1.3.1: List of courses which address the Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum during A.Y. 2023-24

Topic	Name of Course	Name of Program offering course	% Covered
Environment and Sustainability	Environment Studies-I	Basic Engineering	100
	Environment Studies-II		100
	Engineering Geology	Civil Engineering	100
	Geotechnical Engineering		100
	Disaster Management		100
	Waste Water Engineering		100
	Solid Waste Management(elective-II)		100
	Hydrology and Water Resources Engineering		100
	Transportation Engineering		100
	Air Pollution and control(Elective)		100
	Applied Thermodynamics	Mechanical Engineering	100
	Heating, Ventilation, Air Conditioning &refrigeration Engineering		100
	Energy Audit & Management		100
	Solar & Wind Energy		100
	Energy Engineering		100
	Corporate Social Responsibility & Sustanability	MBA	35
Human Values	Audit Course-I (Industrial Safety)	Civil Engineering	100
	Humanity & Social Science	Computer Engineering	100
	Code of Conduct		100
	Audit Course- IV(Yoga & Meditation)		100
	Audit Course I : Fire & Safety Technology	Mechanical Engineering	100
	Principles and Practices of Management and Organizational Behavior	MCA	30
Professional Ethics	Principles and Practices of Management and Organizational Behavior	MCA	30
	Awareness to Civil Engineering Practices	Civil Engineering	100
	Project Based Learning		100
	Seminar		100
	Project Management		100
	Internship		100
	Employability Skills Development		100
	Project-I		100
	Project Work		100
	Code of Conduct	Computer Engineering	100
	Audit Course- V(Professional Ethics & Etiquettes)		100
	Seminar & Technical Comminiucation		100
	Audit Course- VI(Leadership & Personality Development)		100
	Project Work- StageI		100
	Project Work- StageII		100
	Audit Course-III	Mechanical Engineering	100
	Machine Shop		100
	Project Based Learning-II		100
	Audit Course- IV		100

	Skill Development		100
	Audit Course- V(Smart Maunfacturing)		100
	Industrial In-plant Training-I		100
	Project-I		100
	Project-II		100
	Indian Ithos & Buisness Ethics	MBA	80
	Verbal Communication Lab		100
Gender Equality	Enternshi Analysis- Desk Research	MBA	10

Dr. Soumitra Das
Incharge Principal

TH:02 Hrs./week	101007: Environmental Studies-I (Mandatory Non-Credit Course)

Course Objectives:

1. To explain the concepts and strategies related to sustainable development and various components of environment.
2. To examine biotic and abiotic factors within an ecosystem, to identify food chains, webs, as well as energy flow and relationships.
3. To identify and analyze various conservation methods and their effectiveness in relation to renewable and nonrenewable natural resources.
4. To gain an understanding of the value of biodiversity and current efforts to conserve biodiversity on national and local scale.

Course Outcomes: On completion of the course, learner will be able to–

CO1:Demonstrate an integrative approach to environmental issues with a focus on sustainability.

CO2: Explain and identify the role of the organism in energy transfers in different ecosystems.

CO3: Distinguish between and provide examples of renewable and nonrenewable resources & analyze personal consumption of resources.

CO4: Identify key threats to biodiversity and develop appropriate policy options for conserving biodiversity in different settings.

Unit I **Introduction to environmental studies** **(02 Hrs)**

Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere. Scope and importance; Concept of sustainability and sustainable development.

Unit II **Ecosystems** **(06 Hrs)**

What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems:

a) Forest ecosystem
b) Grassland ecosystem
c) Desert ecosystem
d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit III **Natural Resources: Renewable and Non-renewable Resources** **(08 Hrs)**

Land Resources and land use change; Land degradation, soil erosion and desertification.

Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.

Water: Use and over-exploitation of surface and ground water, floods droughts, conflicts over water (international & inter-state).

Heating of earth and circulation of air; air mass formation and precipitation.

Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit IV **Biodiversity and Conservation** **(08 Hrs)**

Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots. India as a mega-biodiversity nation; Endangered and endemic species of India. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity; In-situ and Ex-situ conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

Suggested Readings:

1. Carson, R. 2002. Silent spring. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R.1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
3. Gleeson,B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
4. Gleick, P.H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. Principals of Conservation Biology.
   Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339:36-37.
7. McCully, P.1996. Rivers no more: the environmental effects of dams (pp.29-64). Zed Books.
8. McNeil, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.

