

## List of Courses in the Curriculum which address the Gender, Environment and Sustainability, Human Values and Professional Ethics:

1. English Language & Technical Communication – HU101
2. Language Laboratory – HU181/191
3. Extra Curricular Activities (NSS/NCC/NSO, etc) – XC181
4. Values and Ethics in Profession – HU301/401
5. Basic Environmental Engineering and Elementary Biology – CH301/401
6. Group Discussion – HU781/791

## Description of Courses in the Curriculum which address the Gender, Environment and Sustainability, Human Values and Professional Ethics:

### English

**PAPER CODE: HU 101**

**CONTACT: 2L**

**CREDIT: 2**

**PAPER NAME: ENGLISH LANGUAGE & TECHNICAL COMMUNICATION**

### Guidelines for Course Execution:

Objectives of the Course: This Course has been designed

1. To impart advanced skills of Technical Communication in English through Language Lab. Practice Sessions to 1<sup>st</sup> Semester UG students of Engineering & Technology.
2. To enable them to communicate confidently and competently in English Language in all spheres.

### Desired Entry Behaviour:

The students must have basic command of English to  
Talk about day-to-day events and experiences of life.  
Comprehend Lectures delivered in English.  
Read and understand relevant materials written in English.  
Write grammatically correct English.

### Strategies for Course Execution:

1. It is a Course that aims to develop Technical Communication Skills. It is, therefore, *Lab*- based and practical in orientation. Students should be involved in Practice Sessions.
2. The content topics should be conveyed through real-life situations. Lecture classes should be conducted as Lecture cum Tutorial classes.
3. Keeping in view the requirements of students, the teachers may have to prepare some learning aids task materials.
4. Some time should be spent in teaching stress and intonation.
5. In teaching 'Speaking skill,' emphasis should be on *clarity, intelligibility, fluency, (as well as accepted pronunciation)*.
6. Micro Presentation and Group Discussion Sessions should be used for developing Communicative Competence
7. The Language Lab, device should be used for giving audio-visual inputs to elicit students' responses by way of Micro-Presentation, Pair Conversation, Group Talk and Class Discussion.
8. The teacher must function as *a creative monitor in the Language Lab for the following:*
  - A. Developing Listening Comprehension Skill;
    1. Developing Listening Comprehension through Language Lab Device
    2. Developing sub skills of the Listening Skill by Conversational Practice Sessions
    3. Focusing on intelligent and advanced Listening Sessions e.g. Seminars, Paper Presentation, Mock Interviews etc.
    4. Conducting Conversational Practice: Face to Face & Via Media (Telephone, Audio, Video +

Clips)

B. Developing Speaking Competence:

- a) Helping students in achieving *clarity and fluency* ; manipulating paralinguistic features of speaking (*voice modulation ,pitch , tone stress , effective pauses* )  
Conducting *Task oriented interpersonal ,informal and semiformal Speaking / Classroom Presentation*
- b) *Teaching strategies for Group Discussion*  
*Teaching Cohesion and Coherence*  
*Teaching effective communication & strategies for handling criticism and adverse remarks*  
*Teaching strategies of Turn- taking, effective intervention, kinesics (use of body language) and courtesies and all components of softskills.*

C. Developing Reading Comprehension Skill:

a) Developing Reading Skill through Non Technical (Literary) Texts  
(See Recommended Book 5)

- 1. The Thief by Ruskin Bond
- 2. The Open Window by Saki
- 3. Marriage is a private Affair by Chinua Achebe
- 4. The Moon in the Earthen Pot by Gopini Karunakar

b) Developing Reading Skill through Radio Commentary, Technical Texts and Case Studies (Refer to Recommended Book 1.)

\* Freedom by G. B. Shaw (Radio Commentary)

- a) Guiding students for Intensive & Extensive Reading( See Recommended Book 1 )

D. Developing Writing Competence:

- a) Teaching all varieties of Technical Report, Business Letters and Job Application (Expressing Ideas within restricted word limit through paragraph division, Listing Reference Materials through Charts , Graphs ,Tables and Diagrams);
- b) Teaching correct Punctuation & Spelling, Semantics of Connectives, Modifiers and Modals, variety of sentences and paragraphs
- c) Teaching Organizational Communication: Memo, Notice, Circular, Agenda / Minutes etc.

SYLLABUS -- DETAILED OUTLINES

A. ENGLISH LANGUAGE GRAMMAR:

5L

Correction of Errors in Sentences  
Building Vocabulary  
Word formation  
Single Word for a group of Words  
Fill in the blanks using correct Words  
Sentence Structures and Transformation  
Active & Passive Voice  
Direct & Indirect Narration  
(MCQ Practice during classes)

B. READING COMPREHENSION:

Strategies for Reading Comprehension 1L  
Practicing Technical & Non Technical Texts for Global/Local/Inferential/Referential comprehension; 3L  
Précis Writing

C. TECHNICAL COMMUNICATION

The Theory of Communication –Definition & Scope  
Barriers of Communication  
Different Communication Models 2  
Effective Communication (Verbal / Non verbal)

Presentation / Public Speaking Skills  
(MCQ Practice during classes)

5L

**HU 181/191(Practical)**

**LANGUAGE LABORATORY CONTACTS: 2P**

**CREDIT: 1**

**LANGUAGE LABORATORY PRACTICE**

a) Honing 'Listening Skill' and its sub skills through Language Lab Audio device;	3P
b) Honing 'Speaking Skill' and its sub skills;	2P
c) Helping them master Linguistic/Paralinguistic features (Pronunciation/Phonetics/Voice modulation/ Stress/ Intonation/ Pitch & Accent) of connected speech;	2P
j) Honing 'Conversation Skill' using Language Lab Audio –Visual input; Conversational Practice Sessions (Face to Face / via Telephone , Mobile phone & Role Play Mode);	2P
k) Introducing 'Group Discussion' through audio –Visual input and acquainting them with key strategies for success;	2P
f) G D Practice Sessions for helping them internalize basic Principles (turn- taking, creative intervention, by using correct body language, courtesies & other soft skills) of GD;	4P
g) Honing 'Reading Skills' and its sub skills using Visual / Graphics/Diagrams /Chart Display/Technical/Non Technical Passages; Learning Global / Contextual / Inferential Comprehension;	2P
h) Honing 'Writing Skill' and its sub skills by using Language Lab Audio –Visual input; Practice Sessions	2P
Total Practical Classes	17

Books Recommended:

Dr. D. Sudharani: Manual for English Language Laboratory  
Pearson Education (WB edition),2010

Board of Editors: Contemporary Communicative English  
for Technical Communication  
Pearson Longman, 2010

**Extra Curricular Activities(NSS/NCC/NSO etc)**

**Code: XC181**

**Code Credits: 1**

- a) Creating awareness in social issues
- b) Participating in mass education programmes
- c) Proposal for local slum area development
- d) Waste disposal
- e) Environmental awareness
- f) Production Oriented Programmes
- g) Relief & Rehabilitation work during Natural calamities

Creating awareness in social issues:

1. Women's development – includes health, income-generation, rights awareness.
2. Hospital activities – Eg. writing letters for patients, guiding visitors
3. Old age home – visiting the aging in-mates, arranging for their entertainment.
4. Children's Homes - visiting the young in-mates, arranging for their entertainment
5. Linking with NGOs to work on other social issues. (Eg. Children of sex-workers)
6. Gender issues- Developing an awareness, to link it with Women's Cell of college

Participating in mass education programmes

1. Adult education

## 2. Children's education

### Proposal for local slum area development

One or two slums to be identified and according to the needs, activities to be developed and proposals and reports are to be submitted.

### Environmental awareness

- Resource conservation – Awareness to be developed on water, energy, soil.
- Preservation of heritage monuments- Marches, poster campaigns
- Alternative energy consciousness amongst younger school-children.
- Plantation and beautification- Plantation of trees, their preservation and upkeep, developing NSS parks.
- Waste disposal- Proper methods of domestic waste disposal.

### Production Oriented Programmes

5. Working with people and explaining and teaching improved agricultural practices
6. Rodent control and pest control practices;
7. Soil-testing, soil health care and soil conservation;
8. Assistance in repair of agriculture machinery;
9. Work for the promotion and strengthening of cooperative societies in villages;
10. Assistance and guidance in poultry farming, animal husbandry, care of animal health etc.;
11. Popularization of small savings and
12. Assistance in procuring bank loans

