



Criteria 1- Curricular Aspects

Key Indicator- 1.3 Curriculum Enrichment

1.3.1 Institution integrates cross-cutting issues relevant to Professional Ethics, Human Values, Environment and Sustainability, and Gender into the curriculum



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Professional Ethics

SR.NO	Professional Ethics Related Syllabus or Activities	Course Code	Department
1	Communication Skills	FEC206	First year Engineering
2	Professional Communication and Ethics-I	FEC206	First year Engineering
3	Professional Communication and Ethics-I	FEL205	First year Engineering
4	Professional Communication and Ethics-II	CSL504	Computer Engineering
5	Professional Communication and Ethics	CEL505	Civil Engineering
6	Professional Communication and Ethics-II	MESBL501	Mechanical Engineering
7	Professional Communication and Ethics-II	ECL504	Electronics and Telecommunication Engineering
8	Professional Communication & Ethics-II	ELL504	Electrical Engineering
9	Information Security	MCA23	Masters in Computer Application
10	Digital Marketing and Business Analytics	MCAE25	Masters in Computer Application
Activities Based on Professional Ethics			
Sr.No.	Activities		
1	Industry Institute Interaction		
2	Webinar On Leadership		
3	Seminar on Intellectual Property Rights		
4	Professional Communication		



Human Values

SR.NO	Human Value Related Syllabus or Activities	Course Code	Department
1	Project Management	ILO8022	Computer Engineering
2	Major Project 1	CSP701	Computer Engineering
3	Project Management	CECILOC8021	Civil Engineering
4	Management Information System	ECCILO7013	Electronics and Telecommunication Engineering
5	Project Management	ECCILO8021	Electronics and Telecommunication Engineering
6	Software Project Management	MCA14	Masters in Computer Application
7	Soft Skill Development Lab	MCAL22	Masters in Computer Application
8	Mathematical Foundation for Computer Science 1	MCA11	Masters in Computer Application
9	Mathematical Foundation for Computer Science 1	MCA21	Masters in Computer Application
10	Project Management	ILO8021	Electrical Engineering

Activities Based on Human Values:

Sr.No.	Activities
1	Yoga Awareness & It's Practical Demonstration
2	Computer Education For Students In Zillha Parishad School
3	Interaction With Students In Zillha Parishad School
4	Social Awareness Program "Importance of education
5	Blood Donation Camp
6	Laughter yoga
7	Pledge To Act Against Covid-19
8	Vegan Day Event

9	Event On Covid Care For Students
10	Road Safety Rally



11	Art Of Living
12	Constitution Day Event
13	Maharashtra Day

Environment and Sustainability

Environment and Sustainability Related Syllabus or Activities	Course Code	Department
Environmental Studies	FEC106	First Year Engineering
Environmental Engineering	CEL604	Civil Engineering
Industrial Waste Treatment	CEDLO8015	Civil Engineering
Micro-grid	EEDLO6O22	Electrical Engineering
Renewable Energy Sources	EEDO5011	Electrical Engineering
Activities Based on Environment and Sustainability:		
Activities		
Tree Plantation		
Village Cleanness		
Beach Cleanness		
World Environment Day Celebration		

Gender Sensitization

Sr.NO	Particulars
1	Woman's Development Committee
Activities Based on Gender Sensitization	
Sr.No.	Activities
1	Tidying up Your Space
2	Gender Equality Awareness Programme
3	Youth Day
4	Swanatrata
5	Balancing Personal and Professional Life
6	International Women's Day Celebration on "The power of positivity"



Professional Ethics

Professional Ethics			
SR.NO	Professional Ethics Related Syllabus or Activities	Course Code	Department
1	Communication Skills	FEC206	First year Engineering
2	Professional Communication and Ethics-I	FEC206	First year Engineering
3	Professional Communication and Ethics-I	FEL205	First year Engineering
4	Business Communication & Ethics II	CSL504	Computer Engineering
5	Professional Communication and Ethics	CEL505	Civil Engineering
6	Professional Communication and Ethics-II	MESBL501	Mechanical Engineering
7	Professional Communication and Ethics-II	ECL504	Electronics and Telecommunication Engineering
8	Professional Communication & Ethics-II	ELL504	Electrical Engineering
9	Information Security	MCA23	Masters in Computer Application
10	Digital Marketing and Business Analytics	MCAE25	Masters in Computer Application

First Year Engineering

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
FEC206	Communication Skills	02	02	--	02	01	--	03

Course Code	Course Name	Examination Scheme							
		Theory				Term Work	Pract	Oral	Total
		Internal Assessment			End Sem Exam				
		Test1	Test2	Av of Test 1 & 2					
FEC206	Communication Skills	10	10	10	40	25	--	--	75

Objectives

1. To acquaint the students with appropriate language skills with the purpose of improving the existing ones – LSRW





2. To make the learners understand the importance and effective use of non-verbal communication
3. To make the learner proficient in public speaking and presentation skills
4. To guide and teach the students to utilize the principles of professional business and technical writing for effective communication in the global world
5. To make the learner capable of creating official content digitally for further communication in the corporate environment

Outcomes: Learner will be able to...

1. Understand and evaluate information they listen to and express their ideas with greater clarity
2. Speak and respond effectively along the various channels of communication in a business organization
3. Speak convincingly before an audience with the help of an expanded vocabulary and enhanced digital content
4. Read and summarize effectively
5. Communicate through result oriented writing both within and outside the organization.
6. Write a set of effective and easy to understand technical description, instructions and convey the same using global information technology

Module	Detailed Contents	Hrs.
01	Communication Theory: Concept and Meaning, Communication cycle, Objectives, Barriers to communication (linguistic and semantic, psychological, physical, mechanical, cultural), Methods of communication (verbal and non-verbal), Networks of communication (formal and informal), Language skills (listening, speaking, reading, writing), Corporate communication: Digital Content Creation.	13
02	Business Correspondence: Principles of Business Correspondence, Parts of a business letter, Formats (Complete block and Modified block), Types of letters: Enquiry, Reply to enquiry, Claim, Adjustment and Sales letter.	05
03	Grammar and Vocabulary: Common errors, Concord (subject- verb agreement), Pairs of confused words, Lexicon (Enriching vocabulary through one-word substitutes, synonyms, antonyms, etc.)	02
04	Summarization and Comprehension: Passages to test the analytical skills and expression	02
05	Technical writing : Techniques to define an object, writing instructions, language exercises based on types of expositions (description of an object, explanation of a process)	02
06	Information Communication Technology (ICT) enabled communication media: E-mail, Blog and Website.	02

The distribution of Term Work marks will be as follows -

Attendance : 05 marks

Assignments : 20 mark





List of assignments:

1. Communication theory: 02
2. Business Correspondence: 02
3. Grammar and vocabulary: 01
4. Summarization & Comprehension: 01
5. Technical writing: 01
6. ICT enabled communication media: 01

Assessment:

Internal Assessment Test:

Assessment consists of two class tests of 10 marks each. The first test should be conducted in the form of a three-minute public speech. The second test should be based on theory and application exercises as mentioned in the syllabus.

End Semester Theory Examination:

1. Question paper will comprise of total 06 questions, each carrying 10 marks.
2. Total 04 questions need to be solved.
3. Question No: 01 will be compulsory and based on entire syllabus wherein sub-questions of 3 to 5 marks will be asked.
4. Remaining questions will be mixed in nature.(e.g. Suppose Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3)
5. In question paper weightage of each module will be proportional to number of respective lecture hrs as mentioned in the syllabus.
6. The first module (Communication Theory) will carry 40 % weightage.

References:

1. Communication in Organizations by Dalmar Fisher, Jaico Publishing House
2. Communication Skills by Meenakshi Raman & Sangeeta Sharma,
3. Oxford University Press.
4. Business Correspondence & Report-writing by R.C. Sharma & Krishna Mohan, Tata McGraw-Hill Education.
5. Effective Technical Communication by Ashraf Rizvi, Tata McGraw-Hill.
6. Technical Writing & Professional Communication for non-native speakers of English by Thomas N. Huckin & Leslie A. Olsen, McGraw –Hill.
7. Mastering Communication by Nicky Stanton, Palgrave Master Series
8. www.businesscommunicationskills.com
9. www.kcitraing.com
10. www.mindtools.com
11. Journal of Business Communication

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Tut.	Pract.	Total





FEC206	Professional Communication and Ethics- I	2	--	--	2	--	--	2	
Course Code	Course Name	Examination Scheme							
		Theory					Term Work	Pract. /oral	Total
		Internal Assessment			End Sem. Exam.	Exam. Duration (in Hrs)			
		Test1	Test 2	Avg.					
FEC206	Professional Communication and Ethics- I	10	10	10	40	2	--	--	50

Objectives

1. To demonstrate the fundamental concepts of interpersonal and professional communication.
2. To encourage active listening with focus on content, purpose, ideas and tone.
3. To facilitate fluent speaking skills in social, academic and professional situations.
4. To train in reading strategies for comprehending academic and business correspondence.
5. To promote effective writing skills in business, technology and academic arenas.
6. To inculcate confident personality traits along with grooming and social etiquettes.

Outcomes: Learners will be able to understand how to...

1. Eliminate barriers and use verbal/non-verbal cues at social and workplace situations.
2. Employ listening strategies to comprehend wide-ranging vocabulary, grammatical structures, tone and pronunciation.
3. Prepare effectively for speaking at social, academic and business situations.
4. Use reading strategies for faster comprehension, summarization and evaluation of texts.
5. Acquire effective writing skills for drafting academic, business and technical documents.
6. Successfully interact in all kinds of settings, displaying refined grooming and social skills.

Module	Detailed Contents	Hrs.
	FUNDAMENTALS OF COMMUNICATION	



1	1.1. Introduction to Theory of Communication <ul style="list-style-type: none"> ● Definition ● Objectives ● Postulates/Hallmarks ● The Process of Communication ● Organizational Communication <ul style="list-style-type: none"> ○ Formal (Upward, Downward and Horizontal) ○ Informal (Grapevine) 1.2. Methods of Communication <ul style="list-style-type: none"> ● Verbal (Written & Spoken) ● Non-verbal <ul style="list-style-type: none"> ○ Non-verbal cues perceived through the five senses: (Visual, Auditory, Tactile, Olfactory and Gustatory cues) ○ Non-verbal cues transmitted through the use of: (The Body, Voice, Space, Time and Silence) 1.3. Barriers to Communication	12
	<ul style="list-style-type: none"> ● Mechanical/External ● Physical/Internal ● Semantic & Linguistic ● Psychological ● Socio-Cultural 1.4. Communication at the Workplace <ul style="list-style-type: none"> ● Corporate Communication - Case Studies ● Listening Tasks with Recordings and Activity Sheets ● Short Speeches as Monologues <ul style="list-style-type: none"> ○ Informative Speeches that Center on People, Events, Processes, Places, or Things ○ Persuasive Speeches to Persuade, Motivate or Take Action ○ Special Occasion Speeches for Ceremonial, Commemorative, or Epideictic purposes ● Pair-work Conversational Activities (Dialogues) ● Short Group Presentations on Business Plans 	



	<ul style="list-style-type: none"> ● Mechanical/External ● Physical/Internal ● Semantic & Linguistic ● Psychological ● Socio-Cultural <p>1.5. Communication at the Workplace</p> <ul style="list-style-type: none"> ● Corporate Communication - Case Studies ● Listening Tasks with Recordings and Activity Sheets ● Short Speeches as Monologues <ul style="list-style-type: none"> ○ Informative Speeches that Center on People, Events, Processes, Places, or Things ○ Persuasive Speeches to Persuade, Motivate or Take Action ○ Special Occasion Speeches for Ceremonial, Commemorative, or Epideictic purposes ● Pair-work Conversational Activities (Dialogues) ● Short Group Presentations on Business Plans 	
2	VERBAL APTITUDE FOR EMPLOYMENT	02
	<p>2.1. Vocabulary Building</p> <ul style="list-style-type: none"> ● Root words (Etymology) ● Meaning of Words in Context ● Synonyms & Antonyms ● Collocations ● Word Form Charts ● Prefixes & Suffixes ● Standard Abbreviations <p>2.2. Grammar</p> <ul style="list-style-type: none"> ● Identifying Common Errors <ul style="list-style-type: none"> ○ Subject - Verb Agreement ○ Misplaced Modifiers ○ Articles ○ Prepositions ● Tautologies ● Pleonasms (Redundancies) ● Idioms ● Cliches 	



3	DEVELOPING READING AND WRITING SKILLS	02
	<p>3.1. Reading Comprehension</p> <ul style="list-style-type: none">● Long Passages● Short Passages● MCQs on Inferential Questions with 4 Options <p>3.2. Summarization of reading passages, reports, chapters, books</p> <ul style="list-style-type: none">● Graphic Organizers for Summaries<ul style="list-style-type: none">○ Radial Diagrams like Mind Maps○ Flow Charts○ Tree Diagrams○ Cyclic Diagrams○ Linear Diagrams like Timelines○ Pyramids○ Venn Diagrams● Point-form Summaries● One-sentence Summaries of Central Idea <p>3.3. Paraphrasing</p> <ul style="list-style-type: none">● Understanding Copyrights● Running a Plagiarism Check on Paraphrased Passages● Generating Plagiarism Reports	
	BUSINESS CORRESPONDENCE	



4	<p>4.1. Seven Cs of Business Correspondence</p> <ul style="list-style-type: none"> • Completeness • Conciseness • Consideration • Concreteness • Clarity • Courtesy • Correctness <p>4.2. Parts of a Formal Letter and Formats</p> <ul style="list-style-type: none"> • Parts/Elements of a Formal Letter <ul style="list-style-type: none"> ○ Letterheads and/or Sender's Address ○ Dateline ○ Inside Address ○ Reference Line (Optional) ○ Attention Line (Optional) ○ Salutation ○ Subject Line ○ Body ○ Complimentary Close ○ Signature Block ○ Enclosures/Attachments • Complete/Full Block Format <p>4.3. Emails</p> <ul style="list-style-type: none"> • Format of Emails • Features of Effective Emails • Language and style of Emails <p>4.4. Types of Letters in Both Formal Letter Format and Emails</p> <ul style="list-style-type: none"> • Claim & Adjustment Letters • Request/Permission Letters • Sales Letters 	06
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5	BASIC TECHNICAL WRITING	02
	5.1. Introduction <ul style="list-style-type: none"> What is Technical Writing? Importance and Principles of Technical Writing Difference between Technical Writing & Literary Writing Framing Definitions Difference between Technical Description & Instructions 5.2. Description of a Technical Object <ul style="list-style-type: none"> Definition Diagram Discussion of Parts/Characteristics Working 5.3. Writing User Instructions <ul style="list-style-type: none"> User Instructions Special Notices (Note, Warning, Caution and Danger) Styles of Presentation <ul style="list-style-type: none"> Impersonal Indirect Direct Imperative 5.4. Description of a Technical / Scientific Process	
	<ul style="list-style-type: none"> Definition Diagram Tools/ Apparatus/Software/ Hardware Used Working Result 	
6	PERSONALITY DEVELOPMENT AND SOCIAL ETIQUETTES	02
	6.1. Personality Development <ul style="list-style-type: none"> Introducing Self and/or a Classmate Formal Dress Code 6.2. Social Etiquettes <ul style="list-style-type: none"> Formal Dining Etiquettes Cubicle Etiquettes Responsibility in Using Social Media Showing Empathy and Respect Learning Accountability and Accepting Criticism Demonstrating Flexibility and Cooperation Selecting Effective Communication Channels 	



Assessment:

Internal Assessment Test:

Assessment consists of two class tests of 10 marks each.

TEST I -Public speech on general topics (Maximum 5 mins. per student)

TEST II - Written test covering modules 1 - 6

The second test should be based on theory and application exercises as mentioned in the syllabus. (Note: Summarization should be a compulsory question in Test II and not in the End Semester Theory Examination.)

End Semester Theory Examination:

- 1.Question paper will comprise of total 06 questions, each carrying 15marks.
- 2.Total 04 questions need to be solved.
- 3.Question No: 01 will be compulsory and based on entire syllabus wherein sub-questions of 2 to 5 marks will be asked.
- 4.Remaining questions will be mixed in nature.(e.g. Suppose Q.2 has part (a) from module3 then part (b) will be from any module other than module 3)
- 5.In question paper weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus
6. The first module (Fundamentals of Communication) will carry 40 % weightage.

Text Books.

1. Sanjay Kumar & Pushp Lata (2018). Communication Skills with CD. New Delhi: Oxford University Press.
2. Hemphill, P.D., McCormick, D. W., & Hemphill, R. D. (2001). Business Communication with writing improvement exercises. Upper Saddle River, NJ: Prentice Hall.
3. Locker, Kitty O. Kaczmarek, Stephen Kyo. (2019). Business Communication: Building Critical Skills. Place of publication not identified: Mcgraw-hill.
4. Murphy, H. (1999). Effective Business Communication. Place of publication not identified: Mcgraw-Hill.
5. Raman, M., & Sharma, S. (2016). Technical Communication: Principles and practice. New Delhi: Oxford University Press.
6. Kaul, A. (2015). Effective Business Communication. Place of publication not identified: Prentice-Hall of India.
7. Rizvi, A. M. (2010). Effective Technical Communication: A guide for Scientists and Engineers. New Delhi: Tata McGraw Hill.
8. Lewis, N. (2014). Word power made easy. Random House USA.





Computer Engineering

Course Code	Course Name	Credit
CSL504	Business Communication & Ethics II	02

Course Rationale: This curriculum is designed to build up a professional and ethical approach, effective oral and written communication with enhanced soft skills. Through practical sessions, it augments student's interactive competence and confidence to respond appropriately and creatively to the implied challenges of the global Industrial and Corporate requirements. It further inculcates the social responsibility of engineers as technical citizens.

Course Objectives

1	To discern and develop an effective style of writing important technical/business documents.
2	To investigate possible resources and plan a successful job campaign.
3	To understand the dynamics of professional communication in the form of group discussions, meetings, etc. required for career enhancement.
4	To develop creative and impactful presentation skills.
5	To analyze personal traits, interests, values, aptitudes and skills.
6	To understand the importance of integrity and develop a personal code of ethics.

Course Outcomes: At the end of the course, the student will be able to

1	Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.
2	Strategize their personal and professional skills to build a professional image and meet the demands of the industry.
3	Emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.
4	Deliver persuasive and professional presentations.
5	Develop creative thinking and interpersonal skills required for effective professional communication.
6	Apply codes of ethical conduct, personal integrity and norms of organizational behaviour.