107008 – Engineering Mathematics – II

Teaching Scheme:	**Credits**	**Examination Scheme:**
TH : 4 Hrs./Week	**05**	**In-Semester : 30 Marks**
TUT : 1 Hr./Week		**End-Semester : 70 Marks**
		TW : 25 Marks

Prerequisites:

Integration, Differential Equation, Three-dimensional coordinate systems

Dept. of Civil Engg.

101014: Environmental Studies-II	
TH: 02 Hr/week	**Mandatory Non-Credit Course**

Course Objectives:

1. To provide a comprehensive overview of environmental pollution and the science and technology associated with the monitoring and control.
2. To understand the evolution of environmental policies and laws.
3. To explain the concepts behind the interrelations between environment and the development.
4. To examine a range of environmental issues in the field, and relate these to scientific theory.

Course Outcomes: On completion of the course, learner will be able to–

CO1: Have an understanding of environmental pollution and the science behind those problems and potential solutions.

CO2: Have knowledge of various acts and laws and will be able to identify the industries that are violating these rules.

CO3: Assess the impact of ever increasing human population on the biosphere: social, economic issues and role of humans in conservation of natural resources.

CO4: Learn skills required to research and analyze environmental issues scientifically and learn how to use those skills in applied situations such as careers that may involve environmental problems and/or issues.

Course Contents

Unit V **Environmental Pollution** **(08 Hrs)**

Environmental pollution : types, causes, effects and controls; Air, water, soil, chemical and noise pollution

Nuclear hazards and human health risks

Solid waste management: Control measures of urban and industrial waste

Bharati College of Engineering & Management
H.O.D.
Dept. of
Civil Engg.
Pune-411005

Pollution case studies.

Unit VI **Environmental Pollution** **(07 Hrs)**

Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities& agriculture.Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto Protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC).Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context

Unit VII **Human Communities and the Environment** **(06 Hrs)**

Human population and growth; Impacts on environment, human health and welfares.

Carbon foot-print. Resettlement and rehabilitation of project affected persons; case studies. Disaster management: floods earthquakes, cyclones and landslides. Environmental movements: Chipko, Silent valley, Bishnios of Rajasthan. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.

Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

Unit VIII **Field work** **(05 Hrs)**

- Visit to an area to document environmental assets; river/forest/flora/fauna, etc.
- Visit to a local polluted site – Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river Delhi Ridge, etc

Suggested Readings:

1. Carson, R. 2002. Silent spring. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R.1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
3. Gleeson,B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
4. Gleick, P.H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. Principals of Conservation Biology, Sunderland: Sinauer Associates, 2006
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339:36-37.
7. McCully, P.1996. Rivers no more: the environmental effects of dams (pp.29-64). Zed Books.
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Dept. of
Civil Engg.

Savitribai Phule Pune University, Pune
Second Year Civil Engineering (2019 Pattern)
Road Safety Management
Audit Course I

Teaching Scheme:
Practical: 01 hrs/week

(Certificate to be issued by institute based on performance assessment)

Road transport remains the least safe mode of transport, with road accidents representing the main cause of death of people. The boom in the vehicle population without adequate road infrastructure, poor attention to driver training and unsatisfactory implementation of regulations have been responsible for increase in the number of accidents. India's vehicle population is negligible as compared to the world statistics; but the comparable proportion for accidents is substantially large. The need for strict enforcement of law to ensure greater safety on roads and an environment-friendly road transport operation is of paramount importance. Safety and security are growing concerns for businesses, governments and the traveling public around the world, as alsoin India. It is, therefore, essential to take new initiatives in raising awareness, skill and knowledge of students as one of the important stake holders who are expected to follow the rules and policies
of the government in order to facilitate safety of individual and safe mobility of others.

Course Objectives:

1. To provide basic overview on road safety & traffic management issues in view of the alarming increase in vehicular population of the country.
2. To explain the engineering & legislative measures for road safety.
3. To discuss measures for improving road safety education levels among the public.

Course Outcomes:

On completion of the course, learners will be able to…

CO1: Summarize the existing road transport scenario of our country

CO2: Explain the method of road accident investigation

CO3: Describe the regulatory provisions needed for road safety

CO4: Identify the safety issues for a road and make use of IRC's road safety manual for conducting road safety audit.

Course Contents (During 1hr Practical Session per week)

Unit I: Existing Road Transport Scenario **(02 Hours.)**

Introduction, national & international statistics related to road transport. Factors responsible for increase in vehicle growth. Share of public transport: importance and current scenario (national & international)

Suggestion for effective content delivery: Displaying updated and authentic statistics & real time scenario images during the session.