### Relief & Rehabilitation work during Natural calamities

- g) Assisting the authorities in distribution of rations, medicine, clothes etc.;
- h) Assisting the health authorities in inoculation and immunization, supply of medicine etc.;
- i) Working with the local people in reconstruction of their huts, cleaning of wells, building roads etc.;
- j) Assisting and working with local authorities in relief and rescue operation;  
Collection of clothes and other materials, and sending the same to the affected areas;

## D. MASTERING TECHNICAL COMMUNICATION

Technical Report (formal drafting)	3L
Business Letter (formal drafting)	4L
Job Application (formal drafting)	3L
Organizational Communication (see page 3)	3L
Group Discussion – Principle & Practice	3L
Total Lectures	30

## MARKS SCHEME (Written Examination)

Total Marks 70

1. 10 Multiple Choice Questions (Communication & Eng. Language-Vocabulary & Syntax)  
Marks 10
2. Short Questions & Précis writing on unseen passages  
Marks 15 (10+5)
3. 3 Essay type Questions on Technical Communication (Technical Report / Business Letter / Job Application / Organizational Communication etc.)  
Marks 45-15\*3

## MARKS SCHEME (Internal Examination)

Total Marks 30

1. Attendance  
Marks 5
2. Testing Speaking Ability  
4  
Marks 5
3. Testing Listening Ability  
Marks 5

**BOOKS -- RECOMMENDED:**

1. Board of Editors: Contemporary Communicative English  
for Technical Communication  
Pearson Longman, 2010
2. Dr. D. Sudharani: Manual for English Language Laboratory  
Pearson Education (W.B. edition), 2010
3. Technical Communication Principles and Practice by Meenakshi Raman, Sangeeta Sharma (Oxford Higher Education)
4. Effective Technical Communication by Barun K. Mitra (Oxford Higher Education)
5. V. Sashikumar (ed.): Fantasy- A Collection of Short Stories  
Orient Black swan (Reprint 2006)

**References:**

1. D. Thakur: Syntax Bharati Bhawan, 1998
2. Longman Dictionary of Contemporary English  
(New Edition) for Advanced Learners
3. Internet

**VALUES & ETHICS IN PROFESSION****Code: HU 301/401****Contacts: 3L****Credits: 3****Science, Technology and Engineering as knowledge and as Social and Professional Activities**

M#	Content	Hrs
1	Effects of Technological Growth: Rapid Technological growth and depletion of resources, Reports of the Club of Rome. Limits of growth: sustainable development Energy Crisis: Renewable Energy Resources, Environmental degradation and pollution. Eco-friendly Technologies. Environmental Regulations, Environmental Ethics Appropriate Technology Movement of Schumacher; later developments Technology and developing notions. Problems of Technology transfer, Technology assessment impact analysis. Human Operator in Engineering projects and industries. Problems of man, machine, interaction, Impact of assembly line and automation. Human centered Technology.	12
2	Ethics of Profession: Engineering profession: Ethical issues in Engineering practice, Conflicts between business demands and professional ideals. Social and ethical responsibilities of Technologists. Codes of professional ethics. Whistle blowing and beyond, Case studies	8
3	Profession and Human Values: Values Crisis in contemporary society. Nature of values: Value Spectrum of a good life. Psychological values: Integrated personality; mental health. Societal values: The modern search for a good society, justice, democracy, secularism, rule of law, values in Indian Constitution. Aesthetic values: Perception and enjoyment of beauty, simplicity, clarity Moral and ethical values: Nature of moral judgements; canons of ethics; ethics of virtue; ethics of duty; ethics of responsibility.	10

**Books:**

1. Stephen H Unger, Controlling Technology: Ethics and the Responsible Engineers, John Wiley & Sons, New York 1994 (2nd Ed)
2. Deborah Johnson, Ethical Issues in Engineering, Prentice Hall, Englewood Cliffs, New Jersey 1991.
3. A N Tripathi, Human values in the Engineering Profession, Monograph published by IIM, Calcutta 1996.