Module	Contents	Hours
1	ADVANCED TECHNICAL WRITING: PROJECT/PROBLEM BASED LEARNING (PBL)	06
	<p>Purpose and Classification of Reports: Classification on the basis of: Subject Matter (Technology, Accounting, Finance, Marketing, etc.), Time Interval (Periodic, One-time, Special), Function (Informational, Analytical, etc.), Physical Factors (Memorandum, Letter, Short & Long)</p> <p>Parts of a Long Formal Report: Prefatory Parts (Front Matter), Report Proper (Main Body), Appended Parts (Back Matter)</p> <p>Language and Style of Reports: Tense, Person & Voice of Reports, Numbering Style of Chapters, Sections, Figures, Tables and Equations, Referencing Styles in APA & MLA Format, Proofreading through Plagiarism Checkers</p> <p>Definition, Purpose & Types of Proposals: Solicited (in conformance with RFP) & Unsolicited Proposals, Types (Short and Long proposals)</p> <p>Parts of a Proposal: Elements, Scope and Limitations, Conclusion</p> <p>Technical Paper Writing: Parts of a Technical Paper (Abstract, Introduction, Research Methods, Findings and Analysis, Discussion, Limitations, Future Scope and References), Language and Formatting, Referencing in IEEE Format</p>	

2	EMPLOYMENT SKILLS	06
	<p>Cover Letter & Resume: Parts and Content of a Cover Letter, Difference between Bio-data, Resume & CV, Essential Parts of a Resume, Types of Resume (Chronological, Functional & Combination)</p> <p>Statement of Purpose: Importance of SOP, Tips for Writing an Effective SOP</p> <p>Verbal Aptitude Test: Modelled on CAT, GRE, GMAT exams</p> <p>Group Discussions: Purpose of a GD, Parameters of Evaluating a GD, Types of GDs (Normal, Case-based & Role Plays), GD Etiquettes</p> <p>Personal Interviews: Planning and Preparation, Types of Questions, Types of Interviews (Structured, Stress, Behavioural, Problem Solving & Case-based), Modes of Interviews: Face-to-face (One-to one and Panel) Telephonic, Virtual</p>	
3	BUSINESS MEETINGS	02
	<p>Conducting Business Meetings: Types of Meetings, Roles and Responsibilities of Chairperson, Secretary and Members, Meeting Etiquette</p> <p>Documentation: Notice, Agenda, Minutes</p>	
4	TECHNICAL/ BUSINESS PRESENTATIONS	02



	Effective Presentation Strategies: Defining Purpose, Analyzing Audience, Location and Event, Gathering, Selecting & Arranging Material, structuring a Presentation, Making Effective Slides, Types of Presentations Aids, Closing a Presentation, Platform skills Group Presentations: Sharing Responsibility in a Team, Building the contents and visuals together, Transition Phases	
5	INTERPERSONAL SKILLS	08
	Interpersonal Skills: Emotional Intelligence, Leadership & Motivation, Conflict Management & Negotiation, Time Management, Assertiveness, Decision Making Start-up Skills: Financial Literacy, Risk Assessment, Data Analysis (e.g. Consumer Behaviour, Market Trends, etc.)	
6	CORPORATE ETHICS	02
	Intellectual Property Rights: Copyrights, Trademarks, Patents, Industrial Designs, Geographical Indications, Integrated Circuits, Trade Secrets (Undisclosed Information) Case Studies: Cases related to Business/ Corporate Ethics	

List of assignments: (In the form of Short Notes, Questionnaire/ MCQ Test, Role Play, Case Study, Quiz, etc.)	
Title of Experiment	
1.	Cover Letter and Resume
2.	Short Proposal

3	Meeting Documentation
4	Writing a Technical Paper/ Analyzing a Published Technical Paper
5	Writing a SOP
6	IPR
7	Interpersonal Skills
Note:	
1	The Main Body of the project/book report should contain minimum 25 pages (excluding Front and Back matter).

2	The group size for the final report presentation should not be less than 5 students or exceed 7 students.
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3	There will be an end-semester presentation based on the book report.
Assessment:	
Term Work:	
1	Term work shall consist of minimum 8 experiments.
2	The distribution of marks for term work shall be as follows: Assignment : 10 Marks Attendance : 5 Marks Presentation slides : 5 Marks Book Report (hard copy) : 5 Marks
3	The final certification and acceptance of term work ensures the satisfactory performance of laboratory work and minimum passing in the term work.
Internal oral: Oral Examination will be based on a GD & the Project/Book Report presentation.	
	Group Discussion : 10 marks Project Presentation : 10 Marks Group Dynamics : 5 Marks
Books Recommended: Textbooks and Reference books	
1	Arms, V. M. (2005). <i>Humanities for the engineering curriculum: With selected chapters from Olsen/Huckin: Technical writing and professional communication, second edition</i> . Boston, MA: McGraw-Hill.
2	Bovée, C. L., & Thill, J. V. (2021). <i>Business communication today</i> . Upper Saddle River, NJ: Pearson.
3	Butterfield, J. (2017). <i>Verbal communication: Soft skills for a digital workplace</i> . Boston, MA: Cengage Learning.
4	Masters, L. A., Wallace, H. R., & Harwood, L. (2011). <i>Personal development for life and work</i> . Mason: South-Western Cengage Learning.
5	Robbins, S. P., Judge, T. A., & Campbell, T. T. (2017). <i>Organizational behaviour</i> . Harlow, England: Pearson.
6	Meenakshi Raman, Sangeeta Sharma (2004) <i>Technical Communication, Principles and Practice</i> . Oxford University Press
7	Archana Ram (2018) <i>Place Mentor, Tests of Aptitude for Placement Readiness</i> . Oxford University Press
8	Sanjay Kumar & PushpLata (2018). <i>Communication Skills a workbook</i> , New Delhi: Oxford University Press.

Electronics and Telecommunication Engineering



Course Code	Course Name	Teaching scheme			Credit assigned			
ECL504	Professional Communication & Ethics-II	Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
		--	2* + 2 Hours (Batch-wise)	--	--	2	--	02

***Theory class to be conducted for full class.**

Course Code	Course Name	Examination Scheme									
		Theory					Term work	Pract	Oral	Internal Oral	Total
		Internal Assessment			End sem	Durati on (hrs)					
		Test 1	Test 2	Avg.							
ECL504	Professional Communication & Ethics-II (abbreviated PCE-II)	--	--	--	--	--	25	--	--	25	50

Course Code	Course Name	Credits
ECL504	Business Communication & Ethics	02
Course Rationale	This curriculum is designed to build up a professional and ethical approach, effective oral and written communication with enhanced soft skills. Through practical sessions, it augments student's interactive competence and confidence to respond appropriately and creatively to the implied challenges of the global Industrial and Corporate requirements. It further inculcates the social responsibility of engineers as technical citizens.	
Course Objectives	<ul style="list-style-type: none"> To discern and develop an effective style of writing important technical/business documents. To investigate possible resources and plan a successful job campaign. To understand the dynamics of professional communication in the form of group discussions, meetings, etc. required for career enhancement. To develop creative and impactful presentation skills. To analyze personal traits, interests, values, aptitudes and skills. To understand the importance of integrity and develop a personal code of ethics. 	

Course Outcomes

Learner will be able to...

- plan and prepare effective business/ technical documents which will inturn provide solid foundation for their future managerial roles.



- strategize their personal and professional skills to build a professional image and meet the demands of the industry.
- emerge successful in group discussions, meetings and result-oriented agreeable solutions in group communication situations.
- deliver persuasive and professional presentations.
- develop creative thinking and interpersonal skills required for effective professional communication.
- apply codes of ethical conduct, personal integrity and norms of organizational behaviour.

Module	Contents	Hours
1	<p>ADVANCED TECHNICAL WRITING :PROJECT/PROBLEM BASED LEARNING (PBL)</p> <p>1.1 Purpose and Classification of Reports: Classification on the basis of:</p> <ul style="list-style-type: none">• Subject Matter (Technology, Accounting, Finance, Marketing, etc.)• Time Interval (Periodic, One-time, Special)• Function (Informational, Analytical, etc.)• Physical Factors (Memorandum, Letter, Short & Long) <p>1.2. Parts of a Long Formal Report:</p> <ul style="list-style-type: none">• Prefatory Parts (Front Matter)• Report Proper (Main Body)• Appended Parts (Back Matter) <p>1.3. Language and Style of Reports</p> <ul style="list-style-type: none">• Tense, Person & Voice of Reports• Numbering Style of Chapters, Sections, Figures, Tables and Equations• Referencing Styles in APA & MLA Format• Proofreading through Plagiarism Checkers <p>1.4. Definition, Purpose & Types of Proposals</p> <ul style="list-style-type: none">• Solicited (in conformance with RFP) & Unsolicited Proposals• Types (Short and Long proposals) <p>1.5. Parts of a Proposal</p> <ul style="list-style-type: none">• Elements• Scope and Limitations• Conclusion	06



	1.6. Technical Paper Writing <ul style="list-style-type: none">• Parts of a Technical Paper (Abstract, Introduction, Research Methods, Findings and Analysis, Discussion, Limitations, Future Scope and References)• Language and Formatting• Referencing in IEEE Format	
2	EMPLOYMENT SKILLS 2.1. Cover Letter & Resume <ul style="list-style-type: none">• Parts and Content of a Cover Letter• Difference between Bio-data, Resume & CV• Essential Parts of a Resume• Types of Resume (Chronological, Functional & Combination) 2.2 Statement of Purpose <ul style="list-style-type: none">• Importance of SOP• Tips for Writing an Effective SOP 2.3 Verbal Aptitude Test <ul style="list-style-type: none">• Modelled on CAT, GRE, GMAT exams 2.4. Group Discussions <ul style="list-style-type: none">• Purpose of a GD• Parameters of Evaluating a GD• Types of GDs (Normal, Case-based & Role Plays)• GD Etiquettes 2.5. Personal Interviews <ul style="list-style-type: none">• Planning and Preparation• Types of Questions• Types of Interviews (Structured, Stress, Behavioural, Problem Solving & Case-based)• Modes of Interviews: Face-to-face (One-to one and Panel) Telephonic, Virtual	06



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3	BUSINESS MEETINGS 1.1. Conducting Business Meetings <ul style="list-style-type: none">• Types of Meetings• Roles and Responsibilities of Chairperson, Secretary and Members• Meeting Etiquette 3.2. Documentation <ul style="list-style-type: none">• Notice• Agenda• Minutes	02
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4	TECHNICAL/ BUSINESS PRESENTATIONS 1.1 Effective Presentation Strategies <ul style="list-style-type: none"> • Defining Purpose • Analyzing Audience, Location and Event • Gathering, Selecting & Arranging Material • Structuring a Presentation • Making Effective Slides • Types of Presentations Aids • Closing a Presentation • Platform skills 1.2 Group Presentations <ul style="list-style-type: none"> • Sharing Responsibility in a Team • Building the contents and visuals together • Transition Phases 	02
5	INTERPERSONAL SKILLS 1.1. Interpersonal Skills <ul style="list-style-type: none"> • Emotional Intelligence • Leadership & Motivation • Conflict Management & Negotiation • Time Management • Assertiveness • Decision Making 5.2 Start-up Skills <ul style="list-style-type: none"> • Financial Literacy • Risk Assessment • Data Analysis (e.g. Consumer Behaviour, Market Trends, etc.) 	08
6	CORPORATE ETHICS 6.1 Intellectual Property Rights <ul style="list-style-type: none"> • Copyrights • Trademarks • Patents • Industrial Designs • Geographical Indications • Integrated Circuits • Trade Secrets (Undisclosed Information) 6.2 Case Studies <ul style="list-style-type: none"> • Cases related to Business/ Corporate Ethics 	02



List of assignments:

**(In the form of Short Notes, Questionnaire/ MCQ Test, Role Play,
Case Study, Quiz, etc.)**

1. Cover Letter and Resume
2. Short Proposal.
3. Meeting Documentation
4. Writing a Technical Paper/ Analyzing a Published Technical Paper
5. Writing a SOP
6. IPR
7. Interpersonal Skills
8. Aptitude test (Verbal Ability)

Note:

1. The Main Body of the project/book report should contain minimum 25 pages (excluding Front and Back matter).
2. The group size for the final report presentation should not be less than 5 students or exceed 7 students.
3. There will be an end-semester presentation based on the book report.

Assessment:

Term Work:

Term work shall consist of minimum 8 experiments.

The distribution of marks for term work shall be as follows:

Assignment	: 10 Marks
Attendance	: 5 Marks
Presentation slides	: 5 Marks
Book Report (hard copy)	: 5 Marks

The final certification and acceptance of term work ensures the satisfactory performance of laboratory work and minimum passing in the term work.

**Oral Examination will be based on a GD & the Project/Book
Report presentation.**





Group Discussion : 10 marks

Project Presentation : 10 Marks

Group Dynamics : 5 Marks

Books Recommended:

Textbooks and Reference books:

1. Arms, V. M. (2005). *Humanities for the engineering curriculum: With selected chapters from Olsen/Huckin: Technical writing and professional communication, second edition*. Boston, MA: McGraw-Hill. Bovée, C. L., & Thill, J. V. (2021). *Business communication today*. Upper Saddle River, NJ: Pearson.
2. Butterfield, J. (2017). *Verbal communication: Soft skills for a digital workplace*. Boston, MA: Cengage Learning.
3. Masters, L. A., Wallace, H. R., & Harwood, L. (2011). *Personal development for life and work*. Mason: South-Western Cengage Learning.
4. Robbins, S. P., Judge, T. A., & Campbell, T. T. (2017). *Organizational behaviour*. Harlow,

Masters in Computer Application

Course Code	Course Name	Teaching Scheme			Credits Assigned		
MCA23	Information Security	Contact Hours					
		Theory	Tutorial	Theory	Tutorial	Total	
		3	--	3	--	3	
		Examination Scheme					
		Theory			Term Work	End Sem Exam	Total
		CA	Test	AVG			
		20	20	20	--	80	100

Pre-requisite: Computer Networks

Course Objectives: The course aim to

Sr. No.	Course Objective
1	Understand the concepts of Information Security, cryptography and its applications





2	Familiarize various authentication and integrity techniques available
3	Understand firewalls and intrusion detection systems.
4	Familiarize relevant security parameters in the web, internet, database and operating systems

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

Sr. No.	Outcome	Bloom Level
CO1	Discuss the requirement of information security , private and publickey algorithms and to examine the mathematics of cryptography	Understanding
CO 2	Analyze authentication and integrity techniques available	Analyzing
CO 3	Interpret the importance of firewalls and intrusion detection systems and signatures.	Understanding
CO 4	Relate to the security issues and technologies used in the web, internet, database and operating system	Understanding

3	<p>Digital certificates and integrity</p> <p>Digital Signature: Concept, Compare Digital Signature with Public Key Cryptography, Digital Signature Schema.</p> <p>Public Key Infrastructure (PKI): Private key management, Public Key Cryptography Standards (PKCS). Digital Certificate Creation Steps,X.509 Certificate, Certificate Revocation</p> <p>Integrity: Message Integrity, Hash functions Properties Algorithm:MDC,MAC,HMAC,MD5, SHA -512</p> <p>Self learning topics:</p> <p>PKIX model, Data integrity threats</p>	8
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4	Internet and web security SSL, IPSec, Email Security- PGP, Email attacks Web services Security: web app versus web service concept, WS-Security, SOAP web service, SAML assertion, Browser attacks, web attacks targeting users, obtaining user or website data. Self learning topics: SET , SSL Vs SET, S/MIME	8
5	Firewall and IDS Firewall: Introduction, Characteristic ,Types :Packet Filter, Stateful and Stateless Packet Filter, Attacks of Packet Filter, Circuit Level and Application Level Firewall, Bastion Host, Firewall Configurations. Intrusion: What is Intrusion, Intruders, Intrusion Detection, Behavior of Authorized user and Intruder, Approaches for Intrusion Detection: Statistical Anomaly Detection and Rule based Detection. Audit Record and AuditRecord Analysis. Self learning topics: Virtual Private Network (VPN)	6
6	Database and OS Security Introduction to database, Security requirements of database, sensitive data, Database access control, inference, Security in operating systems: Operating System Structure, Security Features of Ordinary Operating Systems, Operating System Tools to Implement Security Functions, Rootkit: Phone Rootkit, Sony XCP Rootkit, TDSS Rootkits. Self learning topics: Cryptographic Toolkits, Denial of Service attack	5

Reference Books:





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Reference No	Reference Name
1	AtulKahate, "Cryptography and Network Security", McGraw Hill
2	Kaufman C., Perlman R., and Speciner, "Network Security", Private Communication in a public world, 2nd ed., Prentice Hall PTR.,2002
3	Cryptography and Network Security, Behrouz A Forouzan
4	Cryptography and Network Security: Principles and Practice, William Stallings
5	Computer Security :William Stallings , Edition 6
6	Security in Computing fifth edition Charles P. Pfleeger Shari Lawrence Pfleeger Jonathan Margulies
7	Network Security sand Cryptography: Bernard Menezes, CENGAGE Learning
8	Network Security bible, Eric Cole
9	Cryptography And Information Security, V. K. Pachghare
10	Information Systems Security: Security Management, Metrics, Frameworks and Best practices: Nina Gobole
11	The complete reference Information Security by Mark Rhodes-ousley

Web References:

Reference No	Reference Name
1	https://link.springer.com/content/pdf/10.1007%2F978-1-4302-6383-8_16.pdf
2	docs.oracle.com/cd/B19306_01/server.102/b14220/security.htm
3	https://www.w3.org/Security/security-resource
4	https://www.sophos.com/en-us/labs/security-threat-report.aspx
5	https://www.tutorialspoint.com/cryptography/data_integrity_in_cryptography.htm





Assessment:

Continuous Assessment: 20 marks

Following measures can be used for the continuous assessment as

Assignments /Quiz /Case studies /Projects / Any other measure with the permission of the Director/Principal/HOD/Coordinator

The continuous evaluation has to be done throughout the Semester. The faculty can use the flexibility of the mode as per the requirement of the subject.

Test: 20 marks

Assessment consists of one class tests of 20 marks each. The Class Test is to be conducted when approx. 50 -60% of the syllabus is completed. Duration of each test shall be one hour.

Internal Assessment: 20 marks

The Internal Assessment marks (out of 20) will be the average of the Class test and the Continuous Assessment.

End Semester Theory Examination:

Question paper will comprise of total 06 questions, each carrying 20 marks. Total 04

questions need to be solved.

Question No: 01 will be compulsory and based on entire syllabus wherein 4 sub-questions of 5 marks each will be asked.

Remaining questions will be randomly selected from all the modules.

Weight age of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.





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Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
FEL201	Basic Workshop Practice - II	--	04	--	--	02	--	02

Course Code	Course Name	Examination Scheme							
		Theory				Term Work	Pract	Oral	Total
		Internal Assessment			End Sem Exam				
		Test1	Test2	Av of Test 1 & 2					
FEL201	Basic Workshop Practice - II	--	--	--	--	50	--	--	50

Detailed Syllabus is given in Basic Workshop Practice-I

Term work:

Term work shall consist of respective reports and jobs of the trades selected the distribution of marks for term work shall be as follows:

Laboratory work (Job and Journal) : 40 marks

Attendance (Practical and Theory) : 10 marks

The final certification and acceptance of term – work ensures the satisfactory performance of laboratory work.

References:

1. Environmental Studies by Benny Joseph, TataMcGraw Hill.
2. Environmental Studies by R.Rajagopalan, Oxford University Press.
3. Environmental Studies by. AnanditaBasak, Pearson Education.
4. Essentials of Environmental Studies by Kurian Joseph & Nagendran, Pearson Education.
5. Fundamentals of Environmental Studies by Varadbal G. Mhatre, Himalaya Publication House.
6. Perspective of Environmental Studies, by Kaushik and Kaushik, New Age International.
7. Renewable Energy by Godfrey Boyle, Oxford Publications.
8. Textbook of Environmental Studies by Dave and Katewa, Cengage Learning.
9. Textbook of Environmental studies by ErachBharucha, University Press.
10. Environmental pollution control engineering by C.S. Rao, New Age International (P) Limited Publishers.