Unit II: Road Accidents & its Investigation **(03 Hours.)**

Definition of road accident. National & international statistics related to road accidents. Causes of road accident. Remedies / Measures for control road accidents. Methods for accident investigation. Condition diagram & collision diagram. Black spots & its identification based on accident data.

Suggestion for effective content delivery:

i.] Activity related to drawing condition & collision diagram based on actual accident data. ii.] Activity related to identification of black spots based on actual accident data

Unit III: Motor Vehicle Act & Central Motor Vehicle Rules **(03 Hours.)**

The Motor Vehicle Act of 1988. Central Motor Vehicle Rules (CMVR) of 1989. Amendments to CMVR – 2017 & 2019.

Suggestion for effective content delivery:

i.] Guest lecture by RTO Officer / Traffic Police Officer.

ii.] Public awareness campaign

Unit IV: Road Safety Audit (RSA) **(04 Hours.)**

Introduction & importance of RSA. Methodology, phases and checklists for Road Safety Audit as per IRC SP: 88 – 2010 (Manual on Road Safety Audit)

Suggestion for effective content delivery:

Mini project – Conducting Road Safety Audit on minimum 2 km (both directions included) road stretch in the nearby vicinity.

Guidelines for Conduction (Any one or more of following but not limited to)

1. Guest Lectures.
2. Visits and reports.
3. Assist government authorities like Municipal corporations, RTO in Road Safety Audits
4. Mini Project

Guidelines for Assessment (Any one or more of following but not limited to)

1. Written Test
2. Practical Test
3. Presentation
4. Report

H.O.D. Dept. of Civil Engg. Pune-410506

Savitribai Phule Pune University, Pune

Second Year Civil Engineering (2019 Pattern)

Awareness to Civil Engineering Practices

Audit Course I

Teaching Scheme:

Practical: 01 hrs/week

(Certificate to be issued by institute based on performance assessment)

Civil Engineering is the oldest engineering profession comprising of a variety of sub-disciplines such as Structural Engineering, Geotechnical, Water resources, Environmental Engineering, Construction technology, Transportation Engineering etc. Undergraduate programs are designed with different theoretical approaches on the application of basic sciences to solve different societal problems by engineering knowledge. However, there is a need to make the students aware about how the Civil Engineering industry operates and how theories taught in different courses are applied in practice. The students can learn from the experience gained from different workplaces such Civil Engineering consultancies, contracting companies, construction sites etc. The course aims to provide insight of the different practices followed by the industry such as use of different documents & contracts in Civil Engineering practice, drawings required, engineering ethics, duties and responsibilities of the engineers, site records and diaries, health and safety practices on site.

Course Objectives:

1. To provide basic overview of functioning of different Civil Engineering related industries / firms.
2. To create awareness about application of different drawings, contract documents in Civil Engineering.
3. To provide insight of code of ethics, duties and responsibilities, health and safety as a Civil Engineer.

Course Outcomes:

On completion of the course, learner will be able to…

CO1: Describe functioning/working of different types of industries/sectors in Civil Engineering.

CO2: Describe drawings and documents required and used in different Civil Engineering works.

CO3: Understand the importance of Code of Ethics to be practiced by a Civil Engineer and also understand the duties and responsibilities as a Civil Engineer.

CO4: Understand different health and safety practices on the site.

Course Contents (During 1hr. Practical Session per week)

Unit I: Sectors in Civil Engineering **(03 Hours.)**

Details of different Sectors/sub-disciplines in Civil Engineering along with the following details: description, eminent institutes in India & abroad, related research institutes, noteworthy projects, higher education, latest & ongoing research in the domain, jobs opportunities in government as well as private sector.

Suggestion for effective content delivery:

Lecture cum interaction by alumni of your college working in different sectors of Civil Engineering

Unit II: Drawings and Documents **(03 Hours.)**

H.O.D. Dept. of Civil Engg. Indira College of Engineering & Management Pune-410506

Types of drawings in different construction projects. Contract agreement & other documents in different construction projects.

Suggestion for effective content delivery:

i.] Visit to various construction sites/ architectural firms/ structural engineering firms etc. to understand drawings, documents & working culture.

ii.] Lecture by professional practitioner

Unit III: Engineering Ethics **(03 Hours.)**

Introduction, moral issues and moral dilemmas. Code of ethics in Civil Engineering followed by Construction Industry Development Council (CIDC) of India, national & international associations and institutes. Effective case studies (Minimum 2 case studies).