**BASIC ENVIRONMENTAL ENGINEERING & ELEMENTARY BIOLOGY****Code: CH 301/401****Contacts: 3L****Credits: 3**

M#	Content	Hrs
1	<b>General:</b> Basic ideas of environment, basic concepts, man, society & environment, their interrelationship. Mathematics of population growth and associated problems, Importance of population study in environmental engineering, definition of resource, types of resource, renewable, non-renewable,	6

	potentially renewable, effect of excessive use vis-a-vis population growth, Sustainable Development. Materials balance: Steady state conservation system, steady state system with non conservative pollutants, step function. Environmental degradation: Natural environmental Hazards like Flood, earthquake, Landslide-causes, effects and control/management; Anthropogenic degradation like Acid rain-cause, effects and control. Nature and scope of Environmental Science and Engineering.	
2	<b>Ecology:</b> Elements of ecology: System, open system, closed system, definition of ecology, species, population, community, definition of ecosystem- components types and function. Structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems, Mangrove ecosystem (special reference to Sundar ban); Food chain [definition and one example of each food chain], Food web. Biogeochemical Cycle- definition, significance, flow chart of different cycles with only elementary reaction [Oxygen, carbon, Nitrogen, Phosphate, Sulphur]. Biodiversity- types, importance, Endemic species, Biodiversity Hot-spot, Threats to biodiversity, Conservation of biodiversity.	6
3	<b>Air pollution and control:</b> Atmospheric Composition: Troposphere, Stratosphere, Mesosphere, Thermosphere, Tropopause and Mesopause. Energy balance: Conductive and Convective heat transfer, radiation heat transfer, simple global temperature model [Earth as a black body, earth as albedo], Problems. Green house effects: Definition, impact of greenhouse gases on the global climate and consequently on sea water level, agriculture and marine food. Global warming and its consequence, Control of Global warming. Earth's heat budget. Lapse rate: Ambient lapse rate Adiabatic lapse rate, atmospheric stability, temperature inversion (radiation inversion). Atmospheric dispersion: Maximum mixing depth, ventilation coefficient, effective stack height, smokestack plumes and Gaussian plume model. Definition of pollutants and contaminants, Primary and secondary pollutants: emission standard, criteria pollutant. Sources and effect of different air pollutants- Suspended particulate matter, oxides of carbon, oxides of nitrogen, oxides of sulphur, particulate, PAN. Smog, Photochemical smog and London smog. Depletion Ozone layer: CFC, destruction of ozone layer by CFC, impact of other green house gases, effect of ozone modification. Standards and control measures: Industrial, commercial and residential air quality standard, control measure (ESP. cyclone separator, bag house, catalytic converter, scrubber (ventury), Statement with brief reference).	11
4	<b>Water Pollution and Control :</b> Hydrosphere, Hydrological cycle and Natural water. Pollutants of water, their origin and effects: Oxygen demanding wastes, pathogens, nutrients, Salts, thermal application, heavy metals, pesticides, volatile organic compounds. River/Lake/ground water pollution: River: DO, 5 day BOD test, Seeded BOD test, BOD reaction rate constants, Effect of oxygen demanding wastes on river[deoxygenation, reaeration], COD, Oil, Greases, pH. Lake: Eutrophication [Definition, source and effect]. Ground water: Aquifers, hydraulic gradient, ground water flow (Definition only) Standard and control: Waste water standard [BOD, COD, Oil, Grease], Water Treatment system [coagulation and flocculation, sedimentation and filtration, disinfection, hardness and alkalinity, softening] Waste water treatment system, primary and secondary treatments [Trickling filters, rotating biological contractor, Activated sludge, sludge treatment, oxidation ponds] tertiary treatment definition. Water pollution due to the toxic elements and their biochemical effects: Lead, Mercury, Cadmium, and Arsenic	9
5	<b>Land Pollution:</b> Lithosphere; Internal structure of earth, rock and soil Solid Waste: Municipal, industrial, commercial, agricultural, domestic, pathological and hazardous solid wastes; Recovery and disposal method- Open dumping, Land filling, incineration, composting, recycling. Solid waste management and control (hazardous and biomedical waste).	3
6	<b>Noise Pollution &amp; Environmental Management:</b> Definition of noise, effect of noise pollution, noise classification [Transport noise, occupational noise, neighbourhood noise], Definition of noise frequency, noise pressure, noise intensity, noise threshold limit value, equivalent noise level, L10 (18hr Index) , n Ld . Noise pollution control. Environmental impact assessment, Environmental Audit, Environmental laws and protection act of India, Different international environmental treaty/ agreement/ protocol.	4

**Reference Books:**

Masters, G. M. Introduction to Environmental Engineering and Science, Prentice-Hall of India Pvt. Ltd., 1991.  
De, A. K., "Environmental Chemistry", New Age International.

**Group Discussion & Seminar**

**Code: HU 791/891**

**Contacts: 3P**

**Credits: 2**