11. Professional Ethics			
SR.NO	Professional Ethics Related Syllabus or Activities	Course Code	Department
1	Communication Skills	FEC206	First year Engineering
2	Professional Communication and Ethics-I	FEC206	First year Engineering
3	Professional Communication and Ethics-I	FEL205	First year Engineering
4	Business Communication & Ethics II	CSL504	Computer Engineering
5	Professional Communication and Ethics	CEL505	Civil Engineering
6	Professional Communication and Ethics-II	MESBL501	Mechanical Engineering
7	Professional Communication and Ethics-II	ECL504	Electronics and Telecommunication Engineering
8	Professional Communication & Ethics-II	ELL504	Electrical Engineering
9	Information Security	MCA23	Masters in Computer Application
10	Digital Marketing and Business Analytics	MCAE25	Masters in Computer Application

Course Code	Course Name	Teaching Scheme			Credits Assigned		
MCAE25 4	Digital Marketing and Business Analytics	Contact Hours					
		Theory		Tutorial	Theory	Tutorial	Total
		3		1	3	1	4
		Examination Scheme					
		Theory			Term Work	End Sem Exam	Total
		CA	Test	AVG			
		20	20	20	25	80	125

Pre-requisite: Nil

Course Objectives: The course aim to

Sr. No.	Course Objective
01	Examine and explore the role and importance Digital Marketing in the current business scenario.
02	Familiarize with the various Digital Marketing Tools.





03	Apply Digital Marketing tools for formulating a Digital Marketing Strategy.
04	Understand Digital Marketing Campaigns using various Tools and measure their effectiveness.

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

Sr. No.	Course Outcome	Bloom Level
CO1	Understand the role of Digital Marketing	Remembering
CO2	Demonstrate use of various Digital Marketing Tools.	Understanding
CO3	Discuss key element of Digital Marketing Strategy.	Applying
CO4	Understand use of Digital Marketing Tools for Digital Marketing Campaigns	Analyzing
CO5	Assess / Measure the effectiveness of the Digital Marketing Campaigns.	Evaluating
CO6	Demonstrate practical skills using common digital marketing tools like SEO, SEM, Content Marketing...	Creating

Module No.	Detailed Contents	Hrs.
1	Module: Fundamentals of Digital Marketing: Digital Marketing. Digital Marketing Strategy. Skills Required in Digital Marketing, Digital Marketing Plan, Digital Marketing: Introduction to Display Marketing, Types of Display Ads, Buying Models, Display Plan, Analytics Tools. Dignified Digital Marketing – Ethics and Data Privacy Self Learning Topics: What makes a Good Ad? Programmatic Digital Advertising, YouTube Advertising	04
2	Module: Search Engine Advertising	05



	<p>Introduction, Understanding Ad Placement, Understanding AdRanks, Creating First Ad Campaign, Enhance Your Ad Campaign, Performance Reports.</p> <p>Social Media Marketing Building a Successful Strategy</p> <p>Facebook Marketing Facebook Marketing for Business, Anatomy of an Ad Campaign, Adverts, Facebook Insights, Other Marketing Tools, Other Essentials</p> <p>Self Learning Topics: Campaign Management, Running Campaigns, Lead Generation, Qualified Leads</p>	
3	<p>Module: LinkedIn Marketing Importance of LinkedIn Presence, LinkedIn Strategy, Sales Leads Generation Using LinkedIn, Content Strategy, LinkedIn Analytics, Targeting, Ad Campaign</p> <p>Twitter Marketing Getting Started with Twitter, Building a Content Strategy, Twitter Usage, Twitter Ads, Twitter Analytics, Twitter Tools and Tips for Marketers</p> <p>Self Learning Topics:</p>	09
4	<p>Module: Instagram</p> <p>Mobile Marketing Mobile Usage, Mobile Advertising, Mobile Marketing Toolkit, Mobile Marketing Features, Campaign Development Process, Mobile Analytics</p> <p>Self Learning Topics: Addressing the Diversity in India through Mobile</p>	07
5	<p>Module: SEO Search Engine, Concept of Search Engine Optimization (SEO), SEOPhases, On Page Optimization, Off Page Optimization, Social Media Reach, Maintenance</p> <p>Self Learning Topics: SEM</p>	06



6	Module: Web Analytics Data Collection, Key Metrics, Making Web Analytics Actionable, Multi-Channel Attribution, Types of Tracking Codes, Mobile Analytics, Universal Analytics, Competitive Intelligence Self Learning Topics: Interpretation of various Charts available in Google Analytics. How to connect Offline with Online.	08
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Reference Books:

Reference No.	Reference Name
1	Digital Marketing, Seema Gupta, McGraw Hill Education (India) Private Limited
2	Social Media& Mobile Marketing: Includes Online Worksheets Puneet Singh Bhatia ,ISBN: 9788126578078
3	Digital Marketing for Dummies, Ryan Deiss& Russ Henneberry, John Wiley & Son, Inc.
4	Social Media Marketing All-In-One, Jan Zimmerman, Deborah Ng, John Wiley & Sons Inc.
5	Epic Content Marketing, Joe Pulizzi, McGraw Hill Education
6	Youtility, Jay Baer, Gildan Media, LLC
7	Hit Makers : The Science Age of Dice of Popularity in an Age of Distraction, Derek Thompson, Penguin Press
8	The Art of SEO, Eric Enge, Stephan Spencer, Jessie Stricchiola, O'Reilly Media Inc,
9	Digital Marketing 2020, Danny Star,

Tutorial

Sr. No.	Detailed Contents	Hrs
01	Digital Marketing – Case Study : Ariel Fashion Shoot	01
02	Display Advertising – Case Study : Anything for Jetta	01
03	Search Engine Advertising – Case Study : Kotak Services	01





04	Social Media Marketing – Case Study : The Fall and Rise of Maggie	01
05	Facebook Marketing – Case Study : Tata DoCoMo	01
06	Facebook Marketing – Case Study : ICICI Bank – Building India's Most Social Bank on Facebook	01
07	LinkedIn Marketing – Case Study : Mercedes Benz, DELL	01
08	Twitter Marketing – Case Study : Mercedes-Benz (2011)	01
09	Instagram – Case Study : H & M	01
10	Mobile Marketing – Case Study : Philips Airfryer	01
11	SEO – Case Study : Barclays Business Banking SEO Campaign	01
12	Web Analytics – Case Study : Conversion Tracking through URL Builder – A Hotel Brand	01

Note: The Case Studies mentioned above are indicative and not limited to. The Teacher has the flexibility of taking similar Case Studies taking into consideration the current scenario and technological changes.

Assessment:

Continuous Assessment: 20 marks

Following measures can be used for the continuous assessment as

Assignments /Quiz /Case studies /Projects / Any other measure with the permission of the Director/Principal/HOD/Coordinator

The continuous evaluation has to be done throughout the Semester. The faculty can use the flexibility of the mode as per the requirement of the subject.

Test: 20 marks

Assessment consists of one class tests of 20 marks each. The Class Test is to be conducted when approx. 50 -60% of the syllabus is completed. Duration of each shall be one hour.

Internal Assessment: 20 marks

The Internal Assessment marks (out of 20) will be the average of the Class test and the Continuous





Assessment.

Term Work : 25 marks

The term work will be based on the tutorial performance of the student.

End Semester Theory Examination:

- Question paper will comprise of total 06 questions, each carrying 20 marks.
- Total 04 questions need to be solved.
- Question No: 01 will be compulsory and based on entire syllabus wherein 4 sub-questions of 5 marks each will be asked.
- Remaining questions will be randomly selected from all the modules.
- Weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.

Activities Based on Professional Ethics

SR NO	Particular
1	Industry Institute Interaction
2	Webinar On Leadership
3	Seminar on Intellectual Property Rights
4	Professional Communication

(1) Industry Institute Interaction 2018

Industry Institute Interaction was held at VIVA Institute of Technology on 7th April, 2018.





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(2) Webinar on Leadership

Respected Chief of the Indian Army General Bipin Rawat Sir gave a very inspiring speech to the students and faculty members on how to become great leaders on 11th January, 2018.

The Webinar was attended by the students and Faculty members of VIVA Institute of Technology.





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(3) Seminar on Intellectual Property Rights





(4) Professional Communication

Report on a programme “*Professional Communication: A Prerequisite for Engineers*” organized by Women Development Cell in association with Department of Humanities & Applied Sciences, VIVA Institute of Technology.

Date: 08th March, 2019

Time: 10.00 a.m. onwards

Venue: 4th Floor, Seminar Hall, VIVA Institute of Technology

Resource Person: Mrs. Sangeetha Krovvidi, Professional Trainer in Soft Skills.

Topic: *Professional Communication: A Prerequisite for Engineers*

Women Development Cell in association with Department of Humanities & Applied Sciences of VIVA Institute of Technology, Virar organized a guest lecture on “*Professional Communication: A Prerequisite for Engineers*” for all the faculties and students of college on the eve of International Women’s Day on 8th March 2019.. Mrs. Sangeetha Krovvidi, an expertise in the domain of soft skills and



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other employability skills was present as a chief guest to give valuable guidance to faculties and students on professional communication and its need in the job market.

The programme began with a welcome note Dr. Trupti Patil, Asst.Professor of the Dept. of Humanities and Applied Sciences. This was followed by an enlightening speech by Principal of VIVA Institute of Technology, Dr. Arun Kumar.

The guest session was graced by the presence of the guest speaker Mrs. Sangeetha Krivvidi. Being expert in professional communication, she shared her expertise with the faculties and students in how they can inculcate soft skills, professional communication into their personality.

The session was very interactive as students as well as faculties came up with many queries about how to face an interview and various other doubts they have related to professional communication.

The overall lecture was a very delighting and empowering experience for all.





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Human Values

Course Code	Course Name	Credits
ILO 8021	Project Management	03

Objectives:

1. To familiarize the students with the use of a structured methodology/approach for each and every unique project undertaken, including utilizing project management concepts, tools and techniques.
2. To appraise the students with the project management life cycle and make them knowledgeable about the various phases from project initiation through closure.

Outcomes: Learner will be able to...

1. Apply selection criteria and select an appropriate project from different options.
2. Write work break down structure for a project and develop a schedule based on it.
3. Identify opportunities and threats to the project and decide an approach to deal with them strategically.
4. Use Earned value technique and determine & predict status of the project.
5. Capture lessons learned during project phases and document them for future reference

Module	Detailed Contents	Hrs
01	Project Management Foundation: Definition of a project, Project Vs Operations, Necessity of project management, Triple constraints, Project life cycles (typical & atypical) Project phases and stage gate process. Role of project manager, Negotiations and resolving conflicts, Project management in various organization structures, PM knowledge areas as per Project Management Institute (PMI)	5
02	Initiating Projects: How to get a project started, Selecting project strategically, Project selection models (Numeric /Scoring Models and Non-numeric models), Project portfolio process, Project sponsor and creating charter; Project proposal. Effective project team, Stages of team development & growth (forming, storming, norming & performing), team dynamics.	6
03	Project Planning and Scheduling: Work Breakdown structure (WBS) and linear responsibility chart, Interface Co-ordination and concurrent engineering, Project cost estimation and budgeting, Top down and bottoms up budgeting, Networking and Scheduling techniques. PERT, CPM, GANTT chart, Introduction to Project Management Information System (PMIS).	8





04	Planning Projects: Crashing project time, Resource loading and levelling, Goldratt's critical chain, Project Stakeholders and Communication plan Risk Management in projects: Risk management planning, Risk identification and risk register, Qualitative and quantitative risk assessment, Probability and impact matrix. Risk response strategies for positive and negative risks	6
05	5.1 Executing Projects: Planning monitoring and controlling cycle, Information needs and reporting, engaging with all stakeholders of the projects, Team management, communication and project meetings 5.2 Monitoring and Controlling Projects: Earned Value Management techniques for measuring value of work completed; Using milestones for measurement; change requests and scope creep, Project audit	8

	5.3 Project Contracting Project procurement management, contracting and outsourcing,	
06	6.1 Project Leadership and Ethics: Introduction to project leadership, ethics in projects, Multicultural and virtual projects 6.2 Closing the Project: Customer acceptance; Reasons of project termination, Various types of project terminations (Extinction, Addition, Integration, Starvation), Process of project termination, completing a final report; doing a lessons learned analysis; acknowledging successes and failures; Project management templates and other resources; Managing without authority; Areas of further study.	6

Assessment:

Internal Assessment for 20 marks:

Consisting **Two Compulsory Class Tests**

First test based on approximately 40% of contents and second test based on remaining contents (approximately 40% but excluding contents covered in Test I)

End Semester Examination:

Weightage of each module in end semester examination will be proportional to number of respective lecturehours mentioned in the curriculum.

1. Question paper will comprise of total **six questions, each carrying 20 marks**
2. **Question 1** will be **compulsory** and should **cover maximum contents of the curriculum**
3. **Remaining questions will be mixed in nature** (for example if Q.2 has part (a) from module 3 then part





(b) will be from any module other than module 3)

4. Only Four questions need to be solved

REFERENCES:

1. Project Management: A managerial approach, Jack Meredith & Samuel Mantel, 7th Edition, WileyIndia
2. A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 5th Ed, Project Management Institute PA, USA
3. Project Management, Gido Clements, Cengage Learning
4. Project Management, Gopalan, Wiley India
5. Project Management, Dennis Lock, 9th Edition, Gower Publishing England

Computer Engineering

Course Code	Course Name	Credit
CSP701	Major Project 1	03

Course Objectives:	
The project work facilitates the students to develop and prove Technical, Professional and Ethical skills and knowledge gained during graduation program by applying them from problem identification, analyzing the problem and designing solutions.	
Course Outcomes: Learner will able	
1	To develop the understanding of the problem domain through extensive review of literature.
2	To Identify and analyze the problem in detail to define its scope with problem specific data.
3	To know various techniques to be implemented for the selected problem and related technical skills through feasibility analysis.
4	To design solutions for real-time problems that will positively impact society and environment..
5	To develop clarity of presentation based on communication, teamwork and leadership skills.
6	To inculcate professional and ethical behavior.





Guidelines:

1. Project Topic Selection and Allocation:

- Project topic selection Process to be defined and followed:
 - Project orientation can be given at the end of sixth semester.
 - Students should be informed about the domain and domain experts whose guidance can be taken before selecting projects.
 - Student's should be recommended to refer papers from reputed conferences/journals like IEEE, Elsevier, ACM etc. which are not more than 3 years old for review of literature.
 - Students can certainly take ideas from anywhere, but be sure that they should evolve them in the unique way to suit their project requirements. Students can be informed to refer Digital India portal, SIH portal or any other hackathon portal for problem selection.
- Topics can be finalized with respect to following criterion:
 - **Topic Selection:** The topics selected should be novel in nature (Product based, Application based or Research based) or should work towards removing the lacuna in currently existing systems.
 - **Technology Used:** Use of latest technology or modern tools can be encouraged.
 - Students should not repeat work done previously (work done in the last three years)

Electronic engineering and Telecommunications

Course Code	Course Name	Credits
ILO 8021	Project Management	03

Objectives:

1. To familiarize the students with the use of a structured methodology/approach for each and every unique project undertaken, including utilizing project management concepts, tools and techniques.
2. To appraise the students with the project management life cycle and make them knowledgeable about the various phases from project initiation through closure.

Outcomes: Learner will be able to...

1. Apply selection criteria and select an appropriate project from different options.
2. Write work break down structure for a project and develop a schedule based on it.
3. Identify opportunities and threats to the project and decide an approach to deal with them strategically.





4. Use Earned value technique and determine & predict status of the project.
5. Capture lessons learned during project phases and document them for future reference

Module	Detailed Contents	Hrs
01	Project Management Foundation: Definition of a project, Project Vs Operations, Necessity of project management, Triple constraints, Project life cycles (typical & atypical) Project phases and stage gate process. Role of project manager, Negotiations and resolving conflicts, Project management in various organization structures, PM knowledge areas as per Project Management Institute (PMI)	5
02	Initiating Projects: How to get a project started, Selecting project strategically, Project selection models (Numeric /Scoring Models and Non-numeric models), Project portfolio process, Project sponsor and creating charter; Project proposal. Effective project team, Stages of team development & growth (forming, storming, norming & performing), team dynamics.	6
03	Project Planning and Scheduling: Work Breakdown structure (WBS) and linear responsibility chart, Interface Co-ordination and concurrent engineering, Project cost estimation and budgeting, Top down and bottoms up budgeting, Networking and Scheduling techniques. PERT, CPM, GANTT chart, Introduction to Project Management Information System (PMIS).	8
04	Planning Projects: Crashing project time, Resource loading and levelling, Goldratt's critical chain, Project Stakeholders and Communication plan Risk Management in projects: Risk management planning, Risk identification and risk register, Qualitative and quantitative risk assessment, Probability and impact matrix. Risk response strategies for positive and negative risks	6
05	5.1 Executing Projects: Planning monitoring and controlling cycle, Information needs and reporting, engaging with all stakeholders of the projects, Team management, communication and project meetings 5.2 Monitoring and Controlling Projects: Earned Value Management techniques for measuring value of work completed; Using milestones for measurement; change requests and scope creep, Project audit 5.3 Project Contracting Project procurement management, contracting and outsourcing,	8
06	6.1 Project Leadership and Ethics: Introduction to project leadership, ethics in projects, Multicultural and virtual projects 6.2 Closing the Project: Customer acceptance; Reasons of project termination, Various types of project terminations (Extinction, Addition, Integration, Starvation), Process of project termination, completing a final report; doing a lessons learned analysis; acknowledging successes and failures; Project management templates and other resources; Managing without authority; Areas of further study.	6



Assessment:

Internal Assessment for 20 marks:

Consisting **Two Compulsory Class Tests**

First test based on approximately 40% of contents and second test based on remaining contents (approximately 40% but excluding contents covered in Test I)

End Semester Examination:

Weightage of each module in end semester examination will be proportional to number of respective lecture hours mentioned in the curriculum.

1. Question paper will comprise of total **six questions, each carrying 20 marks**
2. **Question 1** will be **compulsory** and should **cover maximum contents of the curriculum**
3. **Remaining questions will be mixed in nature** (for example if Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3)
4. **Only Four questions need to be solved**

REFERENCES:

1. Project Management: A managerial approach, Jack Meredith & Samuel Mantel, 7th Edition, Wiley India
2. A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 5th Ed, Project Management Institute PA, USA
3. Project Management, Gido Clements, Cengage Learning
4. Project Management, Gopalan, Wiley India
5. Project Management, Dennis Lock, 9th

2. Project Report Format:

At the end of semester, each group needs to prepare a project report as per the guidelines issued by the University of Mumbai.

A project report should preferably contain at least following details:

- Abstract
- Introduction
- Literature Survey/ Existing system



- Limitation Existing system or research gap
- Problem Statement and Objective
- Proposed System
 - Analysis/Framework/ Algorithm
 - Design details
 - Methodology (your approach to solve the problem) Proposed System
- Experimental Set up
 - Details of Database or details about input to systems or selected data
 - Performance Evaluation Parameters (for Validation)
 - Software and Hardware Set up
- Implementation Plan for Next Semester
 - Timeline Chart for Term I and Term-II (Project Management tools can be used.)
- References

Desirable

Students can be asked to undergo some Certification course (for the technical skill set that will be useful and applicable for projects.)

3.Term Work:

Distribution of marks for term work shall be done based on following:

- Weekly Log Report
- Project Work Contribution
- Project Report (Spiral Bound) (both side print)
- Term End Presentation (Internal)

The final certification and acceptance of TW ensures the satisfactory performance on the above aspects.

4.Oral and Practical:

Oral and Practical examination (Final Project Evaluation) of Project 1 should be conducted by Internal and External examiners approved by University of Mumbai at the end of the semester.

Suggested quality evaluation parameters are as follows:

- Quality of problem selected





- Clarity of problem definition and feasibility of problem solution
- Relevance to the specialization / industrial trends
- Originality
- Clarity of objective and scope
- Quality of analysis and design
- Quality of written and oral presentation
- Individual as well as team work

5.Term Work:

Distribution of marks for term work shall be done based on following:

- Weekly Log Report
- Project Work Contribution
- Project Report (Spiral Bound) (both side print)
- Term End Presentation (Internal)

The final certification and acceptance of TW ensures the satisfactory performance on the above aspects.

6.Oral and Practical:

Oral and Practical examination (Final Project Evaluation) of Project 1 should be conducted by Internal and External examiners approved by University of Mumbai at the end of the semester.

Suggested quality evaluation parameters are as follows:

- Quality of problem selected
- Clarity of problem definition and feasibility of problem solution
- Relevance to the specialization / industrial trends
- Originality
- Clarity of objective and scope
- Quality of analysis and design
- Quality of written and oral presentation

Electronics and Telecommunication Engineering





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Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
ECCILO 7013	Management Information System	03	--	--	03	--	--	03

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○

Course Code	Course Name	Examination Scheme							
		Theory Marks				Exam Duration (Hrs.)	Term Work	Practical and Oral	Total
		Internal Assessment			End Sem. Exam.				
		Test1	Test2	Avg.					
ECCILO 7013	Management Information System	20	20	20	80	03	--	--	100

Objectives:

1. The course is blend of Management and Technical field.
2. Discuss the roles played by information technology in today's business and define various technology architectures on which information systems are built
3. Define and analyze typical functional information systems and identify how they meet the needs of the firm to deliver efficiency and competitive advantage
4. Identify the basic steps in systems development

Outcomes: Learner will be able to...

1. Explain how information systems Transform Business
2. Identify the impact information systems have on an organization
3. Describe IT infrastructure and its components and its current trends
4. Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making
5. Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses

Module	Detailed Contents	Hrs
01	Introduction To Information Systems (IS): Computer Based Information Systems, Impact of IT on organizations, Importance of IS to Society. Organizational Strategy, Competitive Advantages and IS.	4
02	Data and Knowledge Management: Database Approach, Big Data, Data warehouse and Data Marts, Knowledge Management. Business intelligence (BI): Managers and Decision Making, BI for Data analysis and Presenting Results	7
03	Ethical issues and Privacy: Information Security. Threat to IS, and Security Controls	7





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04	Social Computing (SC): Web 2.0 and 3.0, SC in business-shopping, Marketing, Operational and Analytic CRM, E-business and E-commerce – B2B B2C. Mobile commerce.	7
05	Computer Networks Wired and Wireless technology, Pervasive computing, Cloud computing model.	6
06	Information System within Organization: Transaction Processing Systems, Functional Area Information System, ERP and ERP support of Business Process. Acquiring Information Systems and Applications: Various System development life cycle models.	8
Total		39

Internal:

Assessment consists of two tests out of which; one should be compulsory class test and the other is either a class test or assignment on live problems or course project.

End Semester Theory Examination:

Some guidelines for setting up the question paper. Minimum 80% syllabus should be covered in question papers of end semester examination. **In question paper weightage of each module will be proportional to number of respective lecture hours as mention in the syllabus.**

1. Question paper will comprise of total six question
2. All question carry equal marks
3. Questions will be mixed in nature (for example supposed Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3)
4. Only Four question need to be solved.

REFERENCES:

1. Kelly Rainer, Brad Prince, Management Information Systems, Wiley
2. K.C. Laudon and J.P. Laudon, Management Information Systems: Managing the Digital Firm, 10th Ed., Prentice Hall, 2007.
3. D. Boddy, A. Boonstra, Managing Information Systems: Strategy and Organization, Prentice Hall, 2008

Electronics and Telecommunication





Engineering

Subject Code	Subject Name	Teaching Scheme (Hrs.)			Credits Assigned				
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total	
ECCILO 8021	Project Management	03	--	--	03	--	--	03	
Subject Code	Subject Name	Examination Scheme							
		Theory Marks				Term Work	Practical & Oral	Oral	Total
		Internal assessment			End Sem. Exam				
		Test 1	Test2	Avg. Of Test 1 and Test 2					
ECCILO 8021	Project Management	20	20	20	80	--	--	--	100

Course objectives:

- To familiarize the students with the use of a structured methodology/approach for each and every unique project undertaken, including utilizing project management concepts, tools and techniques.
- To appraise the students with the project management life cycle and make them knowledgeable about the various phases from project initiation through closure.

Course outcomes:

After successful completion of the course student will be able to

- Apply selection criteria and select an appropriate project from different options.
- Write work break down structure for a project and develop a schedule based on it.
- Identify opportunities and threats to the project and decide an approach to deal with them strategically.
- Use Earned value technique and determine & predict status of the project.
- Capture lessons learned during project phases and document them for future reference

Module No.	Unit No.	Topics	Hrs.
1.0		Project Management Foundation	05



	1.1	Definition of a project, Project Vs Operations, Necessity of project management, Triple constraints, Project life cycles (typical & atypical) Project phases and stage gate process. Role of project manager, Negotiations and resolving conflicts, Project management in various organization structures, PM knowledge areas as per Project Management Institute (PMI)	
2.0		Initiating Projects	06
	2.1	How to get a project started, Selecting project strategically, Project selection models (Numeric /Scoring Models and Non-numericmodels), Project portfolio process, Project sponsor and creating charter; Project proposal. Effective project team, Stages of teamdevelopment & growth (forming, storming, norming &performing), team dynamics.	
3.0		Project Planning and Scheduling	08
	3.1	Work Breakdown structure (WBS) and linear responsibility chart, Interface Co-ordination and concurrent engineering, Project cost estimation and budgeting, Top down and bottoms up budgeting, Networking and Scheduling techniques. PERT, CPM, GANTT chart, Introduction to Project Management Information System (PMIS).	
4.0		Planning Projects	06
	4.1	Crashing project time, Resource loading and levelling, Goldratt's critical chain, Project Stakeholders and Communication plan Risk Management in projects: Risk management planning, Risk identification and risk register, Qualitative and quantitative risk assessment, Probability and impact matrix. Risk response strategies for positive and negative risks	
5.0			08
	5.1	Executing Projects: Planning monitoring and controlling cycle, Information needs and reporting, engaging with all stakeholders of the projects, Team management, communication and project meetings	
	5.2	Monitoring and Controlling Projects: Earned Value Management techniques for measuring value of work completed; Using milestones for measurement; change requests and scope creep, Project audit	
	5.3	Project Contracting Project procurement management, contracting and outsourcing,	
6.0			06
	6.1	6.1 Project Leadership and Ethics: Introduction to project leadership, ethics in projects, Multicultural and virtual projects	



	6.2	Closing the Project: Customer acceptance; Reasons of project termination, Various types of project terminations (Extinction, Addition, Integration, Starvation), Process of project termination, completing a final report; doing a lessons learned analysis; acknowledging successes and failures; Project management templates and other resources; Managing without authority; Areas of further study.	
		Total	39

References:

1. Project Management: A managerial approach, Jack Meredith & Samuel Mantel, 7th Edition, Wiley India
2. A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 5th Ed, Project Management Institute PA, USA
3. Project Management, Gido Clements, Cengage Learning
4. Project Management, Gopalan, Wiley India
5. Project Management, Dennis Lock, 9th Edition, Gower Publishing England

Internal Assessment:

Assessment consists of two class tests of 20 marks each. The first class test is to be conducted when approximately 40% syllabus is completed and second class test when additional 40% syllabus is completed. The average marks of both the test will be considered for final Internal Assessment. Duration of each test shall be of one hour.

End Semester Examination:

1. Question paper will comprise of 6 questions, each carrying 20 marks.
2. The students need to solve total 4 questions.
3. Question No.1 will be compulsory and based on entire syllabus.
4. Remaining question (Q.2 to Q.6) will be selected from all the modules.

MASTER OF COMPUTER

Course	Course Name	Teaching Scheme		Credits Assigned		
MCA14	Software Project	Contact Hours				
		Theory	Tutorial	Theory	Tutorial	Total
		3	1	3	1	4
		Examination Scheme				





	Management	Theory			Term Work	End Sem Exam	Total
		CA	Test	AVG			
		20	20	20			
					25	80	125

Pre-requisite: Knowledge of Basic Programming Courses

Course Objectives: course aim to

Sr.No.	Course Objective
01	Understand the concepts of Software Engineering and Project Management.
02	Familiarize Project Management framework and Tools.
03	Apply knowledge of Project Life Cycle to implement the projects.
04	Apply the requirement specification and designing tools along with UML.
05	Understand the techniques of project scheduling & project implementation.
06	Learn software cost estimation and software quality assurance techniques.

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

Sr.No.	Course Outcome	Bloom Level
CO1	Define the key concepts of Software Project Management.	Remembering
CO2	Demonstrate understanding of the requirements Analysis and Application of UML Models.	Understanding
CO3	Make use of estimation logic for estimation of software size as well as cost of software.	Applying
CO4	Examine the need of change management during software development as well as application of quality tools.	Analyzing
CO5	Assess various factors influencing project management, quality assurance and risk assessment.	Evaluating
CO6	Develop process for successful quality project delivery.	Creating

Module	Detailed Contents
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01	Module: An Overview of Software Project Management: Introduction to Project, Project Management, Difference between Software Engineering & Software Project Management. An Overview of IT Project Management: Define project, project management framework, The role of project Manager, Systems View of Project Management, Stakeholder management, Leadership in Projects: Modern Approaches to Leadership & Leadership Styles.
	Self Learning Topics: Evolving role of software.
02	Module: Software Process Models: Project phases and the project life cycle, Waterfall Model, Evolutionary Process Model: Prototype and Spiral Model, Incremental Process model: Iterative approach, RAD model, Agile Development Model: Extreme programming, Scrum. Self Learning Topics: JAD & DevOps Model, Comparison among models.
03	Module: Software Requirement Analysis and Design: Types of Requirement, Feasibility Study, Requirement Elicitation Techniques: Interviews, Questionnaire, Brainstorming, Facilitated Application Specification Technique (FAST), Requirement Analysis and Design: Data Flow Diagram (DFD), Data Dictionary, Software Requirement Specification (SRS). Object Oriented Analysis and Design: UML Overview, The Nature and purpose of Models, UML diagrams (Use Case diagram, Activity Diagram, Class & Object Diagram, Sequence Diagram, State Transition Diagram, Deployment Diagram). Self Learning Topics: Comparison of Requirements Elicitation Techniques.
04	Module: Software Project Planning & Software Cost Estimation: Business Case, Project selection and Approval, Project charter, Project Scope management, Creating the Work Breakdown Structures (WBS). Software Estimation: Size Estimation: Function Point (Numericals). Cost Estimation: COCOMO (Numericals), COCOMO-II (Numericals) till Early design model. Self Learning Topics: COCOMO II Post- Architecture model.



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05	Module: Project Scheduling and Procurement Management: Relationship between people and Effort: Staffing Level Estimation, Effect of schedule Change on Cost, Project Schedule, Schedule Control, Critical Path Method (CPM) (Numericals), Basics of Procurement Management, Change Management. Self Learning Topics: Degree of Rigor.
06	Module: Software Quality Assurance: Software and System Quality Management: Overview of ISO 9001, SEI Capability Maturity Model, McCall's Quality Model, Six Sigma, Formal Technical Reviews, Tools and Techniques for Quality Control, Pareto Analysis, Statistical Sampling, Quality Control Charts and the seven Run Rule. Software Risk Management: Identify IT Project Risk, Risk Analysis and Assessment, Risk Strategies, Risk Monitoring and Control, Risk Response and Evaluation. Self Learning Topics: Software Reliability Metrics, Reliability Growth Modeling.
07	Module: The Project Implementation Plan and Closure: The Project Implementation Plan and Closure : Project Implementation Administrative Closure. Self Learning Topics: Ethics in Projects, Multicultural Projects.

Reference Books:

Reference No.	Reference Name
1	Software Engineering, 5th and 7th edition, by Roger S Pressman, McGraw Hill publication.
2	Managing Information Technology Project, 6 edition, by Kathy Schwalbe, Cengage Learning publication.
3	Information Technology Project Management by Jack T Marchewka Wiley India publication.





4	Software Engineering 3rd edition by KK Agrawal, Yogesh Singh, New Age International publication.
5	The Unified Modelling Language Reference manual, Second Edition, James Rumbaugh, Ivar Jacobson, Grady Booch, Addison-Wesley.
6	Object-Oriented Modeling and Design with UML, Michael Blaha, James Rumbaugh, PHI(2005).

Web References:

Reference No.	Reference Name
1	https://www.projectmanager.com
2	https://www.tutorialspoint.com
3	https://technologyadvice.com
4	https://www.javatpoint.com
5	https://www.geeksforgeeks.org

SPM : Tutorials

Sr. No.	Detailed Contents	Hrs.
01	Business Case for Project (Case study).	01
02	Software Requirement Specification (SRS Case Study).	01
03	Project Scheduling tools (any open source tools like Microsoft Projects): Creating a Project Plan or WBS, Establishing the Project Start or Finish Date, Entering Tasks.	01
04	Gantt chart, Critical Path Analysis.	01
05	Software Cost Estimation using COCOMO-I / COCOMO-II for Project.	01
06	UML Diagrams: Use Case Diagram.	01
07	UML Diagrams: Activity Diagram.	01
08	UML Diagrams: Class Diagram.	01

09	UML Diagrams: Sequence Diagram	01
10	UML Diagrams: State Chart Diagram.	01
11	UML Diagrams: Component Diagram.	01



12	UML Diagrams:Deployment Diagram.	01
09	UML Diagrams: Sequence Diagram	01
10	UML Diagrams: State Chart Diagram.	01
11	UML Diagrams:Component Diagram.	01
12	UML Diagrams:Deployment Diagram.	01

Assessment:

Continuous Assessment: 20 marks

Following measures can be used for the continuous assessment as

Assignments /Quiz /Case studies /Projects / Any other measure with the permission of the Director/Principal/HOD/Coordinator

The continuous evaluation has to be done throughout the Semester. The faculty can use the flexibility of the mode as per the requirement of the subject.

Test: 20 marks

Assessment consists of one class tests of 20 marks each. The Class Test is to be conducted when approx. 50 -60% of the syllabus is completed. Duration of each test shall be one hour.

Internal Assessment: 20 marks

The Internal Assessment marks (out of 20) will be the average of the Class test and the Continuous Assessment.

Term Work : 25 marks

The term work will be based on the tutorial performance of the student.**End**

Semester Theory Examination:

1. Question paper will comprise of total 06 questions, each carrying 20 marks.





2. Total 04 questions need to be solved.
3. Question No: 01 will be compulsory and based on the entire syllabus wherein 4 sub-questions of 5 marks each will be asked.
4. Remaining questions will be randomly selected from all the modules.
5. Weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.

6. Course Code	Course Name	Contact Hours	Credits Assigned	Examination Scheme			
				Term Work	Practical	Oral	Total
MCAL22	Soft Skills Development Lab	02	01	50	--	--	50

Pre-requisite: Decent working knowledge of the English language (including Grammar) is a must, keeping in mind that most business/management transactions in India and internationally are conducted in the English language

Lab Course Objectives: Course aim to

Sr. No.	Course Objective
1	Inculcate the essential skills that professionals need to distinguish themselves and make a positive impact on their work and social lives
2	Provide better understanding of corporate culture and to improve their etiquettes, interpersonal skills and professional image
3	Develop holistically and ensure comprehensive learning.

Lab Course Outcomes:

Sr. No.	Outcome	Bloom Level
CO1	Develop interpersonal skills that help in communication, teamwork, leadership and decision making.	Applying
CO 2	Methodically study, formulate and interpret different facets of organizational behavior.	Evaluating
CO 3	Develop holistic leaders and technocrats helping in individual and organizational growth.	Creating

Description:





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Module No	Detailed Contents	Hrs
1	Soft Skills Introduction: Soft-Skills Introduction What is Soft Skills? Significance of Soft-Skills – Soft-Skills Vs. Hard Skills - Selling Soft- Skills – Components of Soft Skills – Identifying and Exhibiting Soft-Skills Self Learning Topics: Types of Soft, Hard Skills	02
2	Communication : Concept and meaning of communication, methods of communication, verbal and non-verbal communication, techniques to improve communication. Communication in a business organization: Internal (Upward, Downward, Horizontal, Grapevine). External Communication, 7 C's of communication. Active Listening, Differences between Listening and Hearing, Critical Listening, Barriers to Active Listening, Improving Listening, Intercultural sensitivities, Business etiquette when dealing with people from different nationalities Practical (Role plays, case studies)	03
	Self Learning Topics : Problems/Barriers in communication	
3	Written/ Business Communication : Written Communication: Principles of Correspondence, language and style in official letter (full block format, modified block format), Business letters (enquiry to complaints and redressal), Application letter, CV writing, , E- mail etiquette, Documentation of Meetings, Notice, Agenda, Minutes of Meetings. Practical (Practice on CV, Business Letters, Applications, Notice, Agenda, Minutes of Meetings) Self Learning Topics: Impact of modern Technology on Business Communication the paperless office, use of modern devices	04





4	<p>Presentation Skills :</p> <p>Presentation techniques, Planning the presentation, Structure of presentation, Preparation, Evidence and Research, Delivering the presentation, handling questions, Time management. Visual aids.</p> <p>Practical - Presentation by students in groups of maximum 3 on Organizational Behavior topics allocated by faculty.</p> <p>Topics have to cover –</p> <ol style="list-style-type: none"> 1. Personality: Meaning, Personality Determinants, Traits, Personality types and its, impact on career growth, 2. Individual / Organizational Decision Making. 3. Attitude: Meaning, Components of Attitude, changing attitude and its impact on career growth 4. Perception and Values. 5. Motivation and Leadership: Concept, Importance. 6. Goal setting: SMART (Specific, Measurable, Attainable, Realistic, Timely) Goals, personal and professional goals 7. Time and Self-Management. 8. Learning in a group, Understanding Work Teams, Dynamics of Group Behavior, Techniques for effective participation 9. Etiquette- General & Business Etiquette, Body language 10. Emotional intelligence of self and SWOC 11. Threats v/s Challenges 12. Dos and Dots of a presentation/ meetings Online & offline.(presenter & members) <p>Self Learning Topics : Voice modulation, Tone, Pitch, Knowledge and self confidence</p>	08
5	<p>Effective Public Speaking :</p> <p>Public Speaking, Selecting the topic for public speaking, Understanding the audience, Organizing the main ideas, Language and Style choice in the speech, Delivering the speech, Voice Clarity.</p> <p>Practical (Extempore)</p> <p>Self Learning Topics : Preparation, Attire, Posture and Delivery techniques</p>	03
6	<p>Group Discussions :</p> <p>Group Discussion Skills, Evaluation components, Do's and Don'ts.</p>	03



	Practical (Group Discussions) SelfLearningTopics: --	
7	Interview Techniques : Interview Techniques, Pre-Interview Preparation, Conduct during interview, Verbal and non-verbal communication, common mistakes. Preparation of CV. Practical (Role plays, mock interviews, Telephonic Interviews, Body Language, Facial Expression) SelfLearningTopics : Sample communications and exercises, audio-visual presentations	03

Reference Books:

Reference No	Reference Name
1	Business Communication (Revised Edition), Rai & Rai, Himalaya Publishing House.
2	Soft skills: an integrated approach to maximise Personality, Chauhan & Sharma, Wiley India publications.
3	Business Communication: A practice oriented approach, Kalia and Shailja Agarwal.
4	Business Communication – Meenakshi Raman, Prakash Singh, Oxford Publication
5	Stephen Robbins & Judge Timothy: Organization Behavior, Pearson Education
6	K. Aswathappa – Organizational Behavior: Text, cases & games, Himalaya Publishing House.
7	Pareek, Udai, Understanding Organizational Behaviour, Oxford University Press, New Delhi.
8	Taylor & Chandra, “Communication for Business: A Practical Approach,” Pearson
9	Doctor & Doctor, “Business Communication,” Sheth Publishers.

Suggested list of experiments

Practical No	Problem Statement
1	Role Plays
2	Management Activities/Games
3	Case Studies
4	Presentations
5	Extempore Public Speaking
6	Group Discussions
7	Mock Interviews





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Assessment:

Term Work: Will be based on Continuous Assessment

Laboratory work will be based on the syllabus with minimum 10 experiments. Experiments marks 40

Attendance 10 marks

Practical will be evaluated by the subject teacher and documented according to a rubric

	Course Name	Teaching Scheme			Credits Assigned		
MCA21	Mathematical Foundation for Computer Science 2	Contact Hours					
		Theory		Tutorial	Theory	Tutorial	Total
		3		1	3	1	4
		Examination Scheme					
		Theory			Term Work	End Sem Exam	Total
		CA	Test	AVG			
		20	20	20	25	80	125

Pre-requisite: Basic knowledge of Mathematics and Statistics

Course Objectives: The course aim to

Sr.No	Course Objective
1	Study the formulation of Linear programming problems and obtain the optimum solution using various methods.





2	Solve the transportation, assignment problems and obtain their optimal solution
3	Use competitive strategy for analysis and learn to take decisions in various business environments
4	Understand queuing and simulation models and analyze their performance in real world systems

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

Sr.No	Outcome	Bloom Level
CO1	Formulate mathematical model for a broad range of problems in business and industry.	Creating
CO 2	Apply mathematics and mathematical modeling to forecast implications of various choices in real world problems	Applying
CO 3	Think strategically and decide the optimum alternative from various available options	Evaluating
CO 4	Evaluate performance parameters of a real system using various methods	Evaluating

Module No	Detailed Contents	Hrs
01	Linear Programming Problem: Introduction, Formulation of linear programming problem and basic feasible solution: graphical method, Simplex method, artificial variables, Big M method, Two Phase method. Self Learning Topics: special cases of LPP	10



02	<p>Transportation Problem: Definition of Transportation Problem, Initial basic feasible solution: North-West Corner method, Least Cost method, Vogel's Approximation method, optimum solution: MODI method.</p> <p>Self Learning Topics: optimization using stepping stone method</p>	6
03	<p>Assignment Problem & Travelling Salesman Problem: Definition of assignment Problem : Hungarian method (minimization and maximization), Travelling Salesman Problem : Hungarian method.</p> <p>Self Learning Topics: Simple applications in daily life</p>	6
04	<p>Game Theory & Decision Making : Rules of Game Theory, Two person zero sum game, solving simple games (2x2 games), solving simple games (3x3 games) Decision making under certainty, under uncertainty, Maximax Criterion, Maximin Criterion, Savage Minimax Regret criterion,</p> <p>Laplace criterion of equal Likelihoods, Hurwicz criterion of Realism</p> <p>Self Learning Topics: Decision tree for decision-making problem.</p>	7
05	<p>Queuing Models: Essential features of queuing systems, operating characteristics of queuing system, probability distribution in queuing systems, classification of queuing models, solution of queuing M/M/1 : ∞ /FCFS, M/M/1 : N/FCFS.</p> <p>Self Learning Topics: Understanding Kendall's notation in queuing theory</p>	5
06	<p>Simulation: Introduction to simulation, steps in simulation, advantages of simulation, limitations of simulation, applications of simulation, Monte-Carlo method: simple examples, single server queue model.</p> <p>Self Learning Topics: Generation of pseudo random numbers and their properties.</p>	6

Reference Books:

Reference No	Reference Name
1	Hamdy A. Taha, University of Arkansas, "Operations Research: An Introduction", Pearson, 9th Edition, ©2011, ISBN-13: 9780132555937





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2	Sharma, S.D. and Sharma, H. , “Operations Research: Theory, methods and Applications”,KedarNath Ram Nath, 2010, 15, reprint
3	J. K. Sharma, “Operations Research : Theory And Applications” , Macmillan India Limited, 2006 (3 Edition),ISBN 1403931518, 9781403931511
4	S. C. Gupta, “Fundamentals of Statistics” – Himalaya Publishing House, 2017, 7th edition, ISBN 9350515040, 9789350515044
5	Prem Kumar Gupta & D S Hira, S. Chand publications , “Operations Research”, 7/e, ISBN-13: 978-8121902816, ISBN-10: 9788121902816
6	A. Ravindran, Don T. Phillips, James J. Solberg, “Operations Research: Principles and Practice”, 2nd Edition, January 1987, ISBN: 978-0-471-08608-6
7.	Frederick S. Hillier, Gerald J. Lieberman, Introduction to Operations Research , McGraw-Hill, 2001,Edition7, illustrated,ISBN 0071181636, 9780071181631
8.	Jerry Banks, John S. Carson, Barry L. Nelson, Contributor Barry L. Nelson "Discrete-event System Simulation",Prentice Hall, 1996, Edition 2, illustrated, ISBN 0132174499, 9780132174497

Web References:

Reference No	Reference Name
1	Operations Research, Prof.Kusum Deep, IIT-MADRAS, https://nptel.ac.in/courses/111/107/111107128/
2	Introduction to Operations Research, Prof. G. Srinivasan, IIT-ROORKEE, https://nptel.ac.in/courses/110/106/110106062/
3	Fundamentals of Operations Research, Prof. G. Srinivasan, IIT-MADRAS, https://nptel.ac.in/courses/112/106/112106134/
4	Modeling and simulation of discrete event systems,Prof.P. Kumar Jha, IIT-ROORKEE, https://nptel.ac.in/courses/112107220/
5	Game Theory, Prof. K. S. MallikarjunaRao, IIT-BOMBAY, https://nptel.ac.in/courses/110/101/110101133/
6	Decision Modelling, Prof. BiswajetMahanty, IIT-KHARGPUR, https://nptel.ac.in/courses/110105082/
7	Karmarkar's Method: https://www.youtube.com/watch?v=LWXXhBilj0o
8	Karmarkar's Method : https://en.wikipedia.org/wiki/Karmarkar%27s_algorithm





Tutorials:

Sr. No.	Topic	Hr
1	Linear programming problem using graphical method	1
2	Linear programming problem using simplex method	1
3	Linear programming problem using Big M method	1
4	Finding the basic feasible solution using Vogel's Approximation Method	1
5	Finding the optimal solution using Modi Method	1
6	Assignment Problem using Hungarian method	1
7	Travelling salesman Problem using Hungarian method	1
8	Solving Two person zero sum game	1
9	Decision Making Under Uncertainty	1
10	Queuing system - (M/M/1):(FCFS /infinity)	1
11	Queuing system - (M/M/1): (FCFS/N)	1
12	Monte-Carlo Method	1

Continuous Assessment: 20 marks

Following measures can be used for the continuous assessment as

Assignments /Quiz /Case studies /Projects / Any other measure with the permission of the Director/Principal/HOD/Coordinator

The continuous evaluation has to be done throughout the Semester. The faculty can use the flexibility of the mode as per the requirement of the subject.

Test: 20 marks

Assessment consists of one class tests of 20 marks each. The Class Test is to be conducted when approx. 50 -60% of the syllabus is completed. Duration of each test shall be one hour.





Internal Assessment: 20 marks

The Internal Assessment marks (out of 20) will be the average of the Class test and the Continuous Assessment.

Term Work : 25 marks

The term work will be based on the tutorial performance of the student. **End**

Semester Theory Examination:

Question paper will comprise of total 06 questions, each carrying 20 marks. Total 04

questions need to be solved.

Question No: 01 will be compulsory and based on entire syllabus wherein 4 sub-questions of 5 marks each will be asked.

Remaining questions will be randomly selected from all the modules.

Weightage of each module will be proportional to number of respective lecture hours as mentioned in the syllabus

Course	Course Name	Teaching Scheme			Credits Assigned		
MCA11	Mathematical Foundation for Computer Science 1	Contact Hours					
		Theory	Tutorial	Theory	Tutorial	Total	
		3	--	3	1	3	
		Examination Scheme					
		Theory			Term Work	End Sem Exam	Total
		CA	Test	AVG			
		20	20	20	25	80	125

Pre-requisite: Student must know

Measures of central tendency and dispersion
 Set theory
 Basic principles of counting

Course Objectives: Learner/Student will learn and perform





Sr.No.	Course Objective
1	Statistical measures on various types of data
2	Correlation and regression techniques for estimation
3	Probability aspects to take proper decision
4	Application of discrete and continuous probability distributions
5	Various methods of hypothesis testing

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

Sr.No.	Outcome	Bloom Level
CO 1	Apply different statistical measures on various types of data	Applying
CO 2	Evaluate using regression analysis.	Evaluating
CO 3	Analyze different types of Probability and their fundamental applications and random variable.	Analyzing
CO 4	Apply probability distribution to real world problems	Applying
CO 5	Formulate and test the hypothesis for business problem using various methods	Creating

Module	Detailed Contents	Hrs
01	Module: Skewness Karl Pearson's coefficient of skewness, Bowley's coefficient of skewness. Self Learning Topics: Determining skewness of data related to real system and its graphical representation	04



02	Module: Regression and correlation Correlation: Karl Pearson's coefficient of correlation, Spearman's rank correlation coefficient. Regression: Linear and Non-linear regression (quadratic and cubic), Estimation using linear regression. Self Learning Topics: Apply correlation and regression on real world data and its graphical representation	08
03	Module: Introduction to probability & conditional probability Introduction to probability, Random experiment, Sample space, Events, Axiomatic Probability, Algebra of events. Conditional Probability, Multiplication theorem of Probability, Independent events, Bayes' Theorem Self Learning Topics: Applications based on Bayes' theorem	08
04	Module: Random variable Discrete random variable, Continuous random variable, Two-dimensional random variable, Joint probability distribution, Stochastic independence, Properties of Expectation and Variance, Covariance. Self Learning Topics: Study of various random variables and its independence.	08
05	Module: Theoretical probability distributions Binomial, Poisson, Normal. Self Learning Topics: Study of properties of standard normal variate.	07



06	Module: Testing of hypothesis Hypothesis testing, Type I and Type II errors. Tests of significance – single sample, Student's t-test, large sample test (z-test), Chi-Square test - test for independence of attributes. Self Learning Topics: Study of elementary sampling methods.	05
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Reference Books:

Reference No	Reference Name
1	S C Gupta, Fundamentals of Statistics, Himalaya Publishing house, Seventh edition.
2	S.C.Gupta, V.K.Kapoor , S Chand , Fundamentals of Mathematical Statistics, Sultam and Chand sons publication, First Edition
3	Kishore Trivedi, Probability and Statistics with Reliability, Queuing, And Computer Science Applications, PHI ,First Edition
4	Hwei P. Hsu, Schaum's Outlines Probability, Random Variables & Random Process, Tata McGraw Hill, Third Edition
5	J.Susan Milton, Jesse C. Arnold, Introduction to Probability & Statistics, Tata McGraw Hill, Fourth Edition
6	Dr J Ravichandran ,Probability & Statistics for Engineers, Wiley
7	Dr Seema Sharma, Statistics for Business and Economics, Wiley
8	Ken Black, Applied Business Statistics, Wiley, Seventh Edition

Web References:

Reference No	Reference Name
1	IIT Kharagpur – Probability and Statistics by Dr. Somesh Kumar https://nptel.ac.in/courses/111105041/
2	IIT Madras – Introduction to Probability and Statistics by Dr. G. Srinivasan https://nptel.ac.in/courses/111/106/111106112/
3	IIT Kanpur – Descriptive Statistics with R Software by Prof. Shalabh https://nptel.ac.in/courses/111/104/111104120/
4	IIT Roorkee – Business Statistics by Prof. Mukesh Kumar Barua https://nptel.ac.in/courses/110/107/110107114/
5	MIT – Introduction to Probability and statistics by Jeremy Orloff and Jonathan Bloom https://ocw.mit.edu/courses/mathematics/18-05-introduction-to-probability-and-statistics-spring-2014/index.htm



6	An Introduction to Statistical Learning with Applications in R by Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani http://faculty.marshall.usc.edu/gareth-james/ISL/data.html
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Tutorials:

SrNo	Topic	Hrs
1	Find Bowley's coefficient of skewness	1
2	Find Karl Pearson's coefficient of skewness	1
3	Calculate Karl Pearson's coefficient of correlation	1
4	To fit linear regression and estimate	1
5	Examples on addition and multiplication theorem of probability	1
6	Examples based on Bayes' theorem	1
7	Examples based on independence of discrete random variables.	1
8	Examples based on independence of continuous random variables.	1
9	Example on Poisson distribution	1
10	Example on normal distribution	1
11	Example on t-test	1
12	Example on Chi-square test	1

Assessment:

Continuous Assessment: 20 marks

Following measures can be used for the continuous assessment as

Assignments /Quiz /Case studies /Projects / Any other measure with the permission of the Director/Principal/HOD/Coordinator

The continuous evaluation has to be done throughout the Semester. The faculty can use the flexibility of the mode as per the requirement of the subject.





Test: 20 marks

Assessment consists of one class tests of 20 marks each. The Class Test is to be conducted when approx. 50 -60% of the syllabus is completed. Duration of each test shall be one hour.

Internal Assessment: 20 marks

The Internal Assessment marks (out of 20) will be the average of the Class test and the Continuous Assessment.

Term Work : 25 marks

The term work will be based on the tutorial performance of the student. **End**

Semester Theory Examination:

1. Question paper will comprise of total 06 questions, each carrying 20 marks.
2. Total 04 questions need to be solved.
3. Question No: 01 will be compulsory and based on the entire syllabus wherein 4 sub-questions of 5 marks each will be asked.
4. Remaining questions will be randomly selected from all the modules.
5. Weightage of each module will be proportional to the number of respective lecture hours as mentioned in the syllabus.

ELECTRICAL ENGINEERING

University of Mumbai						
Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Tutorial	Theory	Tutorial	Total
ILO8021	Project Management (abbreviated as PM)	3	-	3	-	3
		Examination Scheme				
		Theory				





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Course code	Course Name	Internal Assessment			End Sem. Exam	Exam Duration (Hrs.)	Term Work	Total
		Test 1	Test 2	Avg.				
ILO8021	Project Management	20	20	20	80	03	-	100

Course Objectives	<ul style="list-style-type: none"> To familiarize the students with the use of a structured methodology/approach for each and every unique project undertaken, including utilizing project management concepts, tools and techniques. To appraise the students with the project management life cycle and make them knowledgeable about the various phases from project initiation through closure.
Course Outcomes	<p>Student will be able to...</p> <ul style="list-style-type: none"> Apply selection criteria and select an appropriate project from different options. Write work break down structure for a project and develop a schedule based on it. Identify opportunities and threats to the project and decide an approach to deal with them strategically. Use Earned value technique and determine & predict status of the project. Capture lessons learned during project phases and document them for future reference

Module	Contents	Hours
1	Project Management Foundation: Definition of a project, Project Vs Operations, Necessity of project management, Triple constraints, Project life cycles (typical & atypical) Project phases and stage gate process. Role of project manager. Negotiations and resolving conflicts. Project management in various organization structures. PM knowledge areas as per Project Management Institute (PMI).	5
2	Initiating Projects: How to get a project started, Selecting project strategically, Project selection models (Numeric /Scoring Models and Non-numeric models), Project portfolio process, Project sponsor and creating charter; Project proposal. Effective project team, Stages of team development & growth (forming, storming, norming & performing), team dynamics.	6





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3	Project Planning and Scheduling: Work Breakdown structure (WBS) and linear responsibility chart, Interface Co-ordination and concurrent engineering, Project cost estimation and budgeting, Top down and bottoms up budgeting, Networking and Scheduling techniques. PERT, CPM, GANTT chart. Introduction to Project Management Information System (PMIS).	8
4	Planning Projects: Crashing project time, Resource loading and leveling, Goldratt's critical chain, Project Stakeholders and Communication plan. Risk Management in projects: Risk management planning, Risk identification and risk register. Qualitative and quantitative risk assessment, Probability and impact matrix. Risk response strategies for positive and negative risks	6
5	Executing Projects: Planning monitoring and controlling cycle. Information needs and reporting, engaging with all stakeholders of the projects. Team management, communication and project meetings. Monitoring and Controlling Projects: Earned Value Management techniques for measuring value of work completed; Using milestones for measurement; change requests and scope creep. Project audit. Project Contracting Project procurement management, contracting and outsourcing,	8
6	Project Leadership and Ethics: Introduction to project leadership, ethics in projects. Multicultural and virtual projects. Closing the Project: Customer acceptance; Reasons of project termination, Various types of project terminations (Extinction, Addition, Integration, Starvation), Process of project termination, completing a final report; doing a lessons learned analysis; acknowledging successes and failures; Project management templates and other resources; Managing without authority; Areas of further study.	6

Books Recommended:

Reference Books:

1. Jack Meredith & Samuel Mantel, Project Management: A managerial approach, Wiley India, 7th Ed.
2. A Guide to the Project Management Body of Knowledge (PMBOK® Guide), 5th Ed, Project Management Institute PA, USA
3. Gido Clements, Project Management, Cengage Learning.
4. Gopalan, Project Management, , Wiley India
5. Dennis Lock, Project Management, Gower Publishing England, 9th Ed.

Assessment:

Internal Assessment consists of two tests out of which; one should be compulsory class test (on minimum 02





Modules) and the other is either a class test or assignment on live problems or course project

Theory Examination:

1. Question paper will comprise of 6 questions, each carrying 20 marks.
2. Total four questions need to be solved.
- 3: Q.1 will be compulsory, based on entire syllabus wherein sub questions of 2 to 5 marks will be asked.
- 4: Remaining question will be randomly selected from all the module

Activities Based on Human Values

1	Yoga Awareness & It's Practical Demonstration
2	Computer Education For Students In Zillha Parishad School
3	INTERACTION WITH STUDENTS IN ZILLHA PARISHAD SCHOOL
4	Social Awareness Program "Importance of education"
5	Blood Donation Camp
6	Laughter yoga
7	Pledge To Act Against Covid-19
8	Vegan Day Event
9	Event On Covid Care For Students
10	Road Safety Rally
11	Art Of Living
12	Constitution Day Event
13	Maharashtra Day

(1) International Yoga Day

On the occasion of International Yoga Day 2017, Ambika Yogashram conducted Yoga session at VIVA Institute of Technology.



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(2) Computer Education for Students of Zilla Parishad School

On 9th April 2019 VIVA Institute of Technology donated a Computer to the Zilla Parishad School, Kumbharpada, Virar (E) for improving the computer literacy among the students. On the occasion the students of VIVA Institute of Technology also interacted with the school students.





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(3) Interaction with Students of Zilla Parishad School, Aug 2018

Faculties of VIVA Institute of Technology, Shirgaon Virar East, conducted an interactive and informative session for the students of Zilla Parishad School, Raipada, and Virar (E) on 3rd August, 2018.



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4.Social Awareness Programme on “Importance of Education”

Organised by
VIVA Institute of Technology



VIVA institute of Technology

has always been taking care of overall growth of the students and staffs. Keeping this in mind, some active students along with the help of our Principal Dr. Arun Kumar and some staffs have organised an awareness programme on the “Importance of Education” of the neighbouring children from the village in the vicinity of the college on 13.06.2018.

Prior to the programme, the Institute understood some of the social issues like poverty and poor or no education for children belonging to the neighbourhood community. Hence the students initiated this programme which involved

- Making children understand the importance of education and schooling.
- Motivating to study.

This programme was inspiring and filled everyone's heart with emotional contentment of doing something for our Nation.

We aim to continue doing such activity and keep inspiring others.



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5.BLOOD DONOR DAY EVENT



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NSS. 14th June 2021:

~~NSS Volunteers of Viva Institute of Technology~~ attended a session on “Blood donor day” Organized by NSS of HNSC University, Mumbai and

M.U. on 14th June, 2021 Monday at 04.00 PM. The Event took place via online platform through zoom meeting wherein our 35 volunteers attended the session. Introduction of the webinar was given by Miss. Aditi Suvarna (NSS Volunteer) followed by welcome address given by Dr. Satish Kolte Director NSS HSNC University Mumbai. Speaker of event was Dr. Neel Verma Assistant Professor Bombay Teachers Training College. After which we were intimated about importance of blood donation and the need for it amid pandemic by Ms. Gayatri Dandavti (NSS Volunteer) and then we were acknowledged by the speech given by Mr. Sudhir Purani, Director NSS University of Mumbai and at last vote of thanks was proposed by Miss. Karupriya Sharma Assistant Professor from HR college and event was officially concluded.

The banner is red with white and gold text. At the top, there are three logos: HSNC University Mumbai, National Service Scheme, and a university crest. The main text reads: "National Service Scheme OF HSNC UNIVERSITY, MUMBAI AND MUMBAI UNIVERSITY Jointly Organizes A Webinar On Account Of 'Blood Donor Day'". Below this, a white banner features a photo of Mr. Vinay Shetty, a member of SBTC and NGO Think Foundation. At the bottom, it states "June 14, 2021" and "16:00" in red, followed by "Join The Programme On Zoom" in white on a red background.

(6) International Webinar on Laughter Yoga

NSS. 08 February 2022:










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NSS Volunteers of Viva Institute of Technology attended an International Webinar on Laughter Yoga for University Level Event organized by NSS Unit of the University of Mumbai and S.S.T. College of Arts and Commerce in association with Laughter Yoga International on the occasion of "Azadi Ka Amrit Mahotsav". The webinar was completed via online platform by attending zoom meeting conducted on 8th February 2022 from 5:00 pm to 6:00 pm. The webinar was taken by Dr. Madan Kataria, World Renowned Founder and Originator of Laughter Yoga Clubs in more than 110 countries. The topic was about Laughter Yoga and about its benefits in day to day life. Dr. Madan Kataria told how laughter improves our immune system and also how we can harness the powerful benefits of laughter yoga. This kind of training programs are indeed successful and helpful for all the people to make this place a better world. It was indeed very informative session.

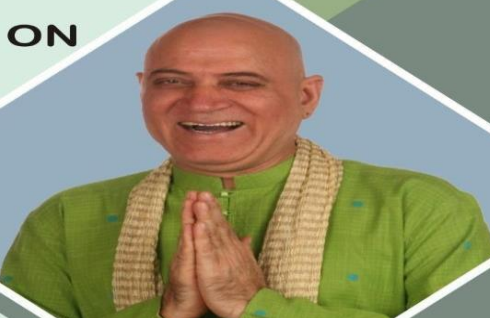


**ON THE OCCASION OF
AZADI KA AMRIT MAHOTSAV**

**N.S.S. CELL, UNIVERSITY OF MUMBAI
AND
S. S. T. COLLEGE OF ARTS & COMMERCE
ULHASNAGAR - 4
in association with
LAUGHTER YOGA INTERNATIONAL
organises
INTERNATIONAL WEBINAR ON
LAUGHTER YOGA**

**RESOURCE PERSON
WORLD RENOWNED
LAUGHTER GURU
DR. MADAN KATARIA**

**Date : 8th February, 2022
Time : 5.00 pm to 6.00 pm**



(7) PLEDGE TO ACT AGAINST COVID-19

NSS. 24 May 2021:





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NSS Volunteers of Viva Institute of Technology took a pledge on 24th May 2021 Monday on 11:00 am on becoming a Young Warrior And take action against COVID-19 pandemic to safeguard ourselves and our communities against covid-19. We took this by posting, "I pledge to act against Covid-19. I am a Young Warrior". So we also tagged 5 friends in the post to make them also aware of the pledge and so that they also share and spread awareness for the same. After which we were required to complete some simple tasks on our android phones and we got e-certificates too. This was very informative event and that pledge will always remind us of the duty of us being a NSS volunteer towards our society. We also posted this on Facebook, Instagram and Twitter tagging @YuWaahIndia @UNICEE India.



(8) Vegan Day Event 2021

NSS. 07 February 2022:

NSS Volunteers of Viva Institute of Technology attended a webinar conducted by NSS Unit of the University of Mumbai and Vegan Outreach on topic FOOD - PLANET - HEALTH which commenced on 07th February 2022. We completed this event via online platform by attending zoom meeting conducted from 3:00 pm to 4:30 pm. There were total of 60 volunteers from our unit who attended the webinar. The Guest speaker for the webinar was Preen Sachdeva and Astha Gupta who is Outreach Coordinator at Vegan Outreach, India. In this webinar, we learnt about the impact of food choices on animals and the environment. We were shown many advantages related to Vegan Diet.





And the problems which affect the food chain of this planet. Health was the main concern in this webinar, which the speaker presented the topic very effectively. We as students were told to spread this message of Going Vegan further to colleagues and friends. We also received certificates for attending the session. It was indeed very informative session.

(9) Event On Covid Care For Students

NSS. 05 August 2021:

NSS Volunteer of VIVA INSTITUTE OF TECHNOLOGY attended an event organized by Mumbai university NSS in association with the Art of Living For Viva Institute of technology on “Covid care Immunity Booster For students” art of living had launched across India to support the fight against the pandemic. These programs help improve people’s mental and physical health. The event was organized on 5th August 2021 from 5 pm to 6 pm via an online platform through Zoom meeting. In the event we were informed about a problem which is faced by the students during the course of pandemic and new covid – 19 pandemic negatively impact our work routine, sleep routine, ability to sleep, Increased stress, Deteriorated physical health, etc. And also appropriate mental and emotional health etc. And also appropriate solutions to this problem were also discussed. It was great and we get many takeaways from the session

(10) ROAD SAFETY RALLY

NSS 6th December 2019:





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NSS volunteers of VIVA Institute of Technology successfully completed Road Safety Rally At 90ft road to Manvelpada on 6th January 2019. There were ____ volunteers present for the event. The rally was conducted from 10:30 AM to 12:30 PM. The volunteers were instructed to reach collage at 8:45 AM.

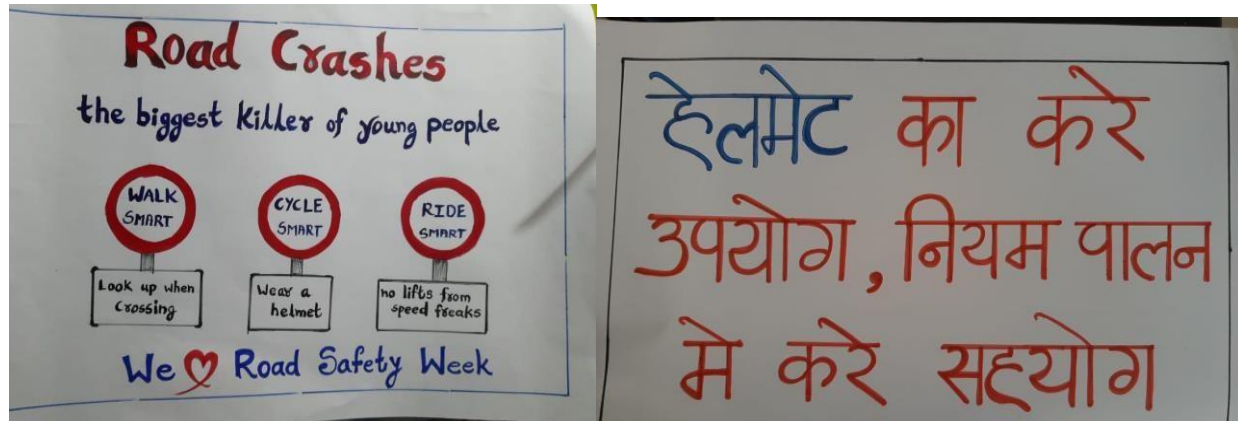
The motive behind organizing the rally was to develop the student as a national power, to make them think about development, in which road safety plays an important role. The objective of the rally was to bring the students to the traffic roadsafety information to all the people.

At the rally, the students were walking along the slogans while chanting slogans with sarcasm. The students shouted out the slogans about road safety. It was not only about two wheelers but also for the drivers who drive four wheelers.



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It was a successful event wherein the students also interacted with the citizens. This event was completed under the supervision and permission of Traffic Police Virar.

(11) MEDITATION SESSION BY THE ART OF LIVING 2021



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NSS. 13 May 2021:

NSS Volunteers of Viva Institute of Technology attended a session presented by the Art of living on, “Happiness wali Immunity for all students and faculty members for Meditation.” Our 45 volunteers of Viva Tech joined the event which was conducted via online platform on Google Meet. It was a free live 30 minutes Immunity and Meditation session conducted on 13th May 2021 from Evening 5:30 pm to 6:30 pm. The speaker started with a very beautiful lines which he recalls, “Happiness of a person depends on his choice.” Speaker explained us that No one needs to feel lonely or alone, Panic and fear is taking over people with so much negative news floating everywhere. Panic is a recipe of defeat. Ever before one can fight covid, one gets defeated mentally. The session covered a sequential topic on Breathworks to Boost Oxygen levels, Meditation for immunity, art, food and lifestyle tips for living a healthy life. We were taught the correct method on how to practice meditation and how we can stay calm in stressful situation and can take right decision when required too. At the end the vote of thanks was proposed by our NSS volunteers Ms. Shivani Shukla and the session was concluded by a small audio visual presented by Art of Living. It was indeed a very helpful session.



(12) Constitution Day Event 2021.

NSS, 26th December 2021





NSS Volunteers of VIT prepared a video on the occasion of constitution day is celebrated in our country to pay homage for formation of our constitution . So on 25th November senior year volunteer took a meeting throughmeet and came to conclusion that we will be preparing a video and raise awareness on National Constitution day , So we all shared our video and with help of technical team will managed to crate a video on the occasion . In the video we read out the preamble of our constitution and every citizen must know the preamble of our country . And thus to raise the awareness we prepared a video for same . Our video was shared o our intagram account and twitter handle of our NSS page . It was a collective efforts of the volunteers and we also shared this video with our family . friends and colleagues and batch mates

(13) EVENT ON CELEBRATION OF MAHARASHTRA DAY

NSS. 01 May 2021:

NSS Volunteers of Viva Institute of Technology participated in an university level program organized by Mumbai University. On the occasion of “61st Maharashtra Day.” Our all 50 volunteer of Viva tech joined the event conducted on 1st May 2021 sharp at 11:30 am to 1:00 pm. The speaker of the event was prof. Ashok Chaushkaur HOD, Politics Department, Shivaji University, Kolhapur. The event started with the national anthem followed by welcoming of chief guest Prof. Ravindra Kulkarni, MU after which Pictorial Maharashtra song was sung. Various events took place in series followed by one after the other. Speeches were given by some political leader and wherein they briefed us the core reason without which Maharashtra State hadn't been into a secular state of our nation. After which the chair person Prof. Suhas Pendekar presented a speech and at last vote of thanks was proposed by Prof. Baniram Gaikwad. M. U. this was a very acknowledgeable session which intimated us of our motherland.





Environment and Sustainability

FIRST YEAR ENGINEERING

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
FEC106	Environmental Studies	02	--	--	02	--	--	02

Course Code	Course Name	Examination Scheme							
		Theory				Term Work	Pract	Oral	Total
		Internal Assessment			End Sem Exam				
		Test1	Test2	Av of Test 1 & 2					
FEC106	Environmental Studies	15	15	15	60	--	--	--	75

Objectives

1. Creating the awareness about environmental problems among students.
2. Imparting basic knowledge about the environment and its allied problems.
3. Developing an attitude of concern for the environment.
4. Motivating students to participate in environment protection and environment improvement.
5. Acquiring skills to help the concerned individuals in identifying and solving environmental problems.

Outcomes: Learner will be able to...

1. Illustrate Depleting Nature of Environmental Resources, Global Environmental Crisis, Ecosystem concept.
2. Adapt to 3R (Reuse, Recovery, Recycle).
3. Study different control measures related to Environmental Pollution.
4. Illustrate and analyse various Case Studies related to Environmental Legislation.
5. Demonstrate the working of Renewable energy sources & Equipments.
6. Illustrate the Techniques of Disaster Management and Green Building.



Module	Detailed Contents	Hrs.
01	Overview of Environmental Aspects: <ul style="list-style-type: none"> • Definition, Scope and Importance of Environmental Study • Need for Public awareness of environmental education • Introduction to depletion of natural resources: Soil, Water, Minerals and Forests. • Global crisis related to – Population, water, sanitation & Land. Ecosystem: <ul style="list-style-type: none"> • Study of ecosystems : Forest, desert and aquatic (in brief). • Energy flow in Ecosystem, overview of Food Chain, Food Web and Ecological Pyramid. • Concept of ecological succession and its impact on human beings (in brief). Case Study on Chipko Movement (Uttarakhand, India), (began in 1973).	4
02	Aspects of Sustainable Development: <ul style="list-style-type: none"> • Concept and Definition of Sustainable Development. • Social, Economical and Environmental aspects of sustainable development. • Control measures: 3R (Reuse, Recovery, Recycle), • Resource utilization as per the carrying capacity (in brief). Case Study on Narmada BachaoAndolan (Gujarat, India, in the mid and late 1980s).	2
03	Types of Pollution: <ul style="list-style-type: none"> • Water pollution: Sources of water pollution and Treatment of Domestic and industrial waste water (with flow-diagram of the treatment), • Land Pollution: Solid waste, Solid waste management by land filling, composting and incineration • Air pollution: Sources of air pollution, Consequences of air pollution :- Greenhouse effect (Explanation with schematic diagram), Photochemical Smog (Explanation with chemical reaction). Cleaning of gaseous effluents to reduce air contaminants namely dust particle or particulate matters by using:- (i) Electrostatic precipitators (ii) Venturi scrubber (Schematic diagram and working). <ul style="list-style-type: none"> • Noise pollution: Sources, effects, threshold limit for different areas and control methods. • E-Pollution: Definition, Sources and effects. • Nuclear pollution: Sources and effects. Case study on Water Pollution of Ganga River. Case study on London smog (U. K.)(December, 1952). Case Study of Fukushima Disaster (March, 2011).	8
04	Pollution Control Legislation: <ul style="list-style-type: none"> • Functions and powers of Central and State Pollution Control Board. • Environmental Clearance, Consent and Authorization Mechanism. Case Study of Dombivali MIDC- Boiler Blast Tragedy (Thane, Maharashtra, India), (May, 2016).	3



05	Renewable Sources of Energy: <ul style="list-style-type: none">• Importance of renewable sources of energy.• Principle and working with schematic diagram of :-<ul style="list-style-type: none">(i) Solar Energy: (a) Flat plate collector and (b) Photovoltaic cell.(ii) Wind Energy: Wind Turbines.(iii) Hydropower: Hydropower generation from water reservoir of the dam.(iv) Geothermal Energy: Utilisation of underground sources of steam for power generation.	4
06	Technological Advances to overcome Environmental problems: <ul style="list-style-type: none">• Concept of Green Buildings,• Various indoor air pollutants and their effects on health.• Carbon Credit: Introduction and general concept.• Disaster Management: Techniques of Disaster Management to cope up with (i) Earthquake and (ii) Flood. <p>Case Study on Earthquake in Latur (Maharashtra, India), (September,1993). Case Study on Cloudburst and Landslides at Kedarnath (Uttarakhand, India), (June, 2013).</p>	5

Assessment:

Internal Assessment Test:

1. Each test will be of 15 marks.
2. At least one question will be based on case study. Candidate is expected to explain the salient features of the incident and suggest preventive measures.

End Semester Theory Examination:

1. Question paper will comprise of total six question, each carrying 15 marks.
2. Total four questions need to be solved.
3. Question Number One will be compulsory and it will be based on entire syllabus wherein sub-questions of 2 to 3 marks will be asked.
4. Remaining questions i.e. Q.2 to Q.6 will be mixed in nature and will be divided in three parts (a), (b) & (c) and they will belong to different modules.
5. In question paper, weight of each module will be proportional to number of respective lecture hours as mentioned in the syllabus.

References:

1. Environmental Studies by Benny Joseph, TataMcGraw Hill.
2. Environmental Studies by R.Rajagopalan, Oxford University Press.
3. Environmental Studies by. AnanditaBasak, Pearson Education.
4. Essentials of Environmental Studies by Kurian Joseph & Nagendran, Pearson Education.





5. Fundamentals of Environmental Studies by Varadbal G. Mhatre, Himalaya Publication House.
6. Perspective of Environmental Studies, by Kaushik and Kaushik, New Age International.
7. Renewable Energy by Godfrey Boyle, Oxford Publications.
8. Textbook of Environmental Studies by Dave and Katewa, Cengage Learning.
9. Textbook of Environmental studies by ErachBharucha, University Press.
10. Environmental pollution control engineering by C.S. Rao, New Age International (P) Limited Publishers

CIVIL ENGINEERING

Semester-VI

Course Code	Course Name	Credits
CEC604	Environmental Engineering	04

Contact Hours			Credits Assigned			
Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
04	-	-	04	-	-	04

Theory					Term Work/Practical/Oral			Total
Internal Assessment			End Sem Exam	Duration of End Sem Exam	Term Work	Pract.	Oral	
Test-I	Test-II	Average						
20	20	20	80	3 Hours	-	-	-	100

Every civil engineer must be acquainted with the principles of public health engineering, purification of water, sewage collection, design of water and sewage treatment and develop rational approaches towards sustainable waste management via appropriate treatment and reuse. The course deals with the overall features and study of treatment of water, building drainage, rain water harvesting, sewage treatment processes and solid waste management. The course also lays emphasis on the knowledge of Air and Noise pollution.

Objectives

- 1 To demonstrate the necessary knowledge and concepts in the fields of water supply and





quality of water.

- 2 To impart necessary skill for the design and operation of various units of water treatment facilities.
- 3 To recognize the necessary knowledge of good plumbing system, building drainage and rainwater harvesting.
- 4 To demonstrate the necessary knowledge on domestic sewage and Sewerage system.
- 5 To develop a flow Content for sewage treatment and design its units.
- 6 To impart the basic understanding of Air pollution, noise pollution and solid waste so as to control its adversity on ambient environment.

2

Detailed Syllabus

Module	Course Module / Contents		Periods
1	Water Supply and Quality Of Water		04
	1.1	Water supply: Water supply systems, water resources, types of intake structures, distribution systems of water and distribution layouts.	
	1.2	Quality of water: Introduction to pure water: potable, wholesome, palatable, distilled, polluted and contaminated water, drinking water standards and characteristics of water, water borne diseases.	
2	Water Treatment		15
	2.1	WTP: Typical layout of WTP, Aeration, Types of Aeration systems, sedimentation, types of settling, tube settlers, design of sedimentation tank.	
	2.2	Coagulation and flocculation: Principle of coagulation, flocculation, Clari flocculator, coagulants aids.	
	2.3	Filtration: rapid sand filters, operation, cleaning and back-washing, Entire design of rapid gravity filter with under drainage system. Pressure filter: Construction and operation	
	2.4	Disinfection: Different methods of disinfection, chlorination and chemistry of chlorination, chlorine demand, free and combined chlorine, various forms of chlorine, types of chlorination. Numerical to calculate quantity of required chlorine doses.	





	2.5	Advanced and Miscellaneous Treatments: Water softening by lime soda process and by base exchange method, Reverse Osmosis, Activated carbon, Membrane filtration, Removal of Iron and Manganese.	
3	Building Water Supply, Drainage and Rainwater Harvesting		04
	3.1	Building water supply: Water demands, Per capita Supply, Service connection from main, Water meter.	
	3.2	Building drainage: basic principles, traps-types, location and function, Systems of Plumbing, anti siphonic and vent pipes.	

4	Domestic Sewage and Sewerage System:		08
	4.1	Sewage: Introduction to domestic sewage, and storm water, System of sanitation, Physical and chemical characteristics, decomposition of sewage, BOD, COD, numerical on BOD. MPCB norms for disposal of sewage effluent.	
	4.2	Sewerage system: Systems of sewerage and their layouts: Separate, Combined and partially combined system, merits and demerits, self-cleaning velocity and non-scouring velocity, Sewer- Shape, hydraulic design of sewers, Laying and testing of sewers, manhole-location, necessity, types and drop manhole, ventilation	
5	Sewage Treatment		15
	5.1	Treatment processes: Objective, methods of treatment, flow sheets showing Preliminary, Primary, Secondary and Tertiary treatment. Primary treatment: Screening, Grit removal, Oil and Grease removal, settling tank.	
		Secondary Treatment Methods: Trickling filter- Principle, Process description and Design of trickling filter. Activated sludge process (ASP) - Principle, Process description, Recirculation of sludge, (numerical), Sludge volume index.	
	5.2	Introduction to Biological Treatment: Aerated lagoons, Oxidation ponds, oxidation ditches.	
		Self-purification of natural waterbodies: Oxygen economy, Disposal of treated effluent. Disposal of Raw and treated sewage on land and water, DO sag curve.	



	5.3	Rural and Low-cost sanitation: Septic Tank and Soak Pit – Operation, suitability and Design	
6	Air Pollution, Noise Pollution and Municipal Solid Waste Management		06
	6.1	Air pollution: Composition of air, Quantification of air pollutants, Air quality standards, Effect of air pollution on Environment, Introduction to Air pollution control devices.	
	6.2	Noise pollution: Basic concept and measurement, Effects of noise, and control methods, and numerical on sound level.	
	6.3	Municipal Solid Waste Management: Sources, storage, treatment, disposal, 5R Principles.	
Total			52

Contribution to Outcome

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

- 1 Analyse the quality of water and make outline of water Supply scheme.
- 2 Design the various units of water treatment plant and apply the advanced, miscellaneous treatments whenever necessary.
- 3 Build service connection of water supply from main and building drainage system at construction site along with rain water harvesting layout.
- 4 Analyse and plan sewerage system along with test for sewer line.
- 5 Design the units of sewage treatment plant. Also, able to apply the knowledge of low-cost treatment and stream sanitation.
- 6 Understand air pollution, noise pollution and functional elements of solid waste management.

Internal Assessment

20 Marks

Consisting of two Compulsory Class Tests –

First test based on approximately 40% of contents and second test based on remaining contents (approximately 40% but excluding contents covered in first test).

Average of marks will be considered for IAE.

End Semester Examination

80 Marks

Weightage of each module in end semester examination will be proportional to number of respective lecture hours mentioned in the curriculum.

- 1 Question paper will comprise of total six questions, each carrying 20 marks.
- 2 Question 1 will be compulsory and should cover maximum contents of the curriculum.





- 3 Remaining questions will be mixed in nature (for example if Q.2 has part (a) from module 3 then part (b) will be from any module other than module 3).
- 4 Only Four questions need to be solved.

Site Visit:

The students will visit to sewage treatment plant/ water treatment plant in the nearby vicinity or in the city and prepare detailed report thereof. This report will form a part of the term work

Recommended Books:

- 1 Water Supply Engineering: S. K. Garg, Khanna Publication.
- 2 Water Supply Engineering: P.N. Modi, Rajsons Publication.
- 3 Water Supply and Sanitary Engineering: S.K. Hussain, Oxford & IBH Publication, New Delhi
- 4 Environmental Engineering: *B. C. Punmia*, Laxmi Publications, New Delhi.
- 5 Solid waste management in developing countries: A.D. Bhide and B.B. Sundaresan
- 6 Environmental Engineering Vol II- Sewage Disposal and Air Pollution Engineering: *S. K. Garg*, Khanna Publishers New Delhi
- 7 Wastewater Treatment- Concepts and Design Approach: G. L. Karia and R. A. Christian
- 8 Integrated solid waste management, Tchobanoglous. Theissen and Vigil, McGraw Hill Publication.

Reference Books:

- 1 Manual on Wastewater Treatment 3rd Ed. Pub: CPH and Env. Engg. Organization, Ministry of Urban Development, Govt. of India, New Delhi, 1991.
- 2 Plumbing Engineering, Theory and Practice: *Patil S. M.*, Seema Publication, Mumbai.
- 3 Manual on Municipal Solid Waste Management: Ministry of urban development, New Delhi.
- 4 Water Supply and Sewerage: *E.W. Steel*.
- 5 Manual on Water Supply and Treatment, (latest Ed.): Ministry of Urban Development, New Delhi.
- 6 Water supply and pollution control: J.W. Clark, W. Veisman, M.J. Hammer, International textbook company.
- 7 CPHEEO Manual on Water Supply and Treatment.
- 8 CPHEEO Manual on Sewage and Treatment.
- 9 Environmental Engineering: Peavy, H.S., Rowe D.R., Tchobanoglous G.; 1991, Tata-Mcgraw Hill.





Civil Engineering

Semester VIII

Course Code	Course Name	Credits
CEDLO8015	Department Optional Course 5: Industrial Waste Treatment	03

Contact Hours			Credits Assigned			
Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total
03	--	--	03	--	--	03

Theory					Term Work/Practical/Oral			Total
Internal Assessment			End Sem Exam	Duration of End Sem Exam	Term Work	Pract.	Oral	
Test-I	Test-II	Average						
20	20	20	80	3 Hrs.	--	--	--	100

Rationale

Industrial wastewater is much more polluted than the domestic wastewater and hence has to be treated with the efficient choice of treatment units by preventing pollution of natural streams and rivers. Wastewater treatments may not suffice only with primary treatments until they are modified and supplemented by additional techniques because of toxic chemicals. Industries are therefore generally prevented by legal aspects, from discharging their untreated effluents. It becomes mandatory for industries to treat their wastewater in their individual treatment plant or common effluent treatment plant before discharging their waste on land, lake, river, municipal sewer, streams as the case may be.

Objectives

1. To enable the students to understand quality, characteristics, toxicity of industrial wastewater





and its effects on streams.

- 2.To enable the students to understand the impact of industrial wastewater on natural streams.
- 3.To enable the students to understand waste minimization techniques for industrial wastewater.
- 4.To enable the students to understand the necessary knowledge and concepts of biological treatment and advanced/emerging techniques.
- 5.To enable the students to understand various industrial manufacturing process, effluents and treatments.
- 6.To enable the students to understand legislative framework for the remediation of industrial wastewater through environmental audit, environmental impact assessment and common effluent treatment plant.

Detailed Syllabus		
Module	Course Module / Contents	Periods
I	Introduction to industrial waste and treatments: Sources and types of industrial waste-water, Effects of industrial waste-water on streams and waste-water treatment plants. Population equivalence, generation rates, characterization, important contaminants of concern from industries. Toxicity and Bioassay tests. Regulation for protection of streams. BOD Numericals.	06
II	Stream Protection Measures: Stream and effluent standards, stream sampling, stream sanitation, Procedures for improving stream water quality, zones of pollution, oxygen sag curve, Streeter Phelps Equation and numerical.	06
III	Waste minimization:	06
	3.1 Minimizing effects of industrial waste water: Volume reduction and Strength reduction	
	3.2 Equalization, Neutralization, Proportioning, Precipitation, Coagulation and flocculation. Flotation - Oil separation and Emulsion breaking.	





IV	Waste-water treatments for industries		06
	4.1	Biological treatments: Aerobic and Anaerobic biological treatment methods (Ponds, lagoons, UASB, RBC). Sludge dewatering techniques- Filter Press, Vacuum Filtration, Sludge thickening, Membrane filtration and Centrifuge.	
	4.2	Advanced treatments: Need for advance technologies, Automated Chemostat Treatment (ACT) Soil Biotechnology (SBT) Reed Bed Technology (RBT) Ozonation	
V	Industries and waste-water management: Raw material, Manufacturing process and flow-sheets, sources of effluents, characteristics, ETP, byproduct recovery for following industries: <ul style="list-style-type: none"> • Sugar • Distillery • Tannery 		10
	<ul style="list-style-type: none"> • Dairy • Paper and Pulp • Metal Processing Industry (Electroplating) 		
VI	Legal Aspects, Environment Management Tools and Common Treatment Facility for industries		05
	<ul style="list-style-type: none"> • Dairy • Paper and Pulp • Metal Processing Industry (Electroplating) 		
	Legal Aspects, Environment Management Tools and Common Treatment Facility for industries		
	6.1	Environmental Impact Assessment, Case Study.	



VI	6.2	Environmental Audit for industries.	05
	6.3	Common Effluent Treatment Plants (CETPs): Flow chart, Location, Need, Operation & Maintenance Problems and Economical aspects. Case study.	

Contribution to Outcome

Having completed this course, the students shall acquire the knowledge of biological treatment and will be able to decide and select precise treatment for particular waste. The students shall be able to determine and design the treatment facilities and assess the guidelines for disposing of waste. They shall be able to formulate approaches to treat waste water in the most effective manner for contamination removal.

After the completion of the course the learner should be able to:

1. Explain the impact of industrial wastewater characteristics on natural streams.
2. Analyze various stream protection measures to protect the natural streams.
3. Summarize waste minimization techniques for industrial wastewater.
4. Relate biological treatment concept and summarize various treatments along with advanced technologies.
5. Describe waste water generated during manufacturing process and decide the suitable treatment for effluents.
6. Evaluate legislative framework for the remediation of industrial wastewater through environmental audit, environmental impact assessment and common effluent treatment plant.

Internal Assessment:

20 Marks

Consisting Two Compulsory Class Tests - First test based on approximately 40% of contents and second test based on remaining contents (approximately 40% but excluding contents covered in Test I). Average marks scored in the above two tests will be considered for final assignment of marks which will be out of 20.

Semester Examination:

80 Marks

Weightage of each module in the end semester examination will be proportional to the number of respective lecture hours mentioned in the curriculum.





- 1 Question paper will comprise of a total six questions, each carrying 20 marks.
- 2 Question 1 will be compulsory and should cover maximum contents of the curriculum.
- 3 Remaining questions will be mixed in nature
- 4 Only Four questions need to be solved.

Course outcomes	<p>Upon successful completion of this course, the learner will be able to:</p> <ol style="list-style-type: none"> 1. Understand different types conventional energy sources and their reserves 2. Identify and analyse the process of power generation through solar thermal energy utilization 3. Identify and analyse the process of power generation through solar photovoltaic energy utilization 4. Identify and describe the various components and types of Wind Energy system 5. Identify and describe the basic operation and types of Fuel cell system 6. Understand different types of other non-conventional energy sources
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Module	Contents	Hours
1.	Introduction-: World's and India's production and reserves of commercial energy sources, energy alternatives, review of conventional and non-conventional energy sources. Statistic of net potential and current generation status of different energy alternatives.	04
2.	Solar Energy (Thermal Energy applications) : Solar thermal energy storage, Liquid flat plate collector, Solar air heater, concentrating collectors, thermal energy storage, solar pond	04
3.	Solar Energy (Direct Electricity Applications): Solar Photovoltaic- solar cell: characteristics, losses, model of a solar cell, emerging solar cell technologies; Solar PV modules, mismatch in module, hot spots, bypass diode; PV module: I-V and power curve, effect of variation in temperature and solar radiations; MPPT, types, different algorithms for electrical MPPT. Distributed MPPT, MPPT converters. Types of PV systems: standalone, grid connected systems; BOS of PV system, Battery charge controllers, Power Conditioning Unit, Solar PV Micro-inverters Solar Plant design: mounting of PV panels supporting structures, Calculation and Design methodology of standalone PV system and grid connected system.	12
4.	Wind Energy: Review of wind energy system and its components, types of wind turbines, characteristics; general concepts of aerofoils and aerodynamics, Wind data, Energy content of the wind, Power generation and control in wind energy systems, performance calculations of wind energy systems. Topologies of WES, WES with rectifier / inverter system, Power Converters for Doubly Fed Induction Generators (DFIG) in Wind Turbines.	08



5.	Fuel Cell: Review of fuel cells and their principle of operation, Review of types of fuel cell and their performance comparison. Topologies of fuel cell power systems, applications.	05
6.	Other Sources: Review of other nonconventional sources, their features and applications; Biomass, Tidal, Ocean, Thermal Electric Conversion, geothermal, Micro-hydro, Wave energy	06

Text / Reference Books:

1. Ali Keyhani, Mohammad N. Marwali, Min Dai "Integration of Green and Renewable Energy in Electric Power Systems", Wiley
2. Green M.A "Solar Cells": Operating Principles, Technology and System Applications, Prentice Hall Inc, Englewood Cliffs N.J, U.S.A, 1982
3. James Larminie, Andrew Dicles "Fuel Cell Systems Explained," Wiley publication
4. Chetan Singh Solanki, Solar Photo Voltaics, PHI Learning Pvt Ltd., New Delhi, 2009
5. Hashem Nehrir and Caisheng Wang, Modeling and control of Fuel Cells: Distributed Generation Applications, IEEE Press, 2009J.F. Manwell and J.G. McGowan, Wind Energy Explained, Theory Design and Applications, Wiley publication
6. Leo J.M.J. Blomen and Michael N. Mugerwa, "Fuel Cell System", New York, Plenum Press, 1993.
7. D. D. Hall and R. P. Grover, Biomass Regenerable Energy, John Wiley, New York, 1987.
8. Felix A. Farret and M. Godoy Simoes, Integration of Alternative Sources of Energy, 2006, John Wiley and Sons.
9. S. Chakraborty, M. G. Simões and W. E. Kramer, Power Electronics for Renewable and Distributed Energy System, Springer 2013
10. N. Femia • G. Petrone, G. Spagnuolo and M. Vitelli, Power Electronics and Control Techniques for Maximum Energy Harvesting in Photovoltaic Systems, CRC Press, 2013.

Website Reference/ Video Courses:

1. NPTEL Course: Energy Resources & Technology By Prof. S. Banerjee, IIT Kharagpur:- Web link-
<https://nptel.ac.in/courses/108/105/108105058/>
2. NPTEL Course: Non-Conventional Energy Systems By Prof. L. Umanand, IISC Bangalore:- Web link-
<https://nptel.ac.in/courses/108/108/108108078/>

Assessment:

Internal Assessment consists of two tests out of which; one should be compulsory class test (on minimum 02 Modules) and the other is either a class test or assignment on live problems or course project.

Theory Examination:

1. Question paper will comprise of 6 questions, each carrying 20 marks.
2. Total four questions need to be solved.
3. Q.1 will be compulsory, based on entire syllabus wherein sub questions of 2 to 5 marks will be asked.
4. Remaining questions will be randomly selected from all the modules.

ELECTRICAL ENGINEERING





ELECTRICAL ENGINEERING - SEMESTER-V						
Course Code	Course Name	Teaching scheme (Contact Hours)		Credits Assigned		
EEDO5011	Renewable Energy Sources	Theory	Pract./Tut.	Theory	Pract./Tut.	Total
		3	--	3		3

Course Code	Course Name	Examination Scheme			
		Theory	Term Work	Pract/ Oral	Total

EEDO5011	Renewable Energy Sources	20	20	20	80	3	-	-	100
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Course Objectives	<ol style="list-style-type: none"> 1. To review of conventional and non-conventional energy sources. 2. To give the students basic knowledge of solar thermal energy applications 3. To give the students basic knowledge solar photovoltaic system 4. To give the students basic knowledge of wind energy system 5. To give the students basic knowledge of fuel cell system operation 6. To give the students basic knowledge about other renewable energy sources.
Course outcomes	<p>Upon successful completion of this course, the learner will be able to:</p> <ol style="list-style-type: none"> 7. Understand different types conventional energy sources and their reserves 8. Identify and analyse the process of power generation through solar thermal energy utilization 9. Identify and analyse the process of power generation through solar photovoltaic energy utilization 10. Identify and describe the various components and types of Wind Energy system 11. Identify and describe the basic operation and types of Fuel cell system 12. Understand different types of other non-conventional energy sources

Module	Contents	Hours
1.	Introduction:- World's and India's production and reserves of commercial energy sources, energy alternatives, review of conventional and non-conventional energy sources. Statistic of net potential and current generation status of different energy alternatives.	04
2.	Solar Energy (Thermal Energy applications) : Solar thermal energy storage, Liquid flat plate collector, Solar air heater, concentrating collectors, thermal energy storage, solar pond	04



3.	Solar Energy (Direct Electricity Applications): Solar Photovoltaic- solar cell: characteristics, losses, model of a solar cell, emerging solar cell technologies; Solar PV modules, mismatch in module, hot spots, bypass diode; PV module: I-V and power curve, effect of variation in temperature and solar radiations; MPPT, types, different algorithms for electrical MPPT. Distributed MPPT, MPPT converters. Types of PV systems: standalone, grid connected systems; BOS of PV system, Battery charge controllers, Power Conditioning Unit, Solar PV Micro-inverters Solar Plant design: mounting of PV panels supporting structures, Calculation and Design methodology of standalone PV system and grid connected system.	12
4.	Wind Energy: Review of wind energy system and its components, types of wind turbines, characteristics; general concepts of aerofoils and aerodynamics, Wind data, Energy content of the wind, Power generation and control in wind energy systems, performance calculations of wind energy systems. Topologies of WES, WES with rectifier / inverter system, Power Converters for Doubly Fed Induction Generators (DFIG) in Wind Turbines.	08
5.	Fuel Cell: Review of fuel cells and their principle of operation, Review of types of fuel cell and their performance comparison. Topologies of fuel cell power systems, applications.	05
6.	Other Sources: Review of other nonconventional sources, their features and applications; Biomass, Tidal, Ocean, Thermal Electric Conversion, geothermal, Micro-hydro, Wave energy	06

Assessment:

Internal Assessment consists of two tests out of which; one should be compulsory class test (on minimum 02Modules) and the other is either a class test or assignment on live problems or course project.

Activities Based on Environment and Sustainability

1	Tree Plantation
2	Village Cleanness
3	Beach Cleanness
4	World Environment Day Celebration

(1) Tree Plantation

A Tree Plantation drive was conducted at VIVA Institute of Technology on 19th July, 2018





Vishnu Waman Thakur Charitable Trust's
VIVA Institute of Technology

Approved by AICTE, New Delhi, DTE, Government of Maharashtra
and Affiliated to University of Mumbai





Tree plantation Event. 2021

NSS. 18 July 2021:

NSS Volunteers of Viva Institute Technology organized an event on ‘Tree Plantation’ on the occasion of university foundation. Dya NSS cell decided to plant 1,00,000 saplings. The event took place on 18th July 2021. We were told to make a collage of pictures and part in our social hurdles of Nss unit of viva tech. every Volunteer planted 415 saplings on that day in their nearby locality as the situation wasn't favorable because it was time of pandemic and students planted the sapling in society, home college premises, etc. we organized this event in monsoon season purportedly because we plan will not be able to required to water daily and thus this event was appropriate to keep. Our 10 volunteers saplings and should their images through WhatsApp group after which our technical team made a collage of the pics and it was shared through our social handler to raise awareness it was a very successful event and all volunteers participated in the event actively.

(2) Navpada Cleanliness Campaign at Sanjay Gandhi National Park – Borivali East

27/02/2020



NSS volunteers of VIVA Institute of Technology successfully completed the cleanliness drive at Navpada, Sanjay Gandhi National Park, Borivali East. The drive was accompanied by in total of 23 volunteers, the drive started at 2:30pm and was over by 4:30pm. The event was carried out along with Eco Awaken Group. The volunteers reached the location via walking from Borivali Station (East) which took roughly around 10 minutes.

The main objective of the drive was to collect all the waste lying around the forest area which included plastics, glass, etc. The activity started with an introductory speech by Forest officials along with the Eco Awaken group, in which the volunteers also joined and gave their valuable inputs regarding different waste disposal techniques.

After the briefing the volunteers were divided in sub groups and were taken inside the village for the cleanliness drive, after two hours of dedicated hard work a total of 20 bagful of waste was gathered and disposed off safely with the help of the host i.e. Eco Awaken group, at the end the volunteers were served with refreshments which was indeed much deserved.

(3) Dhana pani beach cleaning

NSS volunteer of **VIVA INSTITUTE OF TECHNOLOGY AND PHARMACY, VIRAR** conducted a **BEACH**



Vishnu Waman Thakur Charitable Trust's
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CLEANING DRIVE AT DHANA PANI BEACH, MALAD WEST MUMBAI. A total 18 volunteers participated in the cleaning activity which started at 8.00 am and completed by 11.00 am.

We completed this Beach cleaning drive under the guidance of **AFROZ SHAH** who is an INDIAN ENVIRONMENTAL ACTIVIST and lawyer from Mumbai



(4) WORLD ENVIRONMENT DAY 2022

NSS. 5th June 2021:

NSS Volunteers of Viva Institute of Technology attended WORLD ENVIRONMENT DAY session which commenced on 5th June 2021. World Environment Day is celebrated to spread awareness and Encourage people to make their nearby surroundings safe and clean to enjoy safer, cleaner and more prosperous future. Our environment is one of the most important aspects to survive on this planet. Moreover, it is the only thing that can make life sustainable. Without it, we cannot survive even a single day. For instance, our skin will burn, the lungs will get ruptured, our blood pressure would rise. Furthermore, we will not have food and water to survive. And this will also be possible because of the imbalance of heat and atmospheric pressure. Thus it is important that we should take care of the environment. Also, abandon all the exploitation that we are causing it. Meeting begins at 9 Am where our volunteers of VIVA Institute of pharmacy {virar} with NSS Unit conduct a General Awareness Quiz on "Environment" to





Vishnu Waman Thakur Charitable Trust's
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spread awareness. After Quiz Prof. Sachinkumar pandey Encourage everyone to make nearby surroundings safe and clean to enjoy safer, cleaner and prosperous future. After That principle Dr. Sunita ogale Maam shares some of their views and also why it is necessary for today's youth.



**VIVA INSTITUTE OF TECHNOLOGY
NATIONAL SERVICE SCHEME**



**WORLD ENVIRONMENT DAY
JUNE 5**

**VIVA INSTITUTE OF PHARMACY
and
NSS UNIT**
celebrating Environmental day
on 5th June 2021
**Happy world Environment
Day**
on the occasion of Environment day
VIVA institute of Pharmacy arranged
Quiz to spread awareness
link for Quiz attached with poster



Gender Sensitization

WOMEN DEVELOPMENT CELL

The Women's cell at **VIVA Institute of Technology** started with the aim to enlighten and orient women students and staff members about their legal rights and true potential through the promotion of gender equality and programs concerning women's welfare.

AIMS:

- To prevent any act of sexual harassment and to promote the well-being of female students and women staff.
- To create awareness about the problems of gender inequality.
- To maintain a safe working environment with dignity.
- To encourage active participation in the area of women's development.
- To organize seminars, workshops, and training for creating social awareness, self-reliance, and empowerment.

WOMEN DEVELOPMENT CELL COMMITTEE

Sr. No.	Name of the Committee Members
1.	Dr. Arun Kumar (Principal)
3.	Mrs. Pradnya Kulkarni (Member, NGO)
4.	Dr. Trupti Patil (Member)



5.	Mrs. Archana Ingale (Member)
6.	Mrs. Karishma Raut (Member)
7.	Mrs. Lissy Joes (Member)
8.	Mrs. Niyati Raut (Member)
9.	Mrs. Ashwini Save (Member)
10.	Mrs. Shreya Bhamre (Member)
11.	Mrs. Bhagyashree Netke (Member)
12.	Student Representative

Activities Based on Gender Sensitization

1	Tidying up Your Space
2	Gender Equality Awareness Programme
3	Youth Day
4	Swanatrata
5	Balancing Personal and Professional Life
6	International Women's Day Celebration on "The power of positivity"

(1) Report on a programme "*Tidying up Your Space*" organized by Women Development Cell, VIVA Institute of Technology.

Date: 7th October, 2017

Time: 11.00 a.m. onwards

Venue: 4th Floor, Seminar Hall, VIVA Institute of Technology

**Resource Person: Prof. Pallavi Vartak, Computer Engineering Department,
VIVA Institute of Technology.**





Topic: Tidying up Your Space

Women Development Cell of VIVA Institute of Technology, Virar organized a programme on “*Tidying up Your Space*” for all the female staff members of the college. Prof. Pallavi Vartak, from Computer Engineering Department, VIVA Institute of Technology took the initiative to hold this workshop on cluttering and DE cluttering house. The programme was started with a small power point presentation by prof. Pallavi vartak on importance of de-cluttering and how to tide up the home. Prof. Pallavi highlighted the fact that de-clutter Your Life is a month-long initiative *to help you manage stress and boost your health by learning the principles of banishing clutter and restoring a sense of order to your world.*

The overall program was an excellent lecture cum workshop which guided all the female members about de-cluttering home and focusing on simplifying, organizing and sorting.

The session ended with vote of thanks to the expert.

(2) Gender Equality Awareness Programme April, 2018

A One Day Gender Equality Awareness Programme was conducted at VIVA Institute of Technology on 7th April, 2018.





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(3) Youth Day 2018

VIVA Institute of Technology celebrated the National Youth Day on the occasion of the birth anniversary Swami Vivekananda on 12th January, 2018.





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(4) Report on a programme “SWANATRATA”” organized by Women Development Cell, VIVA Institute of Technology.

Date: 07th March, 2018

Time: 1.00 p.m. onwards

Venue: Canteen Porch, VIVA Institute of Technology

Topic: Street Play: SWANATRATA

Women Development Cell of VIVA Institute of Technology has celebrated International Women's Day on 7th March. On the auspicious eve, skit performance of our college students titled as “**SWANATRATA**” based on theme of ‘Women Empowerment’ was presented before the mob of college students. The motto was to bring out the awareness amongst young generation about women and **empowerment which** includes the action of raising the status of **women** through education, raising awareness, literacy, and training. **Women's empowerment** is all about equipping and allowing **women** to make life-determining decisions through the different problems in society.





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(5)

A Report on

Women's Day Celebration

March 08- 03, 2021

Women Development Cell

VIVA Institute of Technology

Topic: Balancing Personal and Professional Life

Guest Speaker: Mrs Manisha Dewarde

VENUE: Google Meet Platform



TIME: 2:00 PM TO 3:30 PM

8th March, considered as International Women's Day. This day brings many things for women – a reason for celebration, a cause to pause and reassess a remembrance, an inspiration and a time to tribute, loved and admired. To honour womanhood, VIVA Institute of Technology has celebrated the International Women's Day on Monday, 8th March 2021. Taking into consideration the current pandemic situation, the programme was conducted through Google Meet Platform. On the occasion, an interactive session on the topic **"Balancing Personal and Professional Life"** was organised. The programme was marked by an intensive discussion on very critical issue of the challenges face by the 21st century women of juggling work life with family life. For the event, chief guest was Mrs Manisha Dewarde, Counselling Psychologist, Psychotherapist, Yash Counselling & Therapy Centre.

The programme commenced with a welcome note by Professor-in-charge of Women Development Cell Dr. Trupti Patil. This was followed by an enlightening speech of the Principal of VIVA Institute of Technology, Dr. Arun Kumar. Prof. Archana Ingale, Senior faculty and HOD of Electronics and Telecommunication department of our college addressed that there should be balance between career and family. There has been a growing concern over work-family issues as increasing number of women are entering into world of paid employment.

The chief guest of the day, Mrs Manisha Dewarde, shared her expertise about the topic, and advised women to manage their energy, not time, and work –life balance will definitely follow. The key to unwind and rejuvenate oneself is meditation, a good laugh, taking care of self and most importantly determining the priorities.

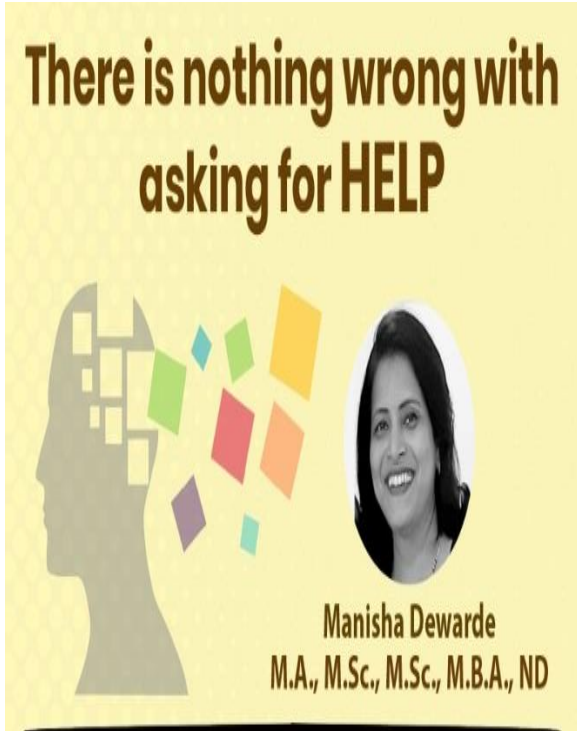
It was really a splendid experience which exposed all the ladies members to untapped potentialities and opportunities for women empowerment. All the members appreciated and got benefited from the session.

The program winded up by open discussion and active participation from the audience which was answered and discussed by the resource person. The program ended successfully on a very positive note, and was very delighted experience for all.





Profile of Guest of Honor



Trainings:

- ☐ Clinical Hypnotherapist (CHH)
- ☐ Professional Master Class on “Healing Sexual Abuse” by Trisha Caetano at CLA.
- ☐ New code NLP Practitioner
- ☐ Access bar Practitioner
- ☐ Reiki Practitioner
- ☐ Oracle card reader
- ☐ Handwriting Analyst
- ☐ “Handwriting Analysis Advanced Mastery Workshop 2012” conducted personally by Bart Baggett (President of Handwriting University International, USA)

Hands-on experience

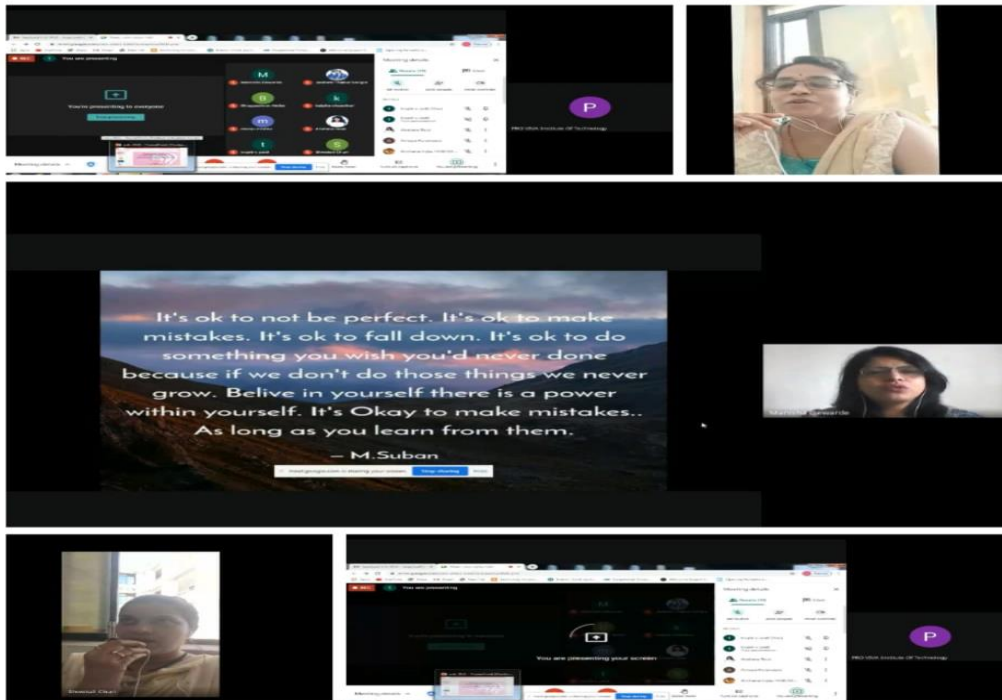
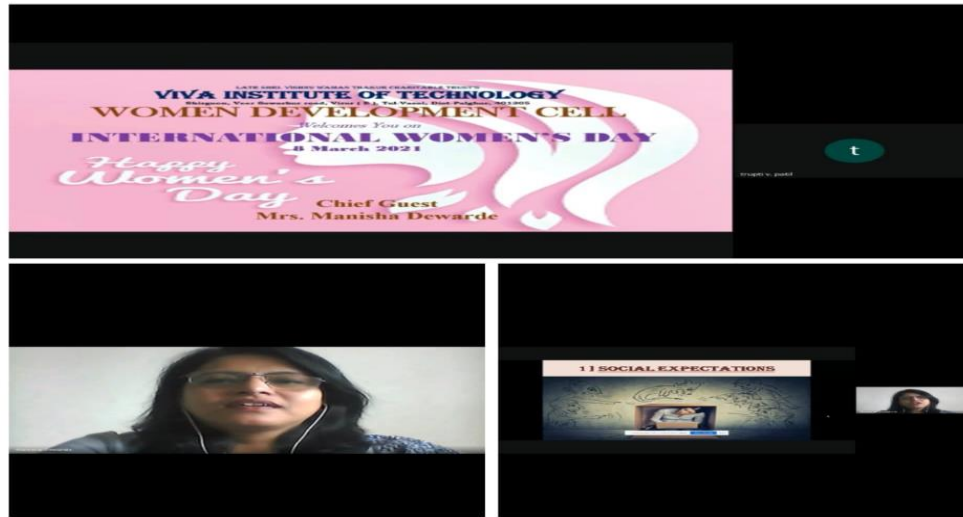
- ☐ Owner of Yash Counseling & Therapy Center.
- ☐ More than 22 years' work experience involved multiple job responsibilities & possess extensive work, experience at various levels related to my field and expertise.
- ☐ Professionally as a Psychologist, Hypnotherapist and Behavioural trainer I cater to all age groups for counseling, psychotherapy and regression for issues, such as:
 - ☐ To have clarity about oneself for personal growth.
 - ☐ To deal with negative & complex emotions.
 - ☐ To develop healthy relation with self, children, spouse and all others.
 - ☐ Resolving confusion of academic & career issue.
 - ☐ To work through traumatic & difficult situations.
 - ☐ To deal with your unresolved health issues.

Snapshots of the Event



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(6)

A Report on

International Women's Day Celebration

March 08- 03-2022



Women Development Cell

VIVA Institute of Technology

International Women's Day Celebration 2022

Date: 8th March 2022

Theme: The Power of Positivity

Resource Person: Dr. Shwetal Churi

Mr. Anoj Kumar Yadav

Venue: Seminar Hall, Main Building.

Time: 2:00 PM TO 3:30 PM





VIVA Institute of Technology in association with the Women Development Cell (WDC), organized a special lecture on the occasion of International Women's Day on **"The Power of Positivity"** on 8.3.2022 (Tuesday). The students, teaching and non-teaching staff members of different departments were cordially invited to join the program.

The programme was marked by an intensive discussion on importance of having positive attitude in life. The session was conducted by Dr. Shwetali Churi from the department Humanities and Applied Sciences and Prof. Anojkumar Yadav from Electrical Engineering Department of VIVA Institute of Technology.

The entire programme of the day was compered by Ms Akshita and Ms Manashree, students of Third Year Computer Engineering department. The gathering was extended a gracious welcome, and highlighted the significance of the day. An inspiring song 'Stree Shakti' was sung to appreciate and boost the self-confidence of women present in the audience.

Dr. Arun Kumar, Principal, delivered the presidential address and appreciated women and their role in all walks of life. Also, Dr.Arun Kumar explained about the importance of the lecture titled "The Power of Positivity". He highlighted the significant role of positive mind-set and its positive consequences for goal achievement.

Prof Anojkumar Yadav in his insightful presentation, talked about a positive attitude and how it can boost our energy, heighten our inner strength, inspire others, and harvest the strength to meet difficult challenges. He further stated to the audience that how our thoughts are the main ingredient of this power, and when we add to them focus and emotions, thoughts become powerful and can affect our reality.

Dr. Shwetali Churi in her address stated the importance of mindfulness. Dr. Churi highlighted how mindfulness practices can help students to increase ability to regulate emotions, decrease stress, anxiety and depression hence helping them stay on track academically and avoid behaviour problems.

The overall lecture was a very delighting and empowering experience for all.

Women Development Cell

Snapshots of the Event





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