Suggestion for effective content delivery:

Case study based content delivery method, Lecture by professional practitioner

Unit IV: Construction Site Safety **(03 Hours.)**

Importance of site safety. Different health and safety parameters during actual execution of Civil Engineering constructions. Safety measures: conventional and modern.

Suggestion for effective content delivery:

On site visit & lecture by professional practicing Safety Engineer.

Guidelines for Assessment (Any one or more of following but not limited to)

1. Group discussion
2. Presentation
3. Mini Project / Activity
4. Site visit report
5. Guest lecture report

H.O.D. Dept. of Civil Engg.
Pune-419506

2. Business Communication, P.D. Chaturvedi, Pearson Education
3. Business Communication, T N Chhabra, Bhanu Ranjan, Sun India
4. Verbal and Non-Verbal Reasoning, Prakash, P, Macmillan India Ltd., New Delhi
5. Objective English, Thorpe, E, and Thorpe, S, Pearson Education, New Delhi

Suggested Reference Books:

1. Communication Skills for Effective Management, Hargie et. al., Palgrave
2. Communication for Business, Tayler Shinley, Pearson Education
3. Technical Communication, Anderson, P.V, Thomson Wadsworth, New Delhi
4. The Oxford Guide to Writing and Speaking, John Seely, Oxford University Press, New Delhi
5. Dictionary of Common Errors, Turton, N.D and Heaton, J.B, Addision Wesley Longman Ltd.

Semester I		114 - Enterprise Analysis - Desk Research
2 Credits	LTP: 0:3:1	Generic Elective – Institute Level

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO114.1	REMEMBERING	DESCRIBE the key historical, organizational, market related, financial, governance, leadership and social responsibility dimensions of a real world business organization.
CO114.2	UNDERSTANDING	SUMMARIZE the regional, national and global footprint of a real world business organization.
CO114.3	APPLYING	DEMONSTRATE the use of secondary – offline and online resources to profile a real world business organization.
CO114.4	ANALYSING	ANALYSE, using tables and charts, the trends in market standing and financial performance of a real world business organization over the last 5 years.
CO114.5	EVALUATING	COMPOSE a succinct summary of future plans of a real world business organization the company website, shareholders reports and other information available in the public domain.
CO114.6	CREATING	IMAGINE the key challenges and opportunities for a real world business organization in the immediate future (1 to 3 years).

1. **Enterprise History & Background:** Establishment, Original & Current Promoters, Business Group or Business Family to which it belongs, Vision-Mission-Philosophy – Values-Quality Policy, Brief profiles of the Chairman, CEO, MD, Members of Board of Directors along with their career highlights CSR Initiatives, Technical and other collaborations if any, Recent Mergers and Acquisitions, if any. **(6)**
2. **Organization :** Organization Structure, Geographical (domestic and global) foot print – at the time of inception and spread over the years, company's current head quarter worldwide as well as head quarter / corporate office in India, Manufacturing /Service locations Indian and major worldwide, Certifications if any - ISO / EMS / FDA / CMMI , etc. Online presence. Initiatives towards gender diversity, Initiatives towards social inclusion, Initiatives towards environment conservation. Current Talent needs. Key highlights of the company's website. **(6)**
3. **Markets:** Major Customers, customer segments, Products, Product lines, Major Brands, Market Share – nationally, region wise, product wise, Advertising Agency, Advertising Punch Line/Slogan, Logo, Key Alliances in the past 5 years & impact. Mergers & Acquisitions, if any. Technological developments. Dirsuptive innovations affecting the organization. Labour unrest if any – reasons thereof and impact. Emerging potential competition through first generation entrepreneurs or global / local players. **(6)**
4. **Financials:** Data to be studied, tabulated, graphically depicted, analyzed and presented for last 5 years for the Revenues, Profitability, Market Capitalization, Segmented Revenues, Auditors. Listing status & Scrip Codes – BSE and NSE, Global Listings on International Stock Markets, Share Price Face Value, Current Market Value, Annual High Low Figures, P/E Ratio, Shareholding Pattern. **(6)**
5. **Governance:** Philosophy, Action taken by SEBI if any, Involvement in Scams, Insider Trading Issues, Standard & Poor's Corporate Governance Scores, CRISIL Rating. Major Awards and Achievements of the Organization in the last 5 years. Forward looking statements of the top management. **(6)**

Note: