

2.6.1-Teachers and students are aware of the stated Programme and course outcomes of the Programmes offered by the institution.

Dr.J.J.Magdum College of Engineering is affiliated to Shivaji University, Kolhapur therefore academic calendar, syllabus and examination scheme are followed as directed by the university. The Program Outcomes (POs) are given by the National Board of Accreditation. These are the attributes that an engineer should have after completing all courses in the respective program. Program Specific Outcomes (PSOs) are framed by the department in line with the department's vision and mission. Course Outcomes (COs) are a comprehensive set of learning objectives that are nurtured and developed across that course. However, COs are already defined in the university prescribed syllabus, the faculty handling the course may modify using action verbs of learning levels as per bloom's taxonomy in consultation with senior faculty members. Each faculty member discusses all course outcomes for their respective subject during introductory lecture to all students studying the particular course. The dissemination of these POs, PSOs, and COs to the teachers, students and various stakeholders is done through the institute website, posters, during different activities. The list is as follows -

1. Institute Website
2. Notice boards
3. Laboratory notice boards
4. Posters in corridors in each department
5. Course files, SIM.





Dr. J. J. Magdum College of Engineering, Jaysingpur.

DEPARTMENT OF GENERAL ENGINEERING

SHIVAJI UNIVERSITY, KOLHAPUR

COURSE OUTCOMES

Semester-I

Physics Group			
Sr.No	CodeNo.	Subject	Credits
1	BSC-P-101	EngineeringPhysics	4
2	BSC-M-I-102	EngineeringMathematics-I	4
3	ESC-P-103	BasicElectricalEngineering	4
4	ESC-P-104	BasicCivilEngineering	4
5	ESC-P-105	EngineeringGraphics	4
6	HM-I-106	ProfessionalCommunication-I	2
7	ESC-W-I-107	WorkshopPractice-I	2
		Total	24

Chemistry Group			
Sr.No	CodeNo.	Subject	Credits
1	BSC-C-101	EngineeringChemistry	4
2	BSC-M-I-102	EngineeringMathematics-I	4
3	ESC-C-103	Fundamentals of Electronics and Computer Programming	4
4	ESC-C-104	AppliedMechanics	4
5	ESC-C-105	BasicMechanicalEngineering	4
6	HM-I-106	ProfessionalCommunication-I	2
7	ESC-W-II-107	WorkshopPractice-II	2
		Total	24



SemesterII

Chemistry Group			
Sl. No	CodeNo.	Subject	Credits
1	BSC-C-201	Engineering Chemistry	4
2	BSC-M-II-202	Engineering Mathematics-II	4
3	ESC-C203	Fundamentals of Electronics and Computer Programming	4
4	ESC-C204	Applied Mechanics	4
5	ESC-C205	Basic Mechanical Engineering	4
6	HM-II-206	Professional Communication-II	2
7	ESC-W-II-207	Workshop Practice-II	2
Total			24

Physics Group			
Sl.No	CodeNo.	Subject	Credits
1	BSC-P-201	Engineering Physics	4
2	BSC-M-II-202	Engineering Mathematics-II	4
3	ESC-P-203	Basic Electrical Engineering	4
4	ESC-P-204	Basic Civil Engineering	4
5	ESC-P-205	Engineering Graphics	4
6	IIM-II-206	Professional Communication-II	2
7	ESC-W-I-207	Workshop Practice-I	2
Total			24



Course code & Course title	BSC-P-101- EngineeringPhysics
Course outcomes:- After successful completion of the course, the students will be able to-	
CO No.	Course outcomes
1	Define various terms of Engineering Physics, states- laws, hypothesis, principles, applications and properties of some emerging fields of Engg. Physics.
2	Explain- various terms, concepts of Engineering Physics, principles, tools, applications and properties of some emerging fields of Engg. Physics
3	Solves problems on grating theory, specific rotation formula, fiber optics, Sabine's formula, crystal Physics and quantum mechanics
4	Derive – formula for R.P. of grating, grating equation, formula for lattice constant, Bragg's law, de Broglie wave equation in different forms.

Course code & Course title	BSC-C-101-EngineeringChemistry
Course outcomes:- After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To integrate pure Chemistry principles and fundamentals with engineering applications. 2. To understand the Chemistry behind the development of engineering materials. 3. To develop an analytical ability of students. 	

Course code & Course title	BSC-M-I-102- EngineeringMathematics-I
Course outcomes:- At the end of successful completion of course, the students will be able to-	
<ol style="list-style-type: none"> 1. Identify, formulate and apply knowledge of mathematics, science and solve engg. Problems. 2. Model an Engg. problem into a mathematical form which can be algebraic equation, differential equation, a graph or some other mathematical expression & solve it by applying suitable mathematical method, skill or technique. 3. Apply the ideas & methods of differentiation to maxima & minima problems. 4. Understand matrices & apply such knowledge to solve linear system of equation. 5. Describe complex numbers, solve complex polynomial equations, and have knowledge of elementary complex functions, 6. Develop algorithm specific computer programs & be able to analyse & solve a wide variety of mathematical & real world problems. 	



Course code & Course title	BSC-M-II-202- Engineering Mathematics-II
Course outcomes:-	
At the end of successful completion of course, the students will be able to--	
<ol style="list-style-type: none"> 1. Identify, formulate and apply knowledge of mathematics, science and solve Engg. problems. 2. Model an Engg. problem into a mathematical form which can be algebraic equation, differential equation, a graph or some other mathematical expression & solve it by applying suitable mathematical method, skill or technique. 3. Apply the ideas & methods of solving differential equations. 4. Solve electrical circuit's problems, orthogonal trajectory equations, and Newton's law of cooling using knowledge of differential equations. 5. To provide students with skills in integral calculus, differential equations & numerical techniques which would enable them to devise engineering solutions for given situations they may encounter in their profession. 	

Course code & Course title	ESC-P-103- Basic Electrical Engineering
Course outcomes:- After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Understand the theory & nature of Electricity. 2. Know the theoretical & practical aspects of D.C. circuits. 3. Understand the theory & nature of Magnetic circuits. 4. Know the theoretical & practical aspects of A.C. fundamentals & A.C. circuits. 5. Understand the theoretical & practical aspects of Electrical machines. 6. Supervise routine maintenance of electrical wiring and supply systems. 7. Identify different types of lamps & their applications. 	

Course code & Course title	ESC-P-104- Basic Civil Engineering
Course outcomes:- After successful completion of the course, the students will be able -	
<ol style="list-style-type: none"> 1. To understand relevance of Civil Engineering. 2. To understand significance of building system. 3. To understand the use of different survey instruments for the field operations. 	



Course code & Course title	ECS-P-105- Engineering Graphics
Course outcomes:- After successful completion of the course, the students will be able to- <ol style="list-style-type: none"> 1. Visualize the objects. 2. Understand and read drawing. 3. Present the same. 	

Course code & Course title	HM-I-106- Professional Communication-I
Course outcomes:- At the end of successful completion of course, the students should be able to: <ol style="list-style-type: none"> 1. Aware about the nature of communication cycle and its importance. 2. Understand the difference between verbal and non-verbal communication. 3. Introduce actual process of communication and its barriers. 4. Construct the sentences properly and find out jumble words. 5. Improve pronunciation ability by using language lab. 6. Understand the concept of technical writing and learn to improve good speaking techniques in their surroundings. 	

Course code & Course title	HM-II-206- Professional Communication-II
Course outcomes:- At the end of successful completion of course, the students should be able to: <ol style="list-style-type: none"> 1. Know the techniques of technical writing. 2. Understand the ways of data collection methods. 3. Know the SELF attitude. 4. Develop positive thinking and decision making skills. 5. Build leadership qualities and solving problems. 6. Importance of time management and how to release stress. 7. Importance of team work. 8. Improve listening and pronunciation ability by using language lab. 9. Present themselves professionally and also how to address people. 10. Learn to improve good speaking techniques in their surroundings. 11. Use proper format and forms of tenses while writing. 	



Course code & Course title	ESC-C-103- Fundamentals of Electronics and Computer Programming
Course outcomes:- At the end of successful completion of course, the students should be able to:	
<ol style="list-style-type: none"> 1. To understand testing and measurement of Electronic Components. 2. To understand construction, biasing, V-I characteristics and application of Diode and BJT. 3. To gain knowledge of operational amplifiers. 4. To understand basics of sequential & combinational logics 5. To understand Basics of Transducers. 6. To study basics of Computer hardware & software. 7. To expose students to Program building blocks. 8. To understand the basics of networks & Internet. 9. To provide hands on exposure to use of different application software. 	

Course code & Course title	ESC-C-104- Applied Mechanics
Course outcomes:- At the end of successful completion of course, the students should be able to:	
<ol style="list-style-type: none"> 1. To understand the various force systems and its effect on static bodies and moving bodies. 2. To understand the concept of equilibrium. 3. To understand geometric properties of plain lamina. 4. To understand dynamics of rigid bodies. 	

Course code & Course title	ESC-C-105- Basic Mechanical Engineering
Course outcomes:- The course will help the student to	
<ol style="list-style-type: none"> 1. Acquire basic knowledge of mechanical engineering 2. Impart knowledge of basic concepts of thermodynamics applied to industrial application 3. Understand principle of energy conversion system and power plants 4. Understand and identify power transmission devices with their functions 5. Learn and understand manufacturing process 6. Describe the scope of mechanical engineering in multidisciplinary industries 	

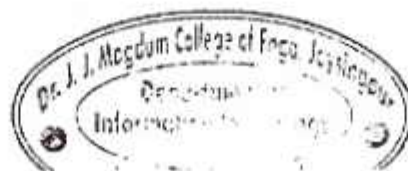




Program Outcomes (POs):

At the end of successful completion of program, the graduates will be able to understand,

1. **Engineering Knowledge:** Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
5. **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
7. **Environment and Sustainability:** Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
9. **Individual and Teamwork:** Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
11. **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these too tools on work, as a member and leader instead, to manage projects and in multidisciplinary environments
12. **Lifelong Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological





Dr. J. J. Magdum Trust's
Dr. J. J. Magdum College of Engineering, Jaysingpur-416101.
Department of Information Technology
2021-22

Program Specific Outcomes (PSO)

1. To design and implement solutions for network security, database security and software quality as per industry standards
2. To design and implement various services for operating systems, compiler libraries and programming applications
3. To enhance the management skills and organizational behavior in IT industry





SHIVAJI UNIVERSITY, KOLHAPUR

COURSE OUTCOMES

Semester-III

Sr. No.	Code No.	Subject	Credits
1	PCC- IT 301	Statistics & Fuzzy Systems	4
2	PCC- IT 302	Digital System & Microprocessor	5
3	PCC- IT 303	Data Communication	3
4	PCC- IT 304	Fundamentals of Economics and Management	3
5	PCC- IT 305	Discrete Mathematical Structures	4
6	PCC- IT 306	Problem solving using C	5
7	PW-IT307	Soft Skills	1
		Total	25

Semester-IV

Sr. No.	Code No.	Subject	Credits
1	PCC- IT 401	Computer Network	4
2	PCC- IT 402	Computer Organization and Architecture	3
3	PCC- IT 403	Data Structures	3
4	PCC- IT 404	Theory of computation	4
5	PCC- IT 405	Software Engineering	3
6	PCC- IT 406	Object Oriented Programming	4
7	PW-IT 407	Mini Project	1
8	MC-IT 408	Environmental Studies	3
		Total	25



Course code & Course title	PCC- IT 301-Statistics & Fuzzy Systems
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Describe the statistical data numerically by using Lines of regression and Curve fittings 2. Solve basic problems in probability theory, including problems involving the binomial, Poisson and Normal distributions 3. Calculate numerical integration 4. Define fuzzy sets using linguistic words and represent these sets by membership functions, convexity, normality, support etc... 5. Solve examples on the principle in performing fuzzy number arithmetic operations such as addition, multiplication and fuzzy equation 6. Solve assignment problems by using different techniques of operation research 	

Course code & Course title	PCC- IT 302- Digital System & Microprocessor
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Solve different examples of arithmetic and logical operations on various number systems. 2. Design and demonstrate different sequential and combinational-logic design. 3. Summarize the working of 8085 & 8086 microprocessor and peripheral. 4. Design and execute assembly language programs using 8085 instruction set. 5. Distinguish different instructions using timing diagrams. 	

Course code & Course title	PCC- IT 303- Data Communication
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Explain the basic concepts and components of Data communication system. 2. Understand Data Encoding techniques. 3. Compare various multiplexing & spreading techniques. 4. Understand responsibilities of each layer in OSI model. 5. Study and understand protocols used at each layer in TCP/IP reference model. 6. Get familiar with hardware components required to build network. 	

Course code & Course title	PCC- IT 304- Fundamentals of Economics and Management
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Explain basic economics concepts 2. Describe different management related activities for business enhancement 3. Explain basic costing and marketing policie 	



Course code & Course title	PCC- IT 305- Discrete Mathematical Structures
<p>Course outcomes: After successful completion of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. Understand mathematical logic, truth tables and its applications. 2. Discuss the basic principles of sets and operations insets. 3. Demonstrate an understanding of relations and functions and be able to determine their properties 4. Determine basic terminologies of groups, graphs and its applications. 5. Implement the knowledge of logical reasoning to solve variety of problems 6. Acquire ability to describe computer programs in a formal mathematical manner and become efficient to face GATE and other competitive exams. 	

Course code & Course title	PCC- IT 306- Problem solving using C
<p>Course outcomes: After successful completion of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. Illustrate flowchart and algorithm to the given problem 2. Understand basic Structure of the C-PROGRAMMING, declaration and usage of variables 3. Write C programs using operators 4. Exercise conditional and iterative statements to Write C programs 5. Write C programs using Pointers to access arrays, strings and functions. 	

Course code & Course title	PW- IT 307- Soft skills
<p>Course outcomes: After successful completion of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. Enhance the communications skills of the students. 2. Expose the students to basic skills of teamwork 3. Inculcate the writing skills necessary for business communications. 	

Semester-IV

Course code & Course title	PCC- IT 401- Computer Network
<p>Course outcomes: After successful completion of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. Explain functions of data link layer 2. Describe network layer of OSI model 3. Explain transport layer with its functionality 4. Explain application layer of OSI model. 	



Course code & Course title	PCC- IT 402- Computer Organization and Architecture
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To understand the structure, function and characteristics of components of computer. 2. To examine the design at gate, register and processor level. 3. To understand various processor architectures and data representation. 4. To apply algorithm to perform operation like multiplication and division. 5. To illustrate control unit. 6. To study memory organization 	

Course code & Course title	PCC- IT 403- Data Structures
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Define the basic terms of Linear Lists, Linked List, Doubly Linked List, Non Linear Data Structures (Binary Trees, AVL Trees, Graphs) 2. Choose the appropriate and optimal data structure for a specified Application 3. Analyze Time Complexity and Memory Complexity of different Algorithms 4. Write programs and applications with Static and Dynamic data structures 	

Course code & Course title	PCC- IT 404- Theory of computation
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To expose the students to the mathematical foundations and principles of computer science. 2. To make the students understand the use of automata theory in Compilers & System programming. 3. To make the student aware of mathematical tools, formal methods & automata techniques to computing. 4. Face the successfully to the GATE as well as competitive exams. 5. Understand the fundamental mathematical, logical, statistical and scientific principles underlying computing and information processing. 	



