

### **1.3.1 - Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum (A.Y 2021-22)**

#### **ENVIRONMENTAL SCIENCE**

##### **Course Objectives:**

The objectives of the course are to impart:

- Overall understanding of the natural resources.
- Basic understanding of the ecosystem and its diversity.
- Acquaintance on various environmental challenges induced due to planned anthropogenic activities.
- An understanding of the environmental impact of developmental activities.
- Awareness on the social issues, environmental legislation and global treaties.

##### **UNIT I**

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information technology in environment and human health. Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem; Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids; Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.

##### **UNIT II**

Natural Resources: Natural resources and associated problems.

Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.

Water resources: Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.

Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources.

Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

##### **UNIT III**

Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity-classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.

## UNIT IV

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Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.

Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics.

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### Human Values Courses

This course also discusses their role in their family. It, very briefly, touches issues related to their role in the society and the nature, which needs to be discussed at length in one more semester for which the foundation course named as “H-102 Universal Human Values 2: Understanding Harmony” is designed which may be covered in their III or IV semester. 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.

## Universal Human Values

### Understanding Harmony

Course code: HSMC (H-102)

Credits: L-T-P-C 2-1-0-3 or 2L:1T:0P 3 credits

Pre-requisites: None. Universal Human Values 1 (desirable)

### 1. Objective:

**The objective of the course is four fold:**

1. Development of a holistic perspective based on self-exploration about themselves (human being), family, society and nature/existence.

2. Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence
3. Strengthening of self-reflection.
4. Development of commitment and courage to act.

## **2. Course Topics:**

**The course has 28 lectures and 14 practice sessions in 5 modules:**

### **Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education**

1. Purpose and motivation for the course, recapitulation from Universal Human Values-I
2. Self-Exploration-what is it? - Its content and process; 'Natural Acceptance' and Experiential Validation- as the process for self-exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. 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!**

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

12. 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**

13. Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfillment to ensure mutual happiness; Trust and Respect as the foundational values of relationship
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16. Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals
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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 with scenarios. Elicit examples from students' lives

#### **Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Coexistence**

18. Understanding the harmony in the Nature
19. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
20. Understanding Existence as Co-existence of mutually interacting units in all-pervasive space
21. Holistic perception of harmony at all levels of existence.

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.

#### **Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics**

22. Natural acceptance of human values
23. Definitiveness of Ethical Human Conduct
24. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
25. Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people- friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems.
26. Case studies of typical holistic technologies, management models and production systems
27. 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
28. Sum up.

Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. To discuss the conduct as an engineer or scientist etc.

#### **3. READINGS:**

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#### **4. MODE OF CONDUCT (L-T-P-C 2-1-0-3 or 2L:1T:0P 3 credits)**

Lectures hours are to be used for interactive discussion, placing the proposals about the topics at hand and motivating students to reflect, explore and verify them.

Tutorial hours are to be used for practice sessions.

While analysing 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 mentor, in a group sitting.

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would also provide support to a student in performing actions commensurate to his/her beliefs. It is intended that this would lead to development of commitment, namely behaving and working based on basic human values.

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This course is to be taught by faculty from every teaching department, including HSS faculty. Teacher preparation with a minimum exposure to at least one 8-day FDP on Universal Human Values is deemed essential.

  
PRINCIPAL  
St. Mary's Group of Institutions Guntur  
CHEBROLU (V&M), Guntur (Dt.)

## **5. 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:

Assessment by faculty mentor: 10 marks

Self-assessment: 10 marks

Assessment by peers: 10 marks

Socially relevant project/Group Activities/Assignments: 20 marks

Semester End Examination: 50 marks

The overall pass percentage is 40%. In case the student fails, he/she must repeat the course.

## **6. OUTCOME OF THE COURSE:**

By the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature); they would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.

