good relationships, self-restraint, spirituality and purity, the quest for character , tests of character , the key to good character ,values in life, building an ethical policy, integrating values in everyday life, archaic social values , parenting practices, critical thinking, analyzing and prioritizing values, practicing yoga and meditation.

UNIT-III

Practicing values for the development of society: Resentment management and self- analysis, positive thinking and emotional maturity, the importance of women , children and taking care of them, helping the poor and needy, fighting against addictions and atrocities, environmental awareness, working for the sustainable development of the society, values in education system, present scenario, engineering education, current trends, need for quality improvement, adoption of value education, principles of integrity, institutional development.

UNIT-IV

Basic concepts of professional ethics: Ethics, morals and human life , types of ethics, personal ethics, professional ethics, ethical dilemmas, Indian and global thoughts on ethics, profession, professional and professionalism, ethical role of a professional basic ethical principles, some basic ethical theories, use of ethical theories - science, religion ethics, genders and ethics, media and ethics, computer ethics, case studies on professional ethics, exemplary life sketches of prominent Indian personalities.

UNIT- V

Ethics in engineering profession: Engineering profession, technology and society, engineering as social experimentation, engineering ethics, ethical obligations of engineering professionals, role of engineers, engineers as managers, professional responsibilities of engineers, engineers responsibility for safety, a few case studies on risk management, conflicts of interest, occupational crimes, plagiarism, self-plagiarism, ethics audit, consideration for ethics audit, ethics standards and bench marking.

TEXT BOOKS:

1. Subramanian R., Professional Ethics, Oxford University Press, 2017.
2. Dinesh BabuS., Professional Ethics and Human Values, Laxmi Publications, 2016.
3. Nagarajan R.S., A Text Book on Human Values and Professional Ethics, New Age Publications, 2007.

SUGGESTED READING:

1. Santosh Ajmera and Nanda Kishore Reddy, Ethics, Integrity and Aptitude, McGraw hill Education Private Limited, 2014.
2. Govinda Rajan M., Natarajan S., Senthil Kumar V.S., Professional Ethics and Human Values, Prentice Hall India Private Limited, 2013.