Course code & Course title	PCC- IT 405- Software Engineering
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Describe basic concepts of software engineering 2. Explain phases of software development life cycle in detail 3. Explain software reliability and quality management. 	

Course code & Course title	PCC- IT 406- Object Oriented Programming
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To understand the basic object oriented concepts. 2. To understand variables, pointer in CPP. 3. To implement types of inheritance 4. To understand file handling. 	

Course code & Course title	PW- IT 407- Mini Project
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Solve the real time Problems with Logical skills. 2. Simplify the problem structure with good team Management 3. Learn the skills of team building to achieve the final output. 4. Develop the logical skill with appropriate data structure. 	

Course code & Course title	MC- IT 408- Environmental Studies
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. 	



SHIVAJI UNIVERSITY, KOLHAPUR

COURSE OUTCOMES

Semester-V

Sr. No.	Code No.	Subject	Credits
1	PCC- IT 501	Operating System-I	4
2	PCC- IT 502	Database Engineering	4
3	PCC- IT 503	Computer Algorithms	3
4	PCC- IT 504	System Programming	5
5	OEC- IT 505	Human Computer Interaction	3
	OEC- IT 506	Internet of Things	5
6	PCC-IT 507	Application Development Tool I	1
7	HM-IT 508	Soft Skill	1

Semester-VI

Sr. No.	Code No.	Subject	Credits
1	PCC- IT 601	Computer Graphics	4
2	PCC- IT 602	Information Security	5
3	PCC- IT 603	Internet Technology	5
4	PCC- IT 604	Operating System II	4
5	OEC- IT 605	Cyber Security	3
	OEC- IT 606	E- Commerce & Digital Marketing	3
6	PCC-IT 607	Application Development Tool II	3
7	PW-IT 608	Seminar	1



Course code & Course title	PCC- IT 501- Operating System-I
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Write and describe the general architecture of computers 2. Describe, contrast and compare differing structures for operating systems. 3. Construct the operating system for certain hardware modules. 4. Use operating system concepts efficiently at various stages of the software development process. 5. Understand and analyze theory and implementation of processes, resource control (concurrency etc.), physical and virtual memory, scheduling, I/O and files. 6. Design, implement and enhance various modules of the operating system to reduce time complexity and space complexity. 7. Compare and construct the various standard solutions to operating system problems 	

Course code & Course title	PCC- IT 502- Database Engineering
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To understand the fundamental concepts of database management. 2. To give a systematic database design approach. 3. To understand the basics of transaction processing and concurrency control in database systems. 	

Course code & Course title	PCC- IT 503- Internet Technology
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Explain different design methods of algorithms. 2. Explain solvability, insolvability of a problem and computational models of parallel algorithms. 3. Apply different design methods of algorithms. 4. Apply different search techniques for efficient graph traversal. 5. Analyze complexity of different algorithm designs. 	

Course code & Course title	PCC- IT 504- Operating System II
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Identify various language processors. 2. Design & implement prototypes of language processors. 3. Apply language processors tool to create language processors. 4. Understand lexical, syntax and semantic analysis process. 	



5. Understand and define the role of lexical analyzer, use of regular expression and transition diagrams.
6. Gain experience in the area of designing and implementing software system like language processors (e.g. assembler, linker, loader etc.).
7. Identify the computing feasibility of problems.

Course code & Course title	OEC- IT 505- Human Computer Interaction
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To explain importance of HCI study and principles of user interface. 2. To develop understanding of human factors in HCI design. 3. To design effective user-interfaces. 4. To develop understanding of models, paradigms and context of interactions 5. To understand HCI design processes. 6. To apply cognitive models for predicting human-computer-interactions. 	

Course code & Course title	OEC- IT 506- Internet of Things
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To learn Internet of Things Technology 2. To know the basics of RFID, sensor and GPS technologies 3. To aware students about wireless technologies and IoT applications 	

Course code & Course title	PW- IT 507- Application Development Tool I
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Understand the structure and model of the Java programming language. 2. Use the Java programming language for various programming technologies. 3. Develop software in the Java programming language. 	

Course code & Course title	HM- IT 508- Soft Skill
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Effectively communicate through verbal/oral communication and improve the listening skills 2. Write precise briefs or reports and technical documents. 3. Actively participate in group discussion / meetings / interviews and prepare & deliver presentations. 4. Become a more effective individual through goal/target setting, self-motivation and practicing creative thinking. 5. Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality. 	



Course code & Course title	PCC- IT 601- Computer Graphics
<p>Course outcomes: After successful completion of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. To express basic ideas of computer graphics and different 2. To demonstrate 2D and 3D transformations. 3. To Implement and understand different types of clipping algorithms used to perform clipping operations on geometric objects. 4. To demonstrate different types of curves in computer graphics. 5. To make use of various multimedia editing tools and software. 	

Course code & Course title	PCC- IT 602- Information Security
<p>Course outcomes: After successful completion of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. Design, implement and enhance security modules for software 2. Architect the security system for certain hardware modules 3. Understand ethical issues of usage of intern security 4. Compare and contrast the various standard solutions to the security problems 5. Utilize security system concept efficiently at software development process 	

Course code & Course title	PCC- IT 603- Internet Technology
<p>Course outcomes: After successful completion of the course, the students will be able to-</p> <ol style="list-style-type: none"> 1. Program the client server model using sockets 2. Understand and apply next generation protocol and addressing model 3. Elaborate the fundamentals of Domain Name Systems 4. Apply the concepts of Remote login and FTP in network applications 5. Learn fundamentals of web, HTTP and e-mail communication protocols. 6. Understand multimedia streaming and relevant protocols. 	



Course code & Course title	PCC- IT 604- Operating System II
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To understand fundamental concepts of the Unix System. 2. To understand the File system and system calls 3. To study structure of process 4. To study Process control and scheduling 5. To study Memory management and I/O subsystem 	

Course code & Course title	OEC- IT 605- Cyber Security
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Explain the cyber security concepts. 2. Describe the cyber security vulnerabilities and prevention techniques. 3. Explain the different rules and regulations under I.T. ACT. 4. Explain the concepts of digital forensics & incident management 	

Course code & Course title	OEC- IT 606- E- Commerce & Digital Marketing
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Students will be able to identify the importance of the e-commerce and digital marketing for business success 2. Students will be able to create a digital marketing plan, starting from the SWOT analysis and defining a target group 3. Students will be able to identifying digital channels, business tools used in social networking 4. Students will be able to demonstrate the optimization of web site using business tools. 	

Course code & Course title	PCC- IT 607- Application Development Tool II
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Understand the structure and model of the programming language C # 2. Develop, implement Applications with C#. 	



Course code & Course title	PW- IT 608- Seminar
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none">1. To identify recent technical topics from interested topic.2. To organize a detailed literature survey of their seminar topic.3. To illustrate the seminar topic through presentation.4. To undertake problem identification, formation and solution.5. To develop a technical report.	



SHIVAJI UNIVERSITY, KOLHAPUR

COURSE OUTCOMES

Semester-VII

Sr. No.	Code No.	Subject	Credits
1	PCC- IT 701	Distributed Computing	5
2	PCC- IT 702	Mobile Computing	4
3	PCC- IT 703	Advanced Database Systems	4
4	PCE- IT 704	Image processing	4
		Soft Computing	
		Data Science	
5	PCC- IT 705	Web Technology	5
6	PW- IT 706	Project – I	2
7	WI-IT 707	Winter Internship	1

Semester-VIII

Sr. No.	Code No.	Subject	Credits
1	PCC- IT 801	Machine Learning	5
2	PCC- IT 802	Cloud Computing	5
3	PCE- IT 803 Elective -II	Enterprise Resource Planning	4
		Information Retrieval	
		Business Intelligence	
4	PCE- IT 804 Elective -III	Software Testing	4
		Artificial Intelligence	
		Project Management	
5	PCC- IT 805	Advance Web Technology	5
6	PW- IT 806	Project - II	2
7	WI-IT807	Winter Internship	0



Course code & Course title	PCC- IT 701- Distributed Computing
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Upon Completion of the course, the students will be able to 2. List the principles of distributed systems and describe the problems and challenges associated with these principles. 3. Understand Distributed Computing techniques, Synchronous and Processes. 4. Apply Shared Data access and Files concepts. 5. Design a distributed system that fulfils requirements with regards to key distributed systems properties. 6. Understand Distributed File Systems and Distributed Shared Memory. 7. Apply Distributed web-based system. 8. Understand the importance of security in distributed systems 	

Course code & Course title	PCC- IT 702- Mobile Computing
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Understand basics of wireless communications. 2. Analyze the applications that are mobile-device specific and express current practice in mobile Computing contexts. 3. Understand and recognize the GSM, GPRS and Bluetooth software model for mobile computing. 	

Course code & Course title	PCC- IT 703- Advanced Database Systems
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Implement a database management system in a complex domain, making the best use of the available tools and techniques. 2. Learn and experiment advanced database techniques, models and products, and to provide them with the knowledge to take decisions concerning implementation issues. 	

Course code & Course title	PCE- IT 704- Image processing
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Know and understand the basics and fundamentals of digital image processing such as digitization, sampling, quantization and 2D-transforms. 2. Operate on images using different image transforms and filtering techniques. 3. Understand the image enhancement techniques. 4. Learn the basics of color image processing. 5. Demonstrate an application based on image processing. 	



Course code & Course title	PCE- IT 704- Soft Computing
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Understand basic concept of Soft Computing. 2. Know different Soft Computing Techniques. 3. Understand Concept related Neural Networks and Fuzzy Systems. 	

Course code & Course title	PCE- IT 704- Data Science
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Apply various Python data structures to effectively manage various types of data. 2. Explore various steps of data science pipeline with role of Python. 3. Design applications applying various operations for data cleansing and transformation. 4. Use various data visualization tools for effective interpretations and insights of data. 5. Perform data Wrangling with Scikit-learn applying exploratory data analysis. 6. Apply various Python data structures to effectively manage various types of data. 	

Course code & Course title	PCC- IT 705- Web Technology
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Apply knowledge of different HTML/CSS elements for designing web pages 2. Construct client side scripts for validating HTML form data using Javascript technology 3. Develop web applications using HTML/CSS/JavaScript/Server side technologies 	

Course code & Course title	PW- IT 706- Project – I
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Explain the need of a software project for the society. 2. Identify requirement analysis like functional and technical requirements for the Project. 3. Come up with design documents for the project consisting of Architecture, Dataflow diagram, class diagram, Algorithmic descriptions of various modules, collaboration diagram, ER Diagrams, Database Design Documents, Sequence Diagram, Use Case diagram. 4. Able to demonstrate analysis and design of project 5. Prepare the technical report consisting of Requirement specification, Analysis and design of Project 	



Course code & Course title	WI- IT 707- Winter Internship
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Students build applicable skills through a variety of internship opportunities, and our graduates find positions in public and private organizations 2. Assess and improve upon their, own cultural competency skills. 	

Semester-VIII

Course code & Course title	PCC- IT 801- Machine Learning
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Explain Machine Learning concepts 2. Distinguish various machine learning algorithms 3. Apply appropriate learning methods for problems 4. Design solution using Machine Learning techniques. 	

Course code & Course title	PCC- IT 802- Cloud Computing
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Understanding and familiar with the basic concepts of cloud computing 2. Demonstration of different virtualization techniques 3. Illustrates different cloud applications 4. Understand recent trends in cloud computing 5. Comprehend the importance of cloud security 	

Course code & Course title	PCE- IT 803- Enterprise Resource Planning
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To impart knowledge about different facets of ERP Systems 2. To impart knowledge of ERP implementation process and get familiar with the common pitfalls. 3. Explain the challenges associated with implementing enterprise systems and their impacts on organizations • 4. Describe the selection, acquisition and implementation of enterprise systems 5. Use one of the popular ERP packages to support business operations and decision-making, 6. Communicate and assess an organization's readiness for enterprise system implementation with a professional approach in written form 	



Course code & Course title	PCE- IT 803- Information Retrieval
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. To apply Information Retrieval system to search information. 2. To design and develop Retrieval systems. 	

Course code & Course title	PCE- IT 803- Business Intelligence
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Describe the concepts and components of Business Intelligence (BI). 2. Evaluate use of BI for supporting decision making in an organization. 3. Understand and use the technologies and tools that make up Business Intelligent. 5. Design and development of Business Intelligent Applications. 4. Plan the implementation of a BI system. 	

Course code & Course title	PCE- IT 804- Software Testing
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Design the test cases and apply for software testing. 2. Identify different levels of Testing to be carried out. 3. Develop and validate a test plan. 4. Prepare test planning based on the document. 5. Use automatic testing tools in Software testing. 	

Course code & Course title	PCE- IT 804- Artificial Intelligence
Course outcomes: After successful completion of the course, the students will be able to-	
1.	

Course code & Course title	PCE- IT 804- Project Management
Course outcomes: After successful completion of the course, the students will be able to-	
1.	

Course code & Course title	PCC- IT 805- Advance Web Technology
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none"> 1. Explain the concepts of advanced web development. 2. Design Front end using Angular technology 	



3. Develop a web application using back end technologies.

Course code & Course title	PW- IT 806- Project - II
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none">1. Design and develop usable User Interface2. Analyze and apply emerging technologies in development of a project3. Test the modules in Project4. Demonstrate working of project	

Course code & Course title	WI- IT 807- Winter Internship
Course outcomes: After successful completion of the course, the students will be able to-	
<ol style="list-style-type: none">1. Demonstrate understanding of therapeutic models of helping.2. Understand the stages of helping, including exploration, insight, and action3. Develop applied helping skills to facilitate change in individuals, families, and group	





Dr. J. J. Magdum Trust's
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DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

PROGRAM OUTCOMES (POs):

At the end of successful completion of program, Engineering Graduates will be able to:

- 1) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2) **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3) **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4) **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5) **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6) **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7) **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9) **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.



- 10) **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11) **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12) **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOME (PSOs):

Graduate can be able to,

- 13) Apply their integrated knowledge of Electronics, Communication and Digital Signal Processing to provide the technical solutions to the problems related with digital communication using simulation tools
- 14) Implement the successfully simulated optimum solutions in hardware using modern tools and test those for the designed specifications.





Dr. J. J. Magdum College of Engineering, Jaysingpur.

DEPARTMENT ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SHIVAJI UNIVERSITY, KOLHAPUR

COURSE OUTCOMES

Semester III

Sr. No	Code No.	Subject	Semester	Credits
1.	BSC-ETC301	Engineering Mathematics-III	3	4
2.	PCC-ETC-301	Electronic Circuit Design-I	3	5
3.	PCC-ETC302	Network Analysis	3	5
4.	PCC-ETC303	Transducers and Measurement	3	4
5.	PCC-ETC304	Analog Communication	3	4
6.	PCC-ETC305	Programming Lab-I	3	3
7.	MC-ETC-301	Environmental Studies	3	3**
		Total		25

Semester IV

Sr. No	Code No.	Subject	Semester	Credits
1.	PCC-ETC401	Electronic Circuit Design-II	4	5
2.	PCC-ETC402	Linear Integrated Circuits	4	5
3.	PCC-ETC403	Control System Engineering	4	4
4.	PCC-ETC404	Digital Communication	4	4
5.	PCC-ETC405	Data Structures	4	4
6.	PCC-ETC406	Programming Lab-II	4	3
		Total		25



Course Code and Course Title		BSC-ETC 301: Engineering Mathematics -III
Course Outcomes:		
Upon successful completion of this course ,the students will be able to:		
1	Make use of Linear Differential Equations to solve the Electrical Engineering problems.	
2	Apply knowledge of vector differentiation to find directional derivatives, curl and divergence of vector fields.	
3	Define fuzzy sets using linguistic words and represent these sets by membership functions, convexity, Normality, support, etc.	
4	Develop Fourier series expansion of a function over the given interval.	
5	Find Laplace transforms of given functions and use it to solve linear differential equations.	
6	Solve basic problems in probability theory, including problems involving the binomial, Poisson, and normal distributions	

Course Code & Course Title		PCC-ETC 301: Electronic Circuit Design - I
Course Outcomes:		
Upon successful completion of this course, the student will be able to:		
1	Analyze and design electronic circuits such as rectifiers & unregulated power supply.	
2	Analyze and design electronic circuits such as regulated power supply.	
3	Analyze & Design of BJT & FET Biasing.	
4	Explain the hybrid model of transistor and analyze the transistor amplifier (CE, CB, CC) using h-parameters	
5	Analysis of CE Amplifier for low frequency & High frequency response for sinusoidal & square wave input.	
6	Analyze & Design LPF, HPF, Clipper, Clampers, Multipliers	



Course Code & Course Title	PCC-ETC 302 : Network Analysis
Course Outcomes:	
Upon successful completion of this course, the student will be able to:	
1	Analyze AC and DC circuits using different network Theorems and Apply graph theory to solve network equations
2	Identify and analyze the series, parallel resonance circuits, calculate the bandwidth, selectivity factor also
3	Evaluate two port parameters and Understand network transfer functions in s-domain
4	Analyze and design prototype LC filters.
5	Evaluate initial conditions and solve differential equation for RL, RC, and RLC circuits and carry out transient analysis.

Course Code & Course Title	PCC-ETC 303: Transducers and Measurements
Course Outcomes:	
Upon successful completion of this course, the student will be able to:	
1	Explain principle of operation of different sensors & transducers and will be able to use it for measurement of digital parameters.
2	Describe signal conditioning & data acquisition system.
3	Demonstrate testing & measuring instruments
4	Compare various display devices for appropriate application
5	Distinguish AC & DC bridges.



Course Code & Course Title		PCC-ETC 304: Analog Communication
Course Outcomes:		
Upon successful completion of this course, the student will be able to:		
1	Explain and identify the fundamental concept of analog communication systems.	
2	Compare various analog modulation schemes.	
3	Interpret the performance of analog communications systems under the presence of noise and Explain the operations of various receiver systems	
4	Define Sampling theorem & differentiate between various pulse modulation techniques	

Course Code & Course Title		PCC-ETC 305: PROGRAMMING LAB-I
Course Outcomes:		
Upon successful completion of this course		
1	Student will be able to understand the basic concepts of procedure oriented programming language.	
2	Student will be able to implement the control statements, looping statements and functions concepts.	
3	Student will be able to design programs using user defined functions and data type.	
4	Student will be able to design & apply the skills for solving the engineering problems.	
5	Students will be able to understand the concept string & relevant operations on it.	
6	Students will be able to understand the concept of file & relevant operations on it.	



Course Code & Course Title	MC-ETC 301: Environmental Studies
Course Outcomes:	
Upon successful completion of this course, the student will be able to:	
1	To develop ability to protect the environment through ecofriendly lifestyle.
2	To give knowledge of natural resource conservation
3	To make able to implement sustainable technologies for environmental restoration .
4	To understand social issues and suggest solution



Semester IV

Course Code & Course Title	PCC-ETC 401: Electronic Circuit Design - II
Course Outcomes: Upon successful completion of this course, the student will be able to:	
1	Analyze & Design Multistage and Feedback Amplifier
2	Analyze & Design Power Amplifier
3	Describe & Design Different types of Oscillators using BJT
4	Describe & Design Different types of Multivibrator using BJT
5	Describe & Design IC voltage Regulators

Course Code & Course Title	PCC-ETC 402: Linear Integrated Circuits
Course Outcomes: Upon successful completion of this course, the student will be able to:	
1	Explain operational amplifier with its parameters
2	Classify different configuration of op-amp
3	Identify and explain different applications of op-amp
4	Design and implement various filters
5	Analyze different waveform generator circuits
6	Apply knowledge of op-amp in various industrial applications



Course Code & Course Title		PCC-ETC 403: Control System Engineering
Course Outcomes:		
Upon successful completion of this course, the student will be able to:		
1	Apply knowledge of mathematics, science, and engineering to design, analyze and control the different systems	
2	Explain time & frequency domain analysis for different control systems	
3	Demonstrate & compare different control systems	
4	Describe state variables	
5	Design model for control system	

Course Code & Course Title		PCC-ETC 404: Digital Communication
Course Outcomes:		
Upon successful completion of this course, the student will be able to:		
1	Describe the probability of random signal	
2	Solve the problem based on information theory	
3	Classify different source coding & line coding techniques.	
4	Compare different digital modulation technique	



Course Code & Course Title	PCC-ETC 405: Data Structures
Course Outcomes:	
Upon successful completion of this course, the student will be able to:	
1	Elaborate the basic concept of data structure & its types.
2	Design and Implement the various algorithms on arrays & records.
3	Implement algorithms on linked list.
4	Understand the concept of stacks, queues & its applications.
5	Construct various types of trees & their applications.
6	Understand the concept of Graph & Hashing.

Course Code & Course Title	PCC-ETC 406: PROGRAMMING LAB-II
Course Outcomes:	
Upon successful completion of this course, the student will be able to:	
1	Understand the basic concepts of procedure oriented programming language.
2	Identify the function and operator overloading concepts.
3	Understand and implement the concept of inheritance, template and exception handling applications.
4	Identify the concept of inheritance, virtual functions, dynamic binding & polymorphism
5	Identify the types of inheritance & its design for code reuse in C++.
6	Design and implement generic classes with C++ templates and exception handling.





Dr. J. J. Magdum College of Engineering, Jaysingpur.
DEPARTMENT ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SHIVAJI UNIVERSITY, KOLHAPUR

COURSE OUTCOMES

Semester V

Sr. No	CodeNo.	Subject	Semester	Credits
1.	PCC-ETC501	Signal and Systems	5	5
2.	PCC-ETC502	Electromagnetic Engineering	5	4
3.	PCC-ETC503	Digital and VLSI Design	5	5
4.	PCC-ETC504	Optical Communication	5	5
5.	OEC-ETC501	Open Elective-I	5	4
6.	PCC-ETC505	Simulation and Modeling	5	2
		Total		25

Semester VI

Sr. No	CodeNo.	Subject	Semester	Credits
1.	PCC-ETC601	Digital Signal Processing	6	5
2.	PCC-ETC602	Microprocessor and Microcontrollers	6	5
3.	PCC-ETC603	Power Electronics	6	5
4.	PCC-ETC604	Antenna and Wave Propagation	6	5
5.	OEC-ETC601	Open Elective-II	6	4
6.	PCC-ETC605	Mini Project	6	1
		Total		25



Course Code and Course Title	PCC-ETC501:Signals and Systems
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	Demonstrate use of signals and their representation.
2	Represent CT & DT system
3	Use Fourier transform for analysis of CT& DT signals
4	Compute DFT and IDFT
5	Analyze signals using Z-transform
6	Realize the systems

Course Code and Course Title	PCC-ETC502:ElectromagneticEngineering
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	Explain the fundamentals of mathematical skills related with differential, integral and vector calculus.
2	Apply and analyze the concepts of steady electric & magnetic fields.
3	Develop field equations from understanding of Maxwell's Equations.
4.	Extend the knowledge of basic properties of transmission lines to analyze electromagnetic wave propagation in generic transmission line geometries.

Course Code and Course Title	PCC-ETC503:DigitalandVLSI Design
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	Apply Boolean laws/K-Map-method, to reduce a given Boolean function
2	Design & realize combination all logic circuits using logic gates.
3	Demonstrate the operation of flip-flops, counters, shift registers, Synchronous sequential machine using Moore and Mealy machine
4	Design combinational and sequential logic circuits using various description techniques in VHDL



Course Code and Course Title		PCC-ETC504:Optical Communication
Course Outcomes: Upon successful completion of this course, the students will be able to:		
1	Differentiate the different types of optical fiber structures and light propagating mechanisms.	
2	Acquire knowledge of signal degradation mechanism in optical fiber.	
3	Understand the construction and working of optical sources and detectors.	

Course Code and Course Title		OEC-ETC501: Industrial Automation
Course Outcomes: Upon successful completion of this course, the students will be able to:		
1	Demonstrate the working of PLC, DCS and SCADA	
2	Apply the concept; analyze the importance and application of industrial automation.	
3	Compile ideas into new different solutions with the help of programming languages as per IEC 61131-3.	
4	Apply the knowledge of automation for design and development of Graphical user interface for different process.	
5	Use the advanced software tools for Industrial Automation such Codesys, GXWorks2, RSlogix5000, DeltaV Explorer etc.	

Course Code and Course Title		OEC-ETC501:Biomedical Instrumentation
Course Outcomes: Upon successful completion of this course, the students will be able to:		
1	Express the anatomy and physiology of human body.	
2	Explain the process to capture Bioelectric signal.	
3	Apply knowledge of Diagnostic and Therapeutic equipment's.	
4	State medical safety aspects	



Course Code and Course Title	PCC-ETC505:SimulationandModeling
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	Understand the python programming basics
2	Able to solve programs on decision making & looping statements in python
3	Understand python list, tuple, and dictionary collection concepts
4	Understand simulation programs using SimPy Library
5	Design & Apply Simpy library functions to model real time problems.



SemesterVI

Course Code and Course Title		PCC-ETC601:Digital Signal Processing
Course Outcomes:		
Upon successful completion of this course, the students will be able to:		
1	Make use of FFT algorithm for filtering of long duration sequences	
2	Design digital FIR filters	
3	Design digital IIR filters	
4	Implement FIR and IIR filters using DSP Processor	
5	Apply the basic concept of Multirate digital signal processing	
6	Apply the basic concept of wavelet transform	

Course Code and Course Title		PCC-ETC602:Microprocessor and Microcontroller
Course Outcomes:		
Upon successful completion of this course, the students will be able to:		
1.	Describe Architecture of 8085andwrite various Programs.	
2.	Implement Interrupts and interfacing of memory, 8255with8085.	
3.	Describe Architecture of 8051and write various Programs.	
4.	Perform experiment using ON-Chip resources of 8051.	
5.	Select I/O peripherals to satisfy system design requirements.	
6.	Design Embedded C" Programs for I/O Peripherals	

Course Code and Course Title		PCC-ETC603:PowerElectronics
Course Outcomes:		
Upon successful completion of this course, the students will be able to:		
1	Understand the characteristics of various power electronics devices and Compare the different firing circuits.	
2	Analyze converters, Inverters and Choppers.	
3	Understand the Industrial applications of Power circuits.	



Course Code and Course Title		PCC-ETC604:AntennaandWave Propagation
Course Outcomes:		
Upon successful completion of this course, the students will be able to:		
1	Realize the importance of basics of antenna systems to differentiate the applicability of each type of antenna	
2	Analyze the utilization of Antenna systems in wide areas like wireless communication, fixed line communication, computer communication etc.	
3	Discuss radio wave propagation	

Course Code and Course Title		OEC-ETC601:RoboticsEngineering
Course Outcomes:		
Upon successful completion of this course, the students will be able to:		
1	Understand the concept, development and key components of robotics technologies.	
2	Select different sensors, electronics systems for Robot	
3	Classify different types of effectors and actuators	
4	Analyze the system &develop software for particular robotic applications	
5	Understand robot applications &develop robot for particular applications	

Course Code and Course Title		OEC-ETC601:MobileTechnology
Course Outcomes:		
Upon successful completion of this course, the students will be able to:		
1	Apply multiple access techniques to mobile communication.	
2	Explore the architecture of GSM.	
3	Apply and make use of GSM Services.	
4	Differentiate thoroughly the routing protocols and generations of mobile technologies	



Course Code and Course Title	PCC-ETC605:MiniProject
Course Outcomes:	
Upon successful completion of this course, the students will be able to::	
1	Practiceacquiredknowledgewithinthechosenareaoftechnologyforprojectdevelopment.
2	Identify, discuss and justify the technical aspects of the chosen project with a Comprehensive and systematic approach.
3	Reproduce, improve and refine technical aspects for engineering projects
4	Work as an individual or in a team in development of technical projects.
5	Communicate and report effectively project related activities and findings.





Dr. J. J. Magdum College of Engineering, Jaysingpur.
DEPARTMENT ELECTRONICS AND TELECOMMUNICATION ENGINEERING

SHIVAJI UNIVERSITY, KOLHAPUR

COURSE OUTCOMES

Semester VII

Sr.No.	CodeNo.	Subject	Semester	Credits
1	PCC-ETC701	Satellite Communication	7	4
2	PCC-ETC702	Embedded Systems	7	5
3	PCC-ETC703	Computer Networks	7	5
4	PCC-ETC704	Image Processing	7	5
5	PCE-ETC701	Elective-I	7	4
6	PW-ETC701	Project Phase-I	7	2
Total				25

Semester VIII

Sr.No.	CodeNo.	Subject	Semester	Credits
1	PCC-ETC801	Microwave Engineering	8	5
2	PCC-ETC802	Wireless Communication	8	5
3	PCC-ETC803	Video Engineering	8	5
4	PCE-ETC801	Elective-II	8	4
5	PW-ETC801	Project Phase-II	8	6
Total				25



Course Code and Course Title	PCC-ETC701:SatelliteCommunication
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	Understand Orbital aspects involved in satellite communication.
2	Understand various subsystems in satellite communication system
3	Explain and Analyse Link budget calculation.
4	Understand Satellite Network System
5	Explain Non Geostationary Satellite Systems
6	Explain different applications of Satellite Systems

Course Code and Course Title	PCC-ETC702:EmbeddedSystems
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1.	Develop programs using PIC16F877
2.	Apply on-chip resource facility of PIC16F877.
3.	Understand Embedded systems and concepts of ARM7.
4.	Develop programs using ARM7
5.	Apply on chip resource facility of LPC2148.
6.	Understand RTOS concept

Course Code and Course Title	PCC-ETC703:ComputerNetworks
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	State the evolution of Computer network, classifies different types of Computer Networks.
2	Design, implements, and analyzes simple computer networks.
3	Identify, formulate, and solve network engineering problems.
4	Illustrate different OSI and TCP/IP protocols.



Course Code and Course Title	PCC-ETC704:Image processing
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	List fundamental steps involved in Digital Image Processing.
2	Apply different transforms and filtering techniques on an image.
3	Apply morphological operations
4	Perform image segmentation
5	Apply compression techniques.
6	Perform various operations on color image.

Course Code and Course Title	PCE-ETC701:Speech Processing(Elective-I)
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	Explain the acoustic theory.
2	To Apply sampling, quantization and different modulation techniques.
3	To perform STFT analysis, Homomorphic Speech processing and speech synthesis
4	To Apply Linear predictive coding to enhance speech quality
5	To Apply different techniques to enhance speech quality

Course Code and Course Title	PCE-ETC701:RADAR & NAVIGATION (Elective-D)
Course Outcomes:	
Upon successful completion of this course, the students will be able to:	
1	Acquired knowledge about radar and radar equation
2	Understanding the working principal of Doppler radar
3	Ability to work for measurement and tracking signal
4	Foster ability to work instrument landing system



Course Code and Course Title	PCE-ETC701: JAVA SCRIPT(ELECTIVE-I)
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Identify and apply JS objects in web applications.
2	Articulate and write user define functions.
3	Describe and develop user–browser interactions.
4	Explain the principles of object oriented programming paradigm.
5	Use and illustrate the events, cookies and handling exceptions.

Course Code and Course Title	PCE-ETC701: INFORMATION THEORY AND CODING TECHNIQUES (Elective-I)
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Explain basic concepts of information theory and entropy coding.
2	Mathematically analyze communication channel models & Channel capacity.
3	Analyze the error detecting and correcting capability of different coding schemes.
4	Design encoder and decoder for various coding techniques as per the need and Specifications.

Course Code and Course Title	PW-ETC701:ProjectPhase-I
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Identify the problem statement through literature survey for project work.
2	Develop design strategy for the project work.
3	Develop presentation and interpersonal communication skills through project work.
4	Develop the ability to learn independently and to find/integrate information from different sources required in solving real-life problems.
5	Enhance technical report writing skills with proper organization of materials;



Semester VIII

Course Code and Course Title	PCC-ETC-801: Microwave Engineering
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Analyze the microwave waveguides and passive circuit components.
2	Identify and differentiate the state of art in microwave tubes and their uses in real life
3	Identify materials used in MMIC and microwave hazards
4	Differentiate solid state devices used in microwave based on their characteristics and operations
5	Measure the output power, VSWR, impedance, frequency and wavelength of microwave signal
6	Apply the microwave antenna knowledge for industrial and scientific purposes

Course Code and Course Title	PCC-ETC802: Wireless Communication
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	List basic fundamentals of wireless communication
2	Analyze large & small scale radio wave propagation
3	Able to understand basic wireless technologies
4	Able to understand and analyze wireless concepts

Course Code and Course Title	PCC-ETC803: Video Engineering
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Describe picture and sound transmission and reception
2	Explain color composite video signal
3	Describe principle of digital TV system
4	Explain high definition television system
5	Elaborate concept of video conferencing and videophone.
6	Describe advanced TV system like LCD, plasma, LED, CCTV, etc..



Course Code and Course Title	PCE-ETC 801: High Performance Communication Networks (Elective II)
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Illustrate the different communication networks using the architecture and frames format
2	Design and analyzes simple communication networks.
3	Compare various high performance networks.
4	Develop and research on various networks and its interoperability.

Course Code and Course Title	PCE-ETC801:Advanced Network Security (Elective II)
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Develop Concept of Security needed in Communication of data through computers and networks along with Various Possible Attacks.
2	Understand Various Encryption mechanisms for secure transmission of data and management of key required for required for encryption.
3	Understand authentication requirements and study various authentication mechanisms.
4	Understand network security concepts and study different Web security mechanisms.

Course Code and Course Title	PCE-ETC 801: Electrical Automobiles (Elective-II)
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Know Concept of Electric Vehicles, Hybrid Electric Vehicles & Plug in Hybrid Electric Vehicles
2	Analyze the battery management system & PHEV design
3	Analyze different power converter topology used for electric vehicle application
4	Develop the electric propulsion unit and its control for application of electric vehicles



Course Code and Course Title	PCE-ETC801:BIG DATA ANALYTICS (Elective-II)
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Understand the key issues in big data management.
2	Acquire fundamental enabling techniques using tools in big data analytics.
3	Achieve adequate perspectives of big data analytics in various applications like sensor, recommender systems, social media applications etc.

Course Code and Course Title	PW-ETC-801:ProjectPhase-II
Course Outcomes: Upon successful completion of this course, the students will be able to:	
1	Identify the problem statement through literature survey for project work.
2	Develop design strategy for the project work.
3	Develop presentation and interpersonal communication skills through project work.
4	Develop the ability to learn independently and to find/integrate information from different sources required in solving real-life problems.
5	Enhance technical report writing skills with proper organization of materials;





Dr. J. J. Magdum Trust's (No. E/902)
Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Civil Engineering

Programme Outcomes (PO's)

At the end of successful completion of program, the graduates will be able to,

1. **Engineering Knowledge:** Apply knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering pr
2. **Problem Analysis:** Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an under-standing of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability:** Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork:** Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear
11. **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary enviro
12. **Lifelong Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Civil Engineering

Program Specific Outcomes (PSO)

1. A board education is necessary to understand practical problems and to suggest the best possible and economical solution for the problem.
2. An ability to function in multidisciplinary teams.
3. An ability to succeed in competitive examination in government and private organizations after successful accomplishment (Degree) by professional development and/or Industrial training course(s) certification.





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Civil Engineering

S.Y. Sem-I	
Course name and code	course outcome
ENGINEERING MATHEMATICS-III (BSC- CV301)	1. Solve Linear differential equations and problems related to applications of differential equations
	2. Perform vector differentiation.
	3. Find probabilities by using probability distributions.
	4. Find Laplace transform, Inverse Laplace transform of various functions and application
	5. Find analytic function.
SURVEYING-I (PCC-CV302)	1. To obtain a full understanding of the methods of measurement, errors to be expected, and their control.
	2. To know the basics of levelling and theodolite survey in elevation and angular measurements.
	3. To find out area and volumes using various instruments.
	4. To study the significance of plane table surveying in plan making.
	5. To be able to use minor instruments with efficiency.
	6. To understand the importance of surveying in the field of civil engineering.
Strength of materials (ESC- CV303)	1. Evaluate the response of elastic body for external actions and compute design forces.
	2. Evaluate shear force and bending moment of statically determinate structure.
	3. Analyze the stress, strain and deformation of elastic bodies under bending and shear actions.
	4. Analyze the stress, strain and deformation of elastic bodies under external actions.
Fluid Mechanics- I (ESC- CV304)	1. Study the basic properties of fluids and their behavior under application of various force systems.
	2. Discuss the basic concepts and principles in fluid statics, fluid kinematics and fluid dynamics with their applications in fluid flow problems.
	3. Recognize the principles of continuity, momentum and energy as applied to fluid in motion.
	4. Apply the equations to analyze problems by making proper assumptions and learn systematic engineering methods to solve practical fluid mechanics problems.





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Department of Civil Engineering

BCM (PCC-CV305)	1. Know the building Materials.
	2. Describe properties and suitability of various building materials.
	3. State the different building components.
	4. Demonstrate different bonds in brick masonry.
	5. Produce drawings of different building components.
	6. Explain different types of roof coverings & types of flooring.
NM (ESC-CV306)	1. Identify, classify and choose the most appropriate numerical method for solving a Problems
	2. Illustrate basic theory of correlation and regression.
	3. Form and solve Linear Programming Problem.
	4. Use methods of solutions to solve classical problems.
	5. Deploy skills effectively in the solution of problems in civil engineering.
S.Y.Sem-II	
Structural Mechanics(ESC-CV401)	1. Identify the response of elastic body for external actions.
	2. Distinguish engineering properties of the materials are understood.
	3. Compute the design forces in the structures.
	4. Analyze the stress, strain and deformation of elastic bodies under external forces.
Surveying-II (PCC-CV402)	1. Adopt the principles of advanced surveying instruments.
	2. Formulate triangulation stations, Flight planning and Ground control points (GCPs).
	3. Apply GIS and GPS concepts to civil engineering problems.
	4. Design and setout curves by different methods.
concrete technology (PCC-CV403)	1. Impart knowledge of physical properties of ingredients of concrete and their effect on strength and durability.
	2. Explain the fundamentals of process of making good quality concrete and its elastic properties.
	3. Understand the factors affecting properties of concrete.
	4. Design the concrete mix proportion as per Indian standard code of practice.
	5. Demonstrate Non Destructive Testing (NDT) and evaluate quality of existing concrete.
	6. Understand different types of concrete and their applications.
Fluid Mechanics II (ESC-CV404)	1. Provide students with basic knowledge of fluid properties and utilizing principles developed in fluid mechanics.
	2. Develop the principle and equation for pressure flow and momentum analysis.





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Department of Civil Engineering

	<p>3. Provide the students with the analytical knowledge of pressure and velocity distribution in an open channel in order to solve practical problems.</p>
	<p>4. Illustrate and develop the equations and design principles for open channel flows, including sanitary and storm sewer design and flood control hydraulics.</p>
Building design and drawing (PCC-CV405)	<p>1. Know principles of building planning.</p>
	<p>2. Describe Building Bye-Laws and regulations.</p>
	<p>3. Plan and draw residential building considering principle of planning and Building Bye-Laws and regulations.</p>
	<p>4. Explain techniques of maintenance, repair and rehabilitation of structure.</p>
	<p>5. Draw the working drawing of foundation detail, plumbing and electrification of building.</p>
	<p>6. Illustrate the concept of ventilation, air conditioning and thermal insulation.</p>
	<p>7. Describe different types of building finishes.</p>





Dr. J. J. Magdum Trust's (No. E/902)
Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Civil Engineering

T.Y.Sem-I	
Course name and code	course outcome
PCC-CV501 WRE-I Water Resource Engineering-I	1. Apply the knowledge of estimation of hydrometeorological parameters.
	2. Estimate direct runoff and peak discharge using hydrograph technique.
	3. Apply different methods of efficient irrigation and water conservation.
	4. Determine reservoir capacity based on crop water requirement.
PCC-CV502 DSS Design of Steel Structures	1. Describe the design philosophy, behavior of steel structure and failure mechanism.
	2. Analyze and design different types of bolted & welded connections.
	3. Assess the strength of structural members as per Indian Standards.
	4. Analyze and design members subjected to tension, compression and flexure.
PCC-CV503 EE-I Environmental Engineering- I	1. Describe the various sources of water with respect to quality and quantity of water.
	2. Design the various water treatment units.
	3. Illustrate the special water treatments and sequencing of treatment for various qualities of surface & ground water.
	4. Describe the various components related to transmission and design of distribution of water.
	5. Summarize the different water supply appurtenances.
PCC-CV504 GTE-I Geotechnical Engineering-I	1. Able to evaluate the Index and Engineering properties of soil
	2. Understand the fundamental relationships in properties of soils
	3. Evaluate the stress calculations in soil under different soil conditions
	4. Understands the process and importance of compaction and consolidation
PCC-CV505 Building Planning and Design	1. Specify dimensions and space requirements for various elements of the building in relation to human body measurements.
	2. Plan, design public building considering principles of planning and Building Bye- Laws and regulations.
	3. Prepare the submission and working drawings of public building.





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Department of Civil Engineering

OEC-CV506 Energy & Environment	4. Illustrate the procedures for preparing perspective drawings of various objects as well as buildings.
	5. Apply knowledge of architectural composition and terms for betterment of aesthetic view.
	1. Compare conventional and renewable energy resources
	2. Identify scope and potential of renewable energy
	3. Analyze suitability of renewable energy resource.
OEC-CV506 Waste management	4. Explain energy management principles and strategies
	1. To evaluate the effects of various wastes on human beings, animals and on Environment.
	2. To solve the water and wastewater treat by using conventional and advanced treatment methods.
	3. To estimate quantity of solid waste, E-waste and biomedical wastes and to suggest their disposal methods.

T.Y.Sem-II	
Course name and code	course outcome
PCC-CV601 TOS Theory of Structures	1. Understand the concept of determinacy and indeterminacy.
	2. Apply various techniques of structural mechanics to solve indeterminate structures.
	3. Analyze indeterminate structures by using various approaches.
	4. Know the limitations of the methods of solution and their outcomes.
HM-CV602 EM Engineering Management	1. Understand importance of management in construction.
	2. Use the Project planning and management tools in Construction.
	3. Evaluate and draw project network for estimating time and cost.
	4. Know the techniques of Material Management.
	5. Explore and understand the concepts of Economics in construction.
	6. Know the advance concepts in management.
PCC-CV603 EE-II Environmental Engineering- II	1. Explain sources, characteristics and methods of wastewater collection.
	2. Design the primary and secondary wastewater treatment units and describe low cost wastewater treatment units.





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Department of Civil Engineering

	<ol style="list-style-type: none">3. Understand various methods of wastewater disposal4. Explain the necessity and importance of solid waste management.5. Describe air pollution, its effect and controlling techniques.
PCC-CV604 GT-II Geotechnical Engineering-II	<ol style="list-style-type: none">1. Use engineering science principles to develop foundation engineering knowledge.2. Apply foundation engineering knowledge in the civil engineering projects.3. Calculate bearing capacity theoretically as well as practically.4. Calculate settlement and design shallow and deep foundation5. Apply basics concepts of slope stability on field.6. Apply modern foundation techniques.
OEC-CV605 Soil and water conservation techniques	<ol style="list-style-type: none">1. Understand methods of soil and water conservation.2. Develop an integrated model for sustainable natural conservation.3. Explain the groundwater exploration techniques and its artificial recharge.4. Analyze the needs for protection of banks and preservation of soil.
OEC-CV605 Disaster Risk Management	<ol style="list-style-type: none">1. Gain the ability to understand and categories the disaster.2. Apply preparedness plans for disaster response.3. Setting up of early warning systems for risk reductions4. Application of Sphere Standards Indian context
PCC-CV606 SDD-I Structural Design and Drawing-I	<ol style="list-style-type: none">1. Analyze and design different types of bolted & welded connections2. Demonstrate the knowledge of common sections subjected tension and compression members & its design.3. Analyze and design of steel column, flexural members and its elements.4. Aware of application of software in structural analysis and design.5. Prepare the working drawing as per requirement of project execution.





Dr. J. J. Magdum Trust's (No. E/902)
Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Civil Engineering

B. Tech Sem-I	
Course Name & Course code	Course Outcome
Design of Concrete Structures-I (PCC-CV701)	1. Understand the basic data (Basic Mechanics, Mathematics, and structural analysis) required for design of concrete structures.
	2. Understand the design process of concrete structure
	3. Understand the application of limit state method for structural element such as footing, column, beam slab, staircase etc.
	4. Design the individual members and hence building.
Earthquake Engineering (PCCCV702)	1. Prepare mathematical modelling of Single Degree of Freedom System.
	2. Design earthquake resistant structure by applying various codal provisions related to seismic design
	3. Know the concept of modern earthquake resistant techniques
Quantity Survey and Valuation (PCC-CV703)	1. Explain the importance of estimation in Civil Engineering works.
	2. Prepare rate analysis of various items.
	3. To estimate for various construction projects.
	4. Explain importance of valuation in Civil Engineering works.
Transportation Engineering -I (PCC-CV704)	1. Carry out surveys involved in planning and highway alignment
	2. Design the geometric elements of highways and expressways
	3. Carry out traffic studies and implement traffic regulation and control measures and intersection design
	4. Characterize pavement materials and design flexible and rigid pavements as per IRC
SOLID WASTE MANAGEMENT (PCE-CV705)	1. Learn basic concepts of solid waste management, beginning from source generation to waste disposal in a system of municipality organizational structure.
	2. To acquire a fair amount of knowledge on waste characterization and its management practices
	3. Develop understanding on various technological applications for processing of waste and their disposals in various ways.





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Department of Civil Engineering

	<ol style="list-style-type: none">4. Acquire knowledge on waste to energy productions in the perspectives of sustainable development.5. Apply basic concepts in hazardous waste management and integrated waste management for urban areas.
Legal Aspects in Civil Engineering (HMCV706)	<ol style="list-style-type: none">1. Students will learn Indian contract act, Arbitration act and contract administration.2. Students will understand the labour laws.3. Students will be understand safety engineering and relevant acts.
Project Phase-I (PW-CV708)	<ol style="list-style-type: none">1. Identify the problem statement through literature survey for project work2. Develop planning and design strategy for the project work.3. Develop the ability to learn independently and to find/integrate information from different sources required in solving real-life problems.4. Enhance technical report writing skills with proper organization of materials;
FIELD TRAINING (PW-CV707)	<ol style="list-style-type: none">1. Have an exposure to industrial practices and to work in teams2. Communicate effectively3. Understand the impact of engineering solutions in economic, environmental, and societal context4. Develop the ability for life-long learning





Dr. J. J. Magdum Trust's (No. E/902)
Dr. J. J. Magdum College of Engineering, Jaysingpur
Department of Civil Engineering

B. Tech Sem-II	
Course Name & Course code	Course Outcome
DESIGN OF CONCRETE STRUCTURES-II (PCCCV801)	1. Sections subjected totorsion
	2. Continuous beams
	3. Water tanks resting onground
	4. Prestressed concretesections
WATER RESOURCES ENGINEERING - II (PCC-CV802)	1. Identify and understand various issues related to water resources systems.
	2. Understand the role of dams and reservoirs in controlling the floods.
	3. Plan and design different types of hydraulic structures.
	4. Plan, design and monitor an efficient canal network system.
	5. Understand the role of rivers in the development of nation.
TRANSPORTATION ENGINEERING – II (PCC-CV803)	1. Perform geometric design for the railway tracks.
	2. Plan the layout of different types of air terminals.
	3. Carry out the surveys for layout of railways, airports and harbors.
	4. Design various bridge components
STRUCTURAL DESIGN OF FOUNDATION & RETAINING STRUCTURES (PCE-CV804)	1. understand the different types of foundations & their necessities
	2. Select the suitable foundation system based on soil and loading conditions.
	3. Analyse the different types of loading acting on foundation system.
	4. Design the foundation for lighter & heavy structures.
	5. Learn the reinforcement curtailments in foundation systems.
	6. Design the vertical walls to retain water or soil on one side of wall
ADVANCED DESIGN OF CONCRETE STRUCTURES (PCE-CV804)	1. Analysis and design of large span concrete roofs and design flat slab as per IS 456 –2000
	2. Analysis and design deep beams.
	3. Analysis of stresses in concrete chimney and design the chimney
	4. Analysis and design overhead water tank with codal provision of 3370-2009
	5. Analysis and design of cantilever and counter fort retaining wall.
	6. Describe yield line theory and analyze rectangular and circular slab by yield line theory
ADVANCED CONSTRUCTION TECHNIQUES (PCE-CV805)	1. Examine the importance of composite material in construction. & various materials for formwork & its design.





Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Department of Civil Engineering

	<ol style="list-style-type: none">2. Identify importance of new materials and their uses in construction.3. Interpret & execute the methods of Ground improvement by different methods.4. Explain different types of Cofferdams, selection criteria & material used.5. Analyse the advancement in construction of and rehabilitation of bridges& retaining structures.6. Classify the advance methods in Concrete pavement construction.
CONSTRUCTION PRACTICES (PCE-CV805)	<ol style="list-style-type: none">1. Know the earth moving equipments& excavation in hard rock.2. Understand new construction methods & techniques.3. Know the concreting equipments, plants & concreting methods.4. Understand plants & equipments used for steel construction & road construction.5. Understand construction of heavy structure & construction management.
STRUCTURAL DESIGN AND DRAWING-II (PCCCV806)	<ol style="list-style-type: none">1. Translate the ideas into workable plans2. Classify the components3. Design the units & hence the structure as a whole4. Draft the details for execution5. To read and understand the supplied drawing for execution on site.
Project Phase-II (PW-CV807)	<ol style="list-style-type: none">1. Identify the problem statement through literature survey for project work2. Develop planning and design strategy for the project work.3. Develop the ability to learn independently and to find/integrate information from different sources required in solving real-life problems.4. Enhance technical report writing skills with proper organization of materials.



PO

1. **Engineering Knowledge:** Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
 2. **Problem Analysis:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
 3. **Design/ Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
 4. **Conduct investigations of complex problems** using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
 5. **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
 6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
 7. **Environment and Sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
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8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
 9. **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams and in multi disciplinary settings
 10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.



11. Project Management and Finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PSO's

1. Learn and apply latest Software Technologies in the field of Computer Science & Engineering.
2. Identify real time problems and deliver innovative Software solutions for development of society.

SY CSE

Sr. No.	Subject Name	Course Outcome
1	CS301- Applied Mathematics	1. Study of Curve fitting & Correlation and Solve related engg. Problems 2 Understand all types of probability distributions 3 Solve Numerical Integration 4 Understand Fuzzy sets and its Properties and Solve related Engg. Problems 5 Understand Fuzzy Arithmetic and equations
		6 Understand Assignment problems and apply the Knowledge to Other Subjects
2	CS302 Discrete Mathematics & Structures	1. Apply logic concepts in designing a program. 2. Illustrate basic set concepts & apply operations on set. 3. Minimize the Boolean Function. 4. Apply basic concepts of probability to solve real





		<p>world problems.</p> <p>5. Represent data structures using graph concepts.</p> <p>6. Design abstract machines, detect deadlocks.</p>
3	CS303 Data Structures	<p>1. Identify the appropriate data structure for specific applications.</p> <p>2. Design and analyze programming problem statements.</p> <p>3. Choose appropriate sorting and searching algorithms.</p> <p>4. Outline the solution to the given software problem with appropriate data structure.</p>
4	CS304 Computer Networks - I	<p>1. Understand the fundamental concepts of Computer Networks.</p> <p>2. Explain the OSI and TCP/IP layered architecture.</p> <p>3. Compare and demonstrate fundamentals of network and data link layer protocol.</p> <p>4. Demonstrate TCP protocol in detail.</p> <p>5. Analyze protocol structure using network analyzing tool.</p> <p>6. Apply the principles of socket programming in the networks.</p>
5	CS305 Microprocessors	<p>1. Describe the Architecture of 8085 microprocessors and microcontroller</p> <p>2. Classify the 8086 Assembly Instructions set and use in Assembly language Programs</p> <p>3. Explain Programming model's of 8086 microprocessors</p> <p>4. Classify the 8086 Assembly Instructions set and use, in Assembly language Programs</p> <p>5. Understand the higher processor architecture</p> <p>6. Understand the need for other Microprocessors</p>
6	CS306 C programming	<p>1. Explain programming fundamentals including statements, control flow, functions, file handling and recursion</p> <p>2. Analyze and use data structures, File handling concepts to solve the complex problem statements.</p>



		<p>3. Apply the concepts of pointers, structures, unions in 'C' language for user defined problems.</p> <p>4. Design the solution for the given problems and develop the same using C programming language in Linux environment.</p>
7	CS307 Soft Skills	<p>1. Effectively communicate through verbal/oral communication and improve the listening skills</p> <p>2. Actively participate in group discussion / meetings / interviews and prepare & deliver Presentations.</p> <p>3. Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of team Work, Inter-personal relationships, conflict management leadership quality.</p>
8	Environmental Studies	<p>CO1: To integrate knowledge from multiple disciplines representing physical and life sciences perspectives, political and economic perspectives, and social and cultural perspectives on humans' interactions with their environments.</p> <p>CO2: To protect the environment, to maintain the quality of life, creating the awareness, conservation of natural resources, to understand Ecology, to conservation of some important biological species which are vanishing, to changing the attitudes and tendency of the people so that it becomes a part of their life. It is important for of people towards the protection of environment.</p> <p>CO3: To Design and evaluate strategies, technologies & methods for sustainable management of Environmental system and for the remediation of environmental pollution and restoration of degraded environment. Mitigate & proper handle the natural disaster.</p>



		<p>CO4: Be informed and competent in pursuing Environmental ethics, Global & Local level Environmental issues, career opportunities, professional development or further education in environmental fields. Also visit or identify local level environmental problems and try to solve it.</p> <p>knowledge from multiple disciplines representing physical and life sciences perspectives, political and economic perspectives, and social and cultural perspectives on humans' interactions with their environments.</p> <p>CO2: To protect the environment, to maintain the quality of life, creating the awareness, conservation of natural resources, to understand Ecology, to conservation of some important biological species which are vanishing, to changing the attitudes and tendency of the people so that it becomes a part of their life. It is important for of people towards the protection of environment.</p> <p>CO3: To Design and evaluate strategies, technologies & methods for sustainable management of Environmental system and for the remediation of environmental pollution and restoration of degraded environment. Mitigate & proper handle the natural disaster.</p>
		<p>CO4: Be informed and competent in pursuing Environmental ethics, Global & Local level Environmental issues, career opportunities, professional development or further education in environmental fields. Also visit or identify local level environmental problems and try to solve it.</p> 

TY CSE

Sr. No.	Subject Name	Course Outcome
1	CS501 Information Security	<ol style="list-style-type: none"> 1. To understand basics of the security concepts 2. To expose the various security techniques. 3. To give hands on exposure to various Security algorithms.
2	CS502 System Programming	<ol style="list-style-type: none"> 1. Student will be able to identify the role of system programs and application programs. 2. Student will be able to understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger. 3. Students able to describe the various concepts of assemblers and macro - processors. 4. Students able to understand the various phases of compiler and compare its working with assembler. 5. Students understand how linker and loader create an executable program from an object module created by assembler and compiler. 6. Students will be able to create graphical user interfaces for basic programs and learn about terminal input/output through the termios libraries.
3	CS503 Object-Oriented Modeling & Design	<ol style="list-style-type: none"> 1. Understand the concepts of Object oriented themes. 2. Students can understand the advanced class modeling and state modeling 3. Apply the Knowledge of object oriented modeling & design in higher studies. 4. Understand the system concepts and domain analysis



		<p>5. Understand the application analysis</p> <p>6. To implement the design patterns to provide solutions to real world software design problems</p>
4	CS504 Computer Algorithms	<p>1. Understand and demonstrate algorithm design methods with analysis</p> <p>2. Devise algorithm for given problem statement and analyze its space and time complexity by using recurrence relation</p> <p>3. Categorize the problem to determine polynomial and non-polynomial based on its nature</p> <p>4. Understand and demonstrate basic concepts of parallel algorithms</p>
5	OEC-CS506 Internet of Things	<p>1. Explain fundamentals of Internet of Things technology.</p> <p>2. Describe and demonstrate RFID technology for various applications.</p> <p>3. Write and develop programs for basic IOT applications.</p> <p>4. Illustrate different communication technologies in the IOT system.</p>
6	CS507 Java Programming	<p>1. Recall fundamental object oriented concepts, multi-threading and network programming of Java.</p> <p>2. Explain principles of OOP's exceptions, collections and GUI Components.</p> <p>3. Make use of interface, inheritance, packaging, GUI programming, multi-threading, network programming and database in application development.</p> <p>4. Compare different I/O Streams, Collections and packaging related terms in programming.</p> <p>5. Assess single thread Vs Multi-</p>



		<p>thread applications and client server related applications.</p> <p>6. Design and develop simple applications which will use all concepts of OOP's, network programming and GUI programming.</p>
7	CS508 Business English	<p>1. Learn to communicate with others in practical, business oriented situations</p> <p>2. Learn to express themselves in English with greater fluency, accuracy and confidence</p> <p>3. Learn to handle themselves in English in a variety of business contexts, from negotiating, to using the telephone, to making presentations, to socializing</p> <p>4. Enhance the skills of listening, speaking, pronunciation skills, as well as business vocabulary</p> <p>5. Acquire the communicative competencies crucial for appropriate workplace behavior</p>

B.Tech CSE

Sr. No.	Subject Name	Course Outcome
1	CS701 Advanced Computer Architecture	<p>1. Demonstrate concepts of parallelism in hardware/software.</p> <p>2. Discuss memory organization and mapping techniques.</p> <p>3. Describe architectural features of advanced processors.</p> <p>4. Interpret performance of different pipelined processors.</p> <p>5. Explain data flow in arithmetic algorithms. 6. Development of software to solve computationally intensive problems.</p>
2	CS702 Cloud Computing	<p>1. Describe the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing.</p> <p>2. Explain the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.</p>



		<ol style="list-style-type: none"> 3. Collaboratively research on the state of the art (and open problems) in cloud computing. 4. Identify problems, and explain, analyze, and evaluate various cloud computing solutions. 5. Choose the appropriate technologies, algorithms, and approaches for the related issues. 6. Display new ideas and innovations in cloud computing
3	CS703 Advanced Database Systems	<ol style="list-style-type: none"> 1. Understand and identify issues arising from parallel and distributed processing of data. 2. Select appropriate database and construct solution to real world problems of storing large data. 3. Compare and Contrast NoSQL databases with each other and Relational Database Systems 4. Make use of SQL cursors, triggers, stored procedures, and procedural SQL. to write complex SQL script 5. Learn database administration tasks and security measures
4	CS704 Elective-I- (AI)	<ol style="list-style-type: none"> 1. Evaluate Artificial Intelligence (AI) methods and describe their foundations. 2. Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation and learning. 3. Demonstrate knowledge of reasoning and knowledge representation for solving real world problems. 4. Analyse and illustrate how search algorithms play vital role in problem solving. 5. Illustrate the construction of learning and expert system. 6. Discuss current scope and limitations of AI and societal implications.
5	CS705 Web Technologies	<ol style="list-style-type: none"> 1. Introduce students with front end web designing. 2. Motivate the students to develop web applications using PHP. 3. To introduce emerging Web technology concepts and tools. 4. To learn database access technologies and state management techniques. 5. To expose students to XAMPP web services.



6	CS706 Project - I	<ol style="list-style-type: none"> 1. Explain the need of a software project for the society 2. Identify requirement analysis like functional and technical requirements for the project 3. Come up with design documents for the project consisting of Architecture, Dataflow diagram, Class Diagram, Algorithmic descriptions of various modules, collaboration diagram, ER Diagrams, Database Design Documents, Sequence Diagram, Use Case Diagram 4. Able to demonstrate analysis and design. 5. Prepare the technical report consisting of Requirement specification, Analysis and Design of Project
7	CS707 Internship	<ol style="list-style-type: none"> 1. Have an exposure to industrial practices and to work in teams 2. Communicate effectively 3. Understand the impact of engineering solutions in a global, economic, environmental, and societal context 4. Develop the ability to engage in research and to involve in life-long learning 5. Comprehend contemporary issues 6. Engage in establishing his/her digital footprint



(Signature)

**H.O.D.
(CSE Dept.)**

Dr. J.J. Magdum College of Engg.
Jaysingpur - 416101.



Dr. J. J. Magdum Trust's (No. E/902)

Dr. J. J. Magdum College of Engineering, Jaysingpur

Department of Civil Engineering

Display of POs & PSOs

Dr. JJMCOE
Geotag Photo

DEPARTMENT OF CIVIL ENGINEERING

Program Outcomes (PO's)

At the end of successful completion of program, the graduates will be able to.

- 1. Engineering knowledge** : Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis** : Identify, formulate, research literature analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- 3. Design/ development of solutions** : Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
- 4. Conduct investigations of complex problems**: using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
- 5. Modern tool usage** : Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society** : Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
- 7. Environment and sustainability** : Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- 8. Ethics** : Apply ethical principles and commit to professional ethics and responsibilities and norm of engineering practice.
- 9. Individual and team work** : Function effectively as an individual, and as a member or leader in diverse teams and in multi disciplinary settings.
- 10. Communication** : Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
- 11. Project management and finance** : Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage project and in multidisciplinary environments.
- 12. Life-long learning** : Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSO's)

- 13. Understand practical problems and to suggest the best possible and economical solution for the problems.**

Magdum Engineering
Google

Jaysingpur Maharashtra India 28°C
QH88+G9F, Mahavir Colony, Swapnanagari,
Jaysingpur, Maharashtra 416101, India
Lat: 16.77 | Long: 74.57
20/12/2023 1:16 pm, IST
Wed, 20 Dec

Location - HoD Cabin Department of Civil Engineering





Dr. J. J. Magdum College of Engineering, Jaysingpur.

COURSE - OUTLINE

Programme Name:Civil Engineering.
Course Title:Geotechnical Engineering I
Course Contact Hours:3 hrs/week, 2hrs/batch/week
Faculty Name: Prof. Mrs. S.P.Madnaik
Qualification : M.E(Construction Management)

Course Number: PCC-CV504
Course Designation: Professional Core
Course Type:L ectures,Practicals
Designation:Assistant Professor

Course Mapping with Faculty Expertise:

P.G.in concerned course	Related Hands on Experience	Related refresher Courses Attended	Teaching experience of the course	Training mode
	✓	✓	✓	✓

Course Pre-requisites: 1.Knowledge of Basic Science

Course Assessment Methods:

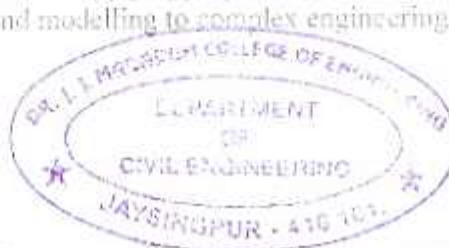
a)Internal Assessment Methods: 1.Continuous assessment of performance in lab. work
2.Continuous internal evaluation
3.Attendance

b)External Assessment Methods: 1.University Theory Examination
2. End semester practical examination

Program Outcomes (POs):

At the end of successful completion of program, the graduates will be able to,

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities, with an understanding of the limitations.



6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for, sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and financial:** Determine economic feasibility and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

13. An ability to identify, analyze, and solve problems, and design a safe, effective, and sustainable best possible economical solution for the problem.
14. An ability to function in multidisciplinary teams.
15. An ability to succeed in competitive examination in government and private organization after successful accomplishment (Degree) by professional development and / or Industrial Training course (IIT) certificate.

Course Outcome:

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

1. Evaluate the index and engineering problem of soil.
2. Describe the fundamental soil properties.
3. Evaluate the stress calculation on soil.
4. Explain the process and importance of soil liquefaction.
5. Discuss the shear strength of soil.
6. Analyze the lateral pressure on earth retaining walls.



Mapping of course outcomes with Program outcomes

Programme outcomes Course Outcomes	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	3	3							2	2		2	2		3
2	3	3							2	2		2	2		3
3	2	2							2	2		2	2		3
4	2	3	2	2	2				2	2		2			3
5	3	3										2			3
6	3	3										2			3

Strong contribution: 3 Moderate Contribution: 2 Low Contribution: 1 No contribution: --

Date of tests

Date of displaying marks:



Chapter / Unit No.:- 1- Soil Properties

No. of Lectures specified in syllabus: 10

No. of Lectures Planned: 10

Contents to be covered in each Lecture: -

1. Origin of soil, Soil structure.
2. Soil phase systems, Weight volume relationship
3. Index Properties of Soil: Unit weights, water content
4. Specific gravity, void ratio, porosity, air content
5. Degree of saturation their relationships and significance
6. Particle size distribution by sieve analysis and hydrometer analysis
7. Atter berg's consistency limits (Liquid limit, plastic limit, shrinkage limit)
8. Consistency indices, Activity
9. Classification of soil
10. Casagrande plasticity chart

Content delivery method:-

The above topics will be delivered by following methods

Content Number	Content delivery method
1	Chalk and talk method
2	
3	
4	
5	
6	
7	
8	
9	
10	

Outcomes of Chapter:

After successful completion of this chapter, students will be able to-

1. Discuss soil structure, soil phase system
2. Test properties of soil
3. Classify the soil

Mapping with Course outcomes with Chapter outcomes: -

Course outcomes Chapter Outcomes		1	2	3	4	5	6
1	→	3	3	2	2	1	1
2	↓	3	3	3	2	1	1
3		3	3	3	2	1	1

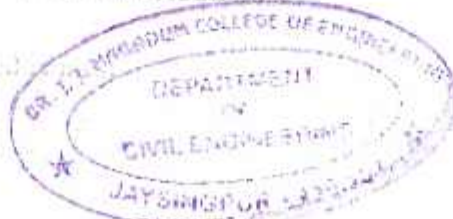
Strong contribution: 3

Worked giving assignment:

Date of returning back corrected:

Weak Contribution: 2

Low Contribution: 1



Text books used:-

1. Text book of soil mechanics in theory and practice by Alam Singh

Reference books used:-

1. Soil mechanics and foundation engineering by B. C. Punmia
2. Soil mechanics and foundation engineering by V. N. S. Murthy

Plan for teaching beyond syllabus: - Nil.

Chapter / Unit No.:-2- Permeability and seepage analysis

No. of Lectures specified in syllabus: 06

No. of Lectures Planned: 06

Contents to be covered in each Lecture: -

1. Darcy's law, its validity and factors affecting permeability.
2. Determination of permeability by different methods.
3. Concept of effective, pore & total stress in soil mass.
4. Seepage pressure, seepage force, seepage force per unit volume.
5. Critical hydraulic gradient, quick sand condition and piping.
6. Flow net construction and characteristics, application of flow net and determination of seepage loss.

Content delivery method:-

The above topics will be delivered by following methods

Contents Number	Content delivery method
1	Power point presentation
2	
3	
4	
5	Chalk and talk method
6	

Outcomes of Chapter

After successful completion of this chapter, students will be able to-

1. Explain Darcy's law and methods of determination of permeability.
2. Discuss different stress on soil.
3. Explain concept of seepage and determination of seepage loss.

Mapping with Course outcomes with Chapter outcomes: -

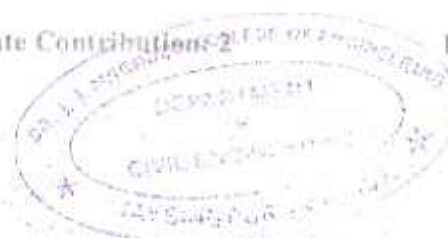
Course outcomes Chapter Outcomes	1	2	3	4	5	6
1	2	2	3	1	2	2
2	2	3	2	1	2	2
3	2	2	2	1	2	2

Strong contribution: 3

Moderate Contributions: 2

Low Contribution: 1

Date of giving assignment:



Date of returning back corrected copies:

Text books used:-

1. Text book of soil mechanics in theory and practice by Alam Singh

Reference books used:-

1. Soil mechanics and foundation engineering by B. C. Punmia
2. Soil mechanics and foundation engineering by V. N. S. Murthy

Plan for teaching beyond syllabus: - Nil

Chapter / Unit No.:-3- Compaction and Consolidation

No. of Lectures specified in syllabus: 08

No. of Lectures Planned: 08

Contents to be covered in each Lecture:-

1. Concept of soil, factors affecting compaction.
2. Standard proctor, modified proctor test, zero air void line and placement water content.
3. Field compaction equipment with their suitability.
4. Concept of consolidation and factors affecting it.
5. Terzaghi's theory of one dimensional consolidation
6. Coefficient of volume change, compression index, coefficient of consolidation
7. Determination of coefficient of consolidation by square root of time fitting method
8. Determination of coefficient of consolidation by logarithm of time fitting method

Content delivery method:-

The above topics will be delivered by following methods

Content Number	Content delivery method
1	Chalk and talk method
2	
3	
4	
5	
6	

Outcomes of Chapter

After successful completion of this chapter, students will be able to-

1. Discuss the concept of compaction and field compaction techniques.
2. Explain concept of consolidation and test to find coefficient of consolidation.
3. Analyse the different methods to determine coefficient of consolidation.

Mapping with Course outcomes with Chapter outcomes:-

Course outcomes						
Chapter Outcomes	1	2	3	4	5	6
1	1	1	1	1	1	1
2	1	1	1	1	1	1
3	1	1	1	1	1	1

High Contribution: 3



Low Contribution: 1

Date of giving assignment:

Date of returning back corrected copies:

Text books used:-

1. Text book of soil mechanics in theory and practice by Alam Singh

Reference books used:-

1. Soil mechanics and foundation engineering – by B. C. Punmia
2. Soil mechanics and foundation engineering by V. N. S. Murthy

Plan for teaching beyond syllabus: - Nil.

Chapter / Unit No.:-4- Stress distribution in soil

No. of Lectures specified in syllabus: 0

No. of Lectures Planned: 06

Contents to be covered in each Lecture: -

1. Boussinesq theory- point load, strip load and circular section.
2. Pressure distribution diagram on horizontal and vertical plane and radial shear stress.
3. Westergaard's theory & pressure bulb
4. Newmark chart & contact pressure
5. Stress distribution method
6. 2:1 method

Content delivery method:-

The above topics will be delivered by following methods

Content Number	Content delivery method
1	Chalk and talk method
2	
3	
4	
5	
6	

Outcomes of Chapter

After successful completion of this chapter, students will be able to-

1. Evaluate the stress distribution concept for soil.
2. Describe the Boussinesq theory & Westergaard's theory

Mapping with Course outcomes with Chapter outcomes: -

Course outcomes	1	2	3	4	5	6
Chapter Outcomes						
1						
2						

Strong contribution: 2

Medium contribution: 2

Low Contribution: 2



Date of giving assignment:

Date of returning back corrected copies:

Text books used:-

1. Text book of soil mechanics in theory and practice by Alam Singh

Reference books used:-

1. Soil mechanics and foundation engineering by V. N. S. Murthy
2. Soil mechanics and foundation engineering by A. K. Arora

Plan for teaching beyond syllabus: - NIL

Chapter / Unit No.:-5 Shear strength of soil

No. of Lectures specified in syllabus: 10

No. of Lectures Planned: 10

Topics to be covered in each Lecture:-

1. Concept of shear stress and strength of soil
2. Mohr-Coulomb theory
3. Failure envelopes for different soils
4. Total stress and effective stress, Representation of Mohr's circle
5. Terzaghi's total and effective stress approach
6. Factors affecting shear strength
7. Determination of shear strength of soil by direct shear test
8. Triaxial test
9. Compression and vane shear test
10. Skempton pore water pressure

Content delivery method:-

The above topics will be delivered by following methods

Topic Number	Content delivery method
1	Chalk and talk method
2	
3	
4	
5	
6	

Outcomes of Chapter

After successful completion of this chapter, students

1. Describe concept of shear strength of soil.
2. Evaluate Mohr's circle theory.
3. Discuss shear stress parameters.

Mapping with Course outcomes with Chapter outcomes.

Course outcomes	Chapter Outcomes
CO-1	1
CO-2	2
CO-3	3



3	2	2	1	2	1	2
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Strong contribution: 3

Moderate Contribution: 2

Low Contribution: 1

Date of giving assignment:

Date of returning back corrected copies:

Text books used:-

1. Text book of soil mechanics in theory and practice by Alam Singh

Reference books used:-

1. Soil mechanics and foundation engineering by V. N. S. Murthy
2. Soil mechanics and foundation engineering by A. K. Arora

Plan for teaching beyond syllabus: - Nil.

Chapter / Unit No.: -6 Earth pressure theory

No. of Lectures specified in syllabus: 08

No. of Lectures Planned: 08

Contents to be covered in each Lecture: -

1. Concept of earth pressure and plastic equilibrium
2. Active and passive earth pressure conditions
3. Rankine's theory of earth pressure - dry/moist
4. submerged (partially and full).
5. horizontal backfill with surcharge.
6. total lateral force on wall
7. Bell-Rankine's theory of earth pressure
8. Coulombs theory of earth pressure

Content delivery method:-

The above topics will be delivered by following methods:

Topic Number	Content delivery method
1	Chalk and talk method
2	
3	
4	
5	
6	
7	
8	

Outcomes of Chapter

After successful completion of this chapter, students will be able to:

1. Explain the concept of earth pressure
2. Describe active and passive earth pressure conditions
3. Analyze the active and passive earth pressure



Mapping with Course outcomes with Chapter outcomes: -

Course outcomes Chapter Outcomes	1	2	3	4	5	6
1	2	1	1	2	1	3
2	2	2	2	1	1	3
3	3	2	2	2	1	3

Strong contribution: 3

Moderate Contribution: 2

Low Contribution: 1

Date of giving assignment:

Date of returning back corrected copies:

Text books used:-

1. Text book of soil mechanics in theory and practice by Alam Singh

Reference books used:-

1. Soil mechanics and foundation engineering by V. N. S. Murthy
2. Soil mechanics and foundation engineering by A. K. Arora

Plan for teaching beyond syllabus: -NIL

For overall subject:

No. of Lectures specified in syllabus: 48

No. of Lectures Planned: 48

Signature of the Faculty

Checked by Academic Co-ordinator

Verified by HOD

Approved by Dean (Academics)



Dr. J.J. Magdum Trust's

Dr.J.J.Magdum College of Engineering, Jaysingpur

STUDENTS INFORMARTION MANUAL
T.Y. B.Tech (2022-23)(Sem-I)



Department of Civil Engineering

Name of Student :

P.R.N.Number :

Roll Number :

Division :

Academic Year :

Mobile Number :

E-mail ID :



Institute Information

Dr J J Magdum College of Engineering was established by Dr J J Magdum Trust, Jaysingpur in the year 1992 with an objective to promote the cause of higher education. The institute is approved by All India Council of Technical Education (AICTE), New Delhi and Government of Maharashtra, affiliated to Shivaji University, Kolhapur. The college offers B. Tech program in Mechanical, Civil, Computer Science Engineering, Electronics & Tele-Communication, Information Technology and M. Tech program in Civil Engineering-Construction Management.

Undergraduate

Programme

Branch	Degree	Intake
Civil Engineering	B.Tech. (Civil Engineering)	120
Mechanical Engineering	B.Tech. (Mechanical Engineering)	60
Computer Science & Engineering	B.Tech. (Computer Science & Engineering)	60
Information Technology	B.Tech. (Information Technology)	60
Electronics & Telecommunication Engg.	B.Tech. (Electronics & Telecommunication Engg)	60

Post Graduate Programme

Branch	Degree	Intake
Civil(Construction Management) Engineering	M.Tech.(Civil-Construction Management)	18

Dr.J.J.Magdum Trust's

Dr.J.J.Magdum College of Engineering

Gat No. (314/330), Shirol – Wadi Road,(Agar Bhag).

Jaysingpur : 416101, Tal : Shirol, Dist : Kolhapur, State : Maharashtra

Website: www.jjmcoe.ac.in, E-mail: principal@jjmcoe.ac.in

Department of Civil Engineering (SEM 2022-23):2





Vision of Institute

To be a Leading academic organization, creating skilled and Ethical Human Resources by leveraging Technical Education for Sustainable Development of Society.

Mission of Institute

- To promote learnability of all stakeholders
- To empower rural youth to be competent in technical education and imbibe ethical values.
- To contribute to local social and economic context, leading to satisfied stakeholders.

Quality Policy

We strive for continual improvement in our performance through methodical academic monitoring, student participation, and use of the innovative teaching-learning processes.



DEPARTMENT OF CIVIL ENGINEERING

The Department of Civil Engineering was established in the year 1992 with a sanctioned intake of 60 along with the establishment of institute intake increases 120 in 2011-12. P.G. Course in Construction & Management started in 2010-11. The department has a good intermingle of experienced and young faculty which works as a team to strengthen the department.

Vision of Department

To contribute to the growth of technical education by providing competent technical manpower with high ethical values.

Mission of Department

To prepare students of high quality with sound knowledge of both theory and practice in Civil Engineering and also exposing them to latest technology in the industry

Programme Educational Objectives (PEO's)

1. To train students with good of knowledge in core areas of Information Technology and related engineering so as to analyze, design, and synthesize data and technical concepts.
2. To inculcate in students to maintain high professionalism and ethical standards, effective oral and written communication skills, to work as part of teams.
3. To provide our graduates with learning environment awareness of the life-long learning needed for a successful professional career and to introduce them to written ethical codes and guidelines, perform excellence, leadership and demonstrate good citizenship.
4. To provide students with academic environment that is aware of excellence, leadership, entrepreneurship, ethical responsibility and ability to work in multidisciplinary teams.
5. To train students with excellent scientific and engineering knowledge so as to understand, analyze, design and create products and solutions for Software engineering problems.



Programme Outcomes (PO's)

At the end of successful completion of program, the graduates will be able to,

1. **Engineering Knowledge:** Apply knowledge of mathematics, science, engineering Fundamentals and an engineering specialization to the solution of complex engineering pr
2. **Problem Analysis:** Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental
4. **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid
5. **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering
7. **Environment and Sustainability:** Understand and the impact of professional engineering solutions in societal and environmental contexts and demonstrates knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering
9. **Individual and Teamwork:** Function effectively as in visual, and as a member or leader in diverse teams and in multidisciplinary s
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear
11. **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these too noels on work, as a member and leader instead, to manage projects and in multidisciplinary environment
12. **Lifelong Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological

Program Specific Outcomes (PSO)

1. A board education is necessary to understand practical problems and to suggest the best possible and economical solution for the problem.
2. An ability to function in multidisciplinary teams.
3. An ability to succeed in competitive examination in government and private organizations after successful accomplishment (Degree) by professional development and/or Industrial training course(s) certification.



Department of Civil Engineering



STUDENTS ROLE

As our society/ nation grows & becomes technologically more strong / complex, it needs more trained Engineers. Students can contribute to this professional growth by playing an effective & disciplined role during their studies.

Responsibilities:

1. Punctuality, 100% Attendance & active participation in All Academic Activities
2. Self-Discipline & good relations with other students, teaching & support staff.
3. Positive attitude, motivation and technical thinking.
4. Participation in Co-Curricular & Extra-Curricular activities.
5. Always carrying Identity Card & following the College Dress Code.
6. Pursuing all-round personality development with good generic skills.
7. Following the Code-of-Conduct by the Department, Institute & University.

Code-of-Conduct:

1. Coming late to Lectures/Practical's, common off, leave without permission is serious offence.
2. Roaming in the campus during academic work or disturbing the campus activities through shouting/ misconduct is not permitted.
3. Use of personal unauthorized electronic gadgets in department premises is objectionable.
4. Attendance less than 75% will lead to semester defaulter & make you ineligible for Exams.
5. Any form of violence, ragging, use of tobacco, alcohol or drugs on campus are serious offences punishable with rustication from the institute &/ legal action.

Let us all- Society, parents, teachers and students join hands & put our best efforts to imbibe the above mentioned behavior in our students.



Laboratory and Classroom Instructions

Laboratory instructions:

- Handle all Devices /equipments carefully
- Follow safety procedures & avoid damage to self and equipment
- Inform to respective faculty before beginning your experiment
- Help to conserve energy. Switch off the equipments tubes & fans before leaving the laboratory
- Inform the lab assistant or lab in-charge when any fault arises during the performance of an experiment
- Report any not working equipment to the lab instructor; don't open/ remove the cover/ attempt to repair any equipment.
- Do not move the instruments from one laboratory to another , without permission

Classroom instructions:

- Maintain silence in class rooms
 - Don't write anything on seating bench and walls of classroom.
 - Keep your mobiles switched off
 - Attend classes regularly and be punctual for your classes.
 - Your reason of absence should be timely informed to your class teacher with written application.
-
- Help to conserve energy. Switch off fans and tubes before leaving the classroom.
Keep the Classrooms clean





Dr. J. J. Magdum Trust's

Dr. J. J. Magdum College of Engineering, Jaysinapur

ACADEMIC PLANNER (A.Y. 2022-23)

Sr. No.	Activity	Period
1	Commencement of Semester I	24 th of August 2022
2	Load Distribution	17th August 2022
3	Time table	20 th of August 2022
4	Commencement of Theory lectures for SY / TY/ Final Year	24 th of August 2022
5	Celebration of Eco-friendly Ganesh Festival-NSS	29 th August, 2022
6	a. Course Outline by individual faculty	First week of September 2022
	b. Distribution of Academic Diary	
	c. Lecture Plan duly signed by HoD	
	d. Department Academic Planner Submission	
	e. Attendance on ERP	
7	SIM submission	First week of September 2022
8	Expert Lecture on Start Up - EDC	3 rd of September 2022
9	Expert Session on "Selection of Project topic" – R & D	8 & 9 September 2022
10	One day college cleaning camp- NSS	10 th September, 2022
11	First Workshop for faculty & students on IPR – R & D	Second week of Sept. 2022
12	Academic Audit of Individual and Department for 2021-22 (College level) – IQAC Coordinator	Second week of Sept. 2022
13	Inspection camp for malnourished Children in Shirol Taluka- Women's Cell	16 th Sept. 2022
14	Expert session on research & SORT Inauguration- R & D	16 th Sept. 2022
15	Faculty Development Program on AWS Cloud- CSE	Second Week of September 2022
16	Expert lecture on " Financial aspects of Business"- EDC	17 th Sept. 2022
17	Essay Writing Competition on various Topics-NSS	17 th September, 2022
18	Signing MoU for IPR – R & D	19 to 23 Sept, 2022

Department of Civil Engineering 7



49	Faculty development on Soft Skills & Stress Management for teaching and non teaching- CSE	Second Week of November 2022
50	Lecture on self-earning and investing Exhibition-Arts/ Poster/ social issue- Women Cell	15 th of November 2022
51	Second assessment of project (Methodology and future work presentation)	17,18 & 19 November 2022
52	SORT activity-III	19 th of November 2022
53	Industrial Visit of Interested students-EDC	19 th of November 2022
54	Voter Registration camp-NSS	20 th November, 2022
55	Higher Studies Cell Activity	20 th November 2022
56	CIE – II for SY /TY/ Final Year	21 st & 22 nd of November 2022
57	End Semester Student Feedback - II	23 rd of November 2022
58	Workshop for Teaching faculty- Civil Engineering Department (FDP)	Last week of Nov. 2022
59	Celebration of Indian Constitution Day-NSS	26 th November, 2022
60	Workshop for Teaching faculty- IT	Last week of Nov. 2022
61	Workshop for Non teaching- Civil Engineering Department (FDP)	Last week of Nov. 2022
62	Social Harassment Prevention Cell- Guest lecture on women's right of laws.	First week of December 2022
63	OBE Review-IQAC	First Week of December 2022
64	Final submission for SY/TY/Final Year	First Week of December 2022
65	End of Th/Pr for SY/TY/Final Year	Tentative Second Week of December 2022
66	Workshop for Non -teaching-II	Last week of Dec. 2022

67	Celebrate of Human Rights Day-NSS	10 th December, 2022
68	Late Dr J J Magdum Memorial Lecture series- Cultural Committee	28 to 30 December 2022
69	Sports- Fit India Run	Last week of December 2022
70	Sports- Zonal Interzonal competition	September to December 2022 as per SUK Time Table
71	Students Participation in different Cultural events	December 2022 as per SUK Time Table
72	Online quiz	At the end of Each Semester
73	Proctor Report	Report at the end of Each Month
74	Industrial Visits	As per departmental academic planner
75	Industry Person Expert Lecture	As per departmental academic planner
76	Student In Plant Training	During Summer or winter Vacation as per Industries Schedule
77	Seminar & Industrial Visit (Student)	As per departmental academic planner
78	Advisory Board meeting- Industry relation Cell	One per semester by all departments
79	Activity Under MOU- Industry relation Cell	One Per Month by all departments
80	Industrial Visit by Faculty- Industry relation Cell	One visit Monthly or Three days in vacation per semester
81	Expert Lectures by all department - Industry relation Cell	Minimum Two per semester
82	Selection of Student Council	As per SUK Guidelines
83	Commencement of Th / Pract. for FY	As per notification of DTE
84	Induction Programme for FY	In 1 st week after Commencement of FY lectures
85	End of Th/Pr for FY	As directed by SUK
86	Final submission for FY	One week before end of sem I
87	Alumni Activity	Expert Lectures in respective department
88	Academic Audit (Semester I)	Before start of Sem II
89	SUK theory examination	As per schedule from SUK
90	End of Semester I	Tentative 2nd week of December



R&D
EDC
Cultural Committee
Industry Relation Cell
Women Cell
Academic Activities
Sports



IQAC
Alumni
FDC
NSS
Sexual Harassment Cell
Students Related Activities



Academic Calendar 2022-23 Sem –I

Sep 2022

Sep 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

1st week QSV Market Survey
 26th - CMC Meeting
 30th CESA Expert Lecture
 30th Syllabus Completion Status
 30th Filling/Displaying students attendance

Oct 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Oct 2022

10th - CMC Meeting
 7th - CFSA/IOE Expert Lecture
 2nd Week Visit to Miraj Railway Station
 21st CESA Expert Lecture
 28th CMC Meeting
 31st Syllabus Completion Status
 31st Filling/Displaying students attendance

Nov2022						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

Nov 2022

1st week Site Visit for Valuation
 1st Week BPD Visit
 14th CMC Meeting
 2nd Week Visit to Water Treatment Plant
 2nd Week EQ Visit
 3rd Week QSV Site Visit for Valuation
 25th CESA Expert Lecture
 Last Week SWM Visit
 29th CMC Meeting
 30th Filling/Displaying students attendance

Department of Civil Engineering



Dec 2022

5th CESA Expert Lecture
19th Syllabus Completion Status
26th CMC Meeting

Dec 2022						
SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Note:

Within 6 working days action taken report of Syllabus Completion Report will be submitted to Dean Academic.
One Technical Augmentation Program (10-14hrs) to be conducted in semester (before 31st August)
Before 1st September --20% +40% =60% Syllabus completion
Before 10th Oct. --60%+40%=100% Syllabus completion

Prof. K.G.Ghodake
I/C Academic Planner

Dr.J.S.Lambe
Head, Civil Engg. Dept.

Time Table

Academic Year: 2022-23
 Department: Civil Engineering
 Class Room No.:B214
 Class Teacher:Prof Mrs S P Madnaik

Semester: I
 Class: TY
 W.e.f: 12/09/2022

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
09.30 am-10.30 am	DSS	A1. EE I	A1. GT-I	GT-I	BPD	OE I
10.30 am-11.30 am	EE I	A2. GT-I	A2. BPD	WRE-I	GT-I	OE I
11.30 am -11.40 am	SHORT RECESS					
11.40 am -12.40 pm	A1.DSS	GT I	EE I	A1. BPD	A1. BPD	--
12.40 pm -01.40pm	A2. EE-I	DSS	WRE I	A2. DSS	A2.WRE-I	--
	A3. BPD			A3. EE I	A3.DSS	
01.40 pm-02.30 pm	LONG RECESS					
02.30 pm-03.30 pm	OE I	WRE I	DSS	OE I	A1. WRE-I	--
03.30 pm-04.30 pm	GT-I	EE I	BPD	DSS	A2. BPD	--
					A3.GT I	

Name of the Subject	Abb.	Name of Teacher	Place of Practical
Water Resources Engineering-I (TH & PR)	WRE-I	Prof.Ms.S.S.Khot (Th+Pr.1,2,3)	Tutorial room
Building Planning and Design (TH & PR)	HPD	Dr. R.S.Chougule (Th+Pr. 1,2,3)	Drawing Hall
Design of Steel Structure (TH)	DSS	Prof.V K Wandre (Th+Pr. 1,2,3)	-----
Environmental Engineering-I(TH & PR)	EE-I	Prof.Mrs D.A.Latthe (Th+Pr.1,2,3)	Environmental Lab
Geotechnical Engineering-I(TH&PR)	GT-I	Prof.Mrs.S.P.madnaik(Th+Pr.1,2,3)	GT Lab
Open elective -I	OE-I	Dr. R.S.Chougule	