They would have better critical ability. They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society). It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

This is only an introductory foundational input. It would be desirable to follow it up by

a) faculty-student or mentor-mentee programs throughout their time with the institution

b) Higher level courses on human values in every aspect of living. E.g. as a professional

Our institute's commitment in offering technologically sophisticated programmes for rural aspirants through a value-based, societal sensitive educational community is clear from its vision statement. All of the courses offered at the institution follow the curriculum established by the affiliating university (JNTUK), which prescribed to offer courses that address cross-cutting issues such as sustainability, environmental management, and professional ethics.

## **Professional Ethics and Human Values :**

The objective in offering educational programmes is to turn out successful young professionals who can tackle social problems with fresh ideas and effective solutions. Engineers must weigh the advantages and disadvantages of technology using their creativity, professional ethics, and values. Students who take this course during their under graduation will better appreciate the significance of these principles in the workplace. Universal Human Values (UHV) will be provided as a component of the Student Induction Programme (SIP), in accordance with latest AICTE standards.

The course's goal is to empower students to make wise decisions based on their knowledge and skills in every circumstance. It also hopes to have a beneficial influence on students' mental processes so that they can better serve the needs of the community. To strengthen awareness and foster a sense of community between students and professors, universal human principles have been established. The goal of these activities is to direct young people's energy into productive uses.

## **Gender Equality**

Gender equality is an ongoing effort that requires the collective action of individuals, communities, organizations, and governments. Our institute advocates gender equality and has undertaken activities to educate its stakeholders about the value of women in society. The management's commitment in empowering women has been demonstrated during the process of hiring staff in both teaching and non-teaching rolls which is at a rate of 50% female, at least. At our institute, an Women Empowerment Cell (WEC) has been set up with the intention of instilling confidence among female staff in handling and overcoming challenges. The WEC is quite active in organizing events like Women's Day, Equality Day, etc. All the students and staff are given equal opportunity to participate in academic, co-curricular, and extracurricular activities and training is equal for boys and girls. Our efforts are in a continuous manner for creating a more inclusive and equal society for all genders.

## **Environment and Sustainability :**

As mandated by JNTUK, the course Environmental Studies in engineering programme covers a topics on sustainability and environmental studies. In this course, students receive systematic instruction on :

- The value of protecting natural resources
- Environmental concerns and evaluations in urban and rural settings
- Means of Pollution and methods to handle its various types
- Significance of developing a green campus that is self-sufficient in terms of plantation, landscaping, as well as power, water, and trash management

Our institute promotes student involvement in initiatives during activities like Swachh Bharat, Tree Plantations, Save Energy – Save Earth, etc.

  
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Gender equality is an ongoing effort that requires the collective action of individuals, communities, organizations, and governments. Our institute advocates gender equality and has undertaken activities to educate its stakeholders about the value of women in society. The management's commitment in empowering women has been demonstrated during the process of hiring staff in both teaching and non-teaching rolls which is at a rate of 50% female, at least. At our institute, an Women Empowerment Cell (WEC) has been set up with the intention of instilling confidence among female staff in handling and overcoming challenges. The WEC is quite active in organizing events like Women's Day, Equality Day, etc. All the students and staff are given equal opportunity to participate in academic, co-curricular, and extracurricular activities and training is equal for boys and girls. Our efforts are in a continuous manner for creating a more inclusive and equal society for all genders.

## **Environment and Sustainability :**

As mandated by JNTUK, the course Environmental Studies in engineering programme covers a topics on sustainability and environmental studies. In this course, students receive systematic instruction on :

- The value of protecting natural resources
- Environmental concerns and evaluations in urban and rural settings
- Means of Pollution and methods to handle its various types
- Significance of developing a green campus that is self-sufficient in terms of plantation, landscaping, as well as power, water, and trash management

Our institute promotes student involvement in initiatives during activities like Swachh Bharat, Tree Plantations, Save Energy – Save Earth, etc.

  
PRINCIPAL  
St. Mary's Group of Institutions Guntur  
CHEBROLU (V&M), Guntur (D.T.)