Department of Civil Engineering



**Third Year CIVIL ENGINEERING – CBCS PATTERN
SEMESTER – V**

Sr. No	Course (Subject Title)	TEACHING SCHEME				EXAMINATION SCHEME															
		THEORY		TUTORIAL		PRACTICAL			THEORY			PRACTICAL				TERMWORK					
		Credits	No. of Lecture	Hours	Credits	No. of Lecture	Hours	Credits	No. of Lecture	Hours	Mode	Marks	Total Marks	Min	Hours	Max	Min	Hours	Max	Min	
1	Pr C-CV501	3	3	3	-	-	-	1	2	2	-	-	-	100	40	25	10	2	50	20	20
2	Pr C-CV502	4	4	4	-	-	-	1	2	2	-	-	100	40	-	-	2	25	10	-	10
3	Pr C-CV503	3	3	3	-	-	-	1	2	2	-	-	100	40	-	-	2	25	10	-	10
4	Pr C-CV504	4	4	4	-	-	-	1	2	2	-	-	100	40	25	10	2	50	20	20	20
5	Pr C-CV505	2	2	2	-	-	-	2	4	4	-	-	-	-	-	50	20	2	50	20	20
6	Pr C-CV506	3	3	3	-	-	-	-	-	-	-	-	100	40	-	-	-	-	-	-	-
	TOTAL	19	19	19	6	12	12	6	12	12	500	100	100	100	100	100	100	100	100	100	200
SEMESTER – VI																					
1	Pr C-CV601	3	3	3	1	1	1	-	-	-	-	-	100	40	-	-	2	25	10	-	10
2	Pr C-CV602	4	4	4	-	-	-	1	2	2	-	-	100	40	25	10	2	25	10	-	10
3	Pr C-CV603	4	4	4	-	-	-	1	2	2	-	-	100	40	25	10	2	25	10	-	10
4	Pr C-CV604	4	4	4	-	-	-	1	2	2	-	-	100	40	-	-	2	25	10	-	10
5	Pr C-CV605	3	3	3	-	-	-	-	-	-	-	-	100	40	-	-	-	-	-	-	-
6	Pr C-CV606	-	-	-	-	-	-	2	4	4	-	-	-	-	-	50	20	2	50	20	20
7	Pr C-CV607	-	-	-	-	-	-	1	2	2	-	-	-	-	-	-	-	-	-	-	20
8	Pr C-CV608	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TOTAL	18	18	18	6	12	12	6	12	12	500	100	100	100	100	100	100	100	100	100	225
	TOTAL	37	37	37	12	24	24	12	24	24	1000	100	100	100	100	100	100	100	100	100	425

CIE: Continuous Internal Evaluation ESE: End Semester Examination



SHIVAJI UNIVERSITY, KOLHAPUR

REVISED SYLLABUS

THIRD YEAR (B. Tech) CBCS

CIVIL ENGINEERING

To be introduced from the academic year 2020-21

(i.e. from June 2020) onwards



Water Resources Engineering – I

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical(Marks)	
						Max.	Min. for passing	Max.	Min. for passing
WRE - I (PCC-CV501)	03	--	02	04	ISE	--	--	50	20
					CIE	30	12	--	--
					ESE	70	28	25	10

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESE: End Semester Examination

Course Objectives:

1. To impart the basic knowledge of importance of Hydrology & irrigation in water resources development.
2. To know various hydro meteorological parameters and their estimation.
3. To create awareness about floods, their estimation using various methods.
4. To understand the importance of irrigation in Indian agricultural industry considering cropping patterns.
5. To understand the principles of watershed management and water harvesting.

Course Outcomes:

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

1. Apply the knowledge of estimation of hydro meteorological parameters.
2. Estimate direct runoff and peak discharge using hydrograph technique.
3. Apply different methods of efficient irrigation and water conservation.
4. Determine reservoir capacity based on crop water requirement.

SECTION I

Unit 1: Hydrology and Precipitation

6hrs

- 1.1 *Introduction of Hydrology*: Definition, Importance and scope of hydrology, Hydrologic cycle.
- 1.2 *Precipitation*: Forms and types of precipitation, Methods of measurement, Rain-gauge Network, Determination of average precipitation over the catchment & its numerical, Estimation of missing rainfall data, Graphical representation of rainfall - Mass rainfall curves, Double mass rainfall curve, Rainfall hyetograph.

Unit 2: Evaporation and Runoff

6hrs

- 2.1 *Evaporation*: Process, Factors affecting, Measurement and control of evaporation.
- 2.2 *Evaporation Transpiration*: Process, factors affecting, Measurement.
- 2.3 *Infiltration*: Process, Factors affecting and measurement of infiltration, Infiltration indices & its numerical.
- 2.4 *Runoff*: Classification, Factors affecting runoff, Determination of runoff-empirical equations, Rainfall runoff co-relation.

Unit 3: Hydrograph and Floods

6hrs

- 3.1 *Hydrograph*: Components of Storm hydrograph, Base flow and Separation of base flow, Direct runoff hydrograph, Unit hydrograph, Theory, assumptions and Modification

Derivation and use of unit hydrograph, Conversion of UH of different durations using Principle of Superposition & S-curve hydrograph.

- 3.2 *Floods*: Introduction of river gauging, Estimation of peak flow- empirical equations, rational method; Importance of -Design flood, Standard project flood, Maximum probable flood.

SECTION II

Unit 4: Ground Water Hydrology

6hrs

- 4.1 *Ground Water Hydrology*: Occurrence, Distribution and classification of ground water, Darcy's law, Aquifer parameters - Permeability, Specific yield, Specific retention, Porosity, Storage coefficient, Transmissibility.
- 4.2 *Hydraulics of Well*: Under steady flow conditions in confined and unconfined aquifers.
- 4.3 *Construction*: Tube wells and open wells. (Construction features only)

Unit 5: Irrigation and Minor Irrigation Works

6hrs

- 5.1 *Introduction to Irrigation*: Definition and necessity of irrigation, ill-effects of irrigation, Systems of irrigation- Surface, Sub-surface (Drip irrigation), Sprinkler irrigation; Water logging and land drainage, Assessment of irrigation water.
- 5.2 *Minor Irrigation Works*: General layout, main components and functioning of –
1. Percolation tanks 2. K. T. Weir, 3. Bandhara irrigation 4. Lift irrigation

Unit 6: Water Requirements of Crops

6hrs

- 6.1 *Water Requirement of Crops*: Principal crops and crop seasons, cropping pattern and crop rotation, Classes and availability of soil water, depth and frequency of watering, Duty, delta, base period and their relationship, factors affecting duty, methods of improving duty, Numerical on command area calculations and reservoir capacity based on crop water requirement.

Term Work:

Assignments on the following topics

1. Determination of average annual rainfall using Thiessens polygon & Isohyetal map method.
2. Consistency of rain gauge station by double mass rainfall curves.
3. Determination of evaporation losses, effective rainfall hyetograph infiltration losses – Phi index calculation, Horton's infiltration curve.
4. To develop a unit hydrograph from a total runoff hydrograph resulting from isolated storms.
5. Alteration of base period of given unit hydrograph using method of superposition and S-curve technique.
6. Determination of well discharge in a confined/unconfined aquifer.
7. Layout of Percolation tank, K. T. Weir, Bandhara Irrigation, Lift Irrigation.
8. Estimating depth and frequency of irrigation on the basis on soil moisture regime concept.
9. Crop water requirement and irrigation command area calculations.
10. A brief report on introduction to GIS software in Water Resource Engineering.
11. Site visit & report on meteorological station.

Text Books:

1. "Irrigation Engineering" – S. K. Garg – Khanna Publishers, Delhi.
2. "Water Resources & Irrigation Engineering" – Dr. K. R. Arora, Standard Publisher.
3. "Irrigation, Water Resources and Water Power Engineering" – Dr P.N. Modi, Standard Book House.
4. "Irrigation and Water Power Engineering" – Dr. Purnima and Dr. Paule – Laxmi Publications, Delhi



5. "Engineering Hydrology" – Dr. K. Subramanya, Tata McGraw Hill, New Delhi.
6. "Hydrology" – Dr. P. Jayarami Reddy, Laxmi Publications, New Delhi
7. "Engineering Hydrology" – Dr. Raghunath H.M. - New Age International Publishers.
8. "Watershed Management in India" – J. V. S. Murthy – Wiley Eastern Publications, Delhi.
9. "Irrigation Engineering" – Dahigaonkar, Asian Book Pvt Ltd.
10. "Irrigation Engineering" – S. R. Sahastrabudhe, Katson Publishers.

Reference Books:

1. "Hydrology and water resources"- R.K.Sharma, Dhanpatrai and sons, New Delhi.
2. "Theory and design of irrigation structures" - Varshney, Gupta and Gupta, vol. I and II and II, New Chand and Brothers.
3. "Irrigation Theory and practice" - Michmel, Vikas Publications House.
4. "Water management" - Jaspal Sing, M.S.Acharya, Arun Sharma, Himanshu Publications.
5. "Design of M.I. and Canal Structure" -Sayanarayan and R. Murthy, Wiley Eastern Ltd, New Delhi.
6. "Irrigation Engineering" - Raghunath, Wiley Eastern Ltd, New Delhi.

Guidelines Regarding Question Paper Setting:

1. Q.No. 4 and Q.No. 8 are compulsory and it should be based on all units of respective sections.
2. Attempt any two questions from Q. No. 1, 2, 3 and any two questions from Q. No. 5, 6, 7.

End Semester Examination Paper Pattern

Question No.	Based on Unit No.	Marks
1.	1	10
2.	2	10
3.	3	10
4.	1,2 & 3 (Compulsory)	15
5.	4	10
6.	5	10
7.	6	10
8.	4,5 & 6 (Compulsory)	15

Assignment Questions

1. Explain hydrologic cycle with sketch.
2. Describe various types of precipitation
3. Enlist & explain types of rain gauge with neat sketch.
4. What are the various selection criteria for raingauge station.
5. What are the different methods of evaporation with neat sketch.
6. How will you control evaporation from reservoir
7. Define hydrograph. Explain various components of it

8. Define runoff. What are the various factors affecting the runoff.
9. What is UH? Give limitations assumption and use of unit hydrograph?
10. Write various methods of estimating runoff
11. Write a note on – a) design flood
b) standard project flood
c) probable maximum flood
d) recurrence period
12. What is the procedure of construction of unit hydrograph
13. Methods of measurement of peak flood
14. Explain the darcy law for ground water movement and its range of validity.
15. Write note on occurrence of groundwater table.
16. Derive the expression for discharge for steady flow to the well in an unconfined aquifer. Explain in terms of radius of influence.
17. Differentiate between tube well and open well
18. Write the procedure to construct the TUBE well
19. Define irrigation and its necessity.
20. Explain the various types of irrigation systems
21. Explain the various crop seasons in india.
22. What is mean by duty, delta & base period. Derive the relation between them.
23. What are the various factors affecting the duty.

24. What are the methods of calculating consumptive use of water.
25. Explain with layout of percolation tank & its design consideration.
26. What do you understand by watershed management. Explain in details different activity performed in watershed management programme
27. Explain with neat sketch KT weir.
28. Explain with neat sketch general layout of various components of lift irrigation scheme.



Third Year B.Tech. (Civil) Semester - V

Design of Steel Structures

Course	Teaching Scheme				Credit	Schem	Evaluation Scheme			
	L	T	P	Schem			Theory (Marks)		Practical(Marks)	
							Max	Min. for Passing	Max	Min. for Passing
DSS (PCC-CV502)	04	---	02	05	ISE	--	--	25	10	
					CIE	30	12	--	--	
					ESE	70	28	--	--	

ISE: In Semester Evaluation CIE: Continuous Inter. Evaluation ESE: End Semester Examination

Course Objectives:

1. To understand the behavior of elements of steel structure.
2. To understand the design concept of steel structure and its members by LSM.

Course Outcomes:

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

1. Describe the design philosophy, behavior of steel structure and failure mechanism.
2. Analyze and design different types of bolted & welded connections.
3. Assess the strength of structural members as per Indian Standards.
4. Analyze and design members subjected to tension, compression and flexure.

SECTION-I

Unit 1: Introduction and Connections

8hrs

1.1 *Introduction:* Design philosophy, Advantages and disadvantages of steel structures, Types of steel structures, Grades of structural steel, Loads and load combinations, Partial safety factors for load and materials for steel structures.

1.2

Conne

ctions: Bolted & welded- Analysis and design of axially and eccentrically loaded bolted and welded connections.

Unit 2:Tension Members

8hrs

2.1 Common sections, Net area, Modes of failure, Load carrying capacity.

2.2 Design of tension members.

Unit 3:Compression Members

8hrs

3.1 Compression member as strut- common sections, Economical sections, Effective length, Slenderness ratio, Modes of failure, Classification of cross section, Behavior of compression member, Load carrying capacity

3.2 Design of compression members- Single and double angle.

SECTION- II

Unit 4: Column and Column Bases

8hrs

4.1 *Columns:* Design of column subjected to axial and eccentric loading, Design of lacing, Battening system, Column splices.

- 4.2. *Column Bases*: Design of slab base & gusseted base subjected to axial and eccentric loading. Design of concrete pedestal (dimensions only)

Unit 5: Beams

8hrs

- 5.1 Beam in flexure - Types of sections, Behavior, Design of laterally supported and unsupported beams, Rolled steel sections, Built up beams/com pound beams using flange plates, Curtailment of flange plates.
5.2 Design for strength and serviceability
5.3 Web buckling & web crippling.

Unit 6: Gantry Girder

8hrs

- 6.1 Forces acting on gantry girder, Commonly used sections
6.2 Design of gantry girder as laterally unsupported beam
6.3 Connection details

Term Work:

One assignment per unit with minimum four numerical in each assignment

Text Books:

1. "Limit State Design of Steel Structures" - Duggal S.K. - Tata McGraw-Hill Education private Ltd., New Delhi, 2nd Edition 2014
2. "Design of Steel Structures: By Limit State Method as Per IS: 800 – 2007" - Bhavikatti S. S., JK International Publishing House.
3. "Limit State Design in Structural Steel" - Shiyekar M. R., 2nd Edition, PHI Publisher
4. "Design of Steel Structures" - Dayaratnam, Wheeler Publications, New Delhi.
5. "Design of Steel Structures" – B. C. Punmia, A. K. Jain and Arun Kumar Jain, Laxmi Publication

Reference Books:

1. "LRF Steel Design" - William T. Segui, PWS Publishing
2. "Design of Steel Structures" - Edwin H. Gaylord, Charles N. Gaylord James, Stallmeyer, Mc-Graw Hill
3. "Design of Steel Structures" - Mac, Gively T.
4. "Design of Steel Structures" - Kazimi S. M. and Jindal R. S., Prentice Hall India.
5. "Design of Steel Structures" - Breslar, Liu Scalzi, John Willey, New York.
6. "Steel Structure" - Controlling Behaviour Through Design, Englekirk, WILEY.

I.S. Codes:

1. IS: 800 – 2007
2. IS: 875 (part I, II and III)
3. SP6 (1) & SP 6 (6).
4. IS: 816
5. IS: 808.

Guidelines Regarding Question Paper Setting:

1. IS: 800 – 2007 is permitted in examination.
2. Q. No. 1 and Q. No. 5 are compulsory
3. Attempt any two questions from Q. No. 2, 3, 4 and any two questions from Q. No. 6, 7, 8

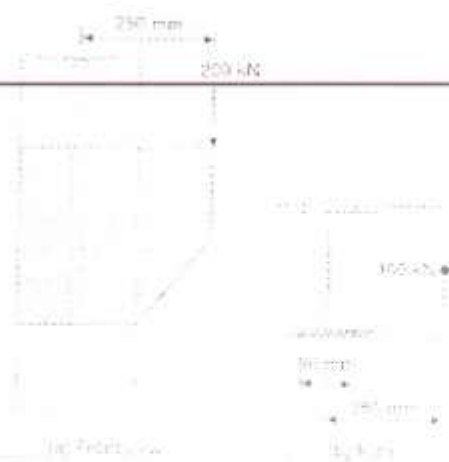


End Semester Examination Paper Pattern

Question No.	Based on Unit No.	Marks
1.	1, 2, 3 – Theory	7
2.	1 – Problem	14
3.	2 – Problem	14
4.	3 – Problem	14
5.	4,5,6 – Theory	7
6.	4 – Problem	14
7.	5 – Problem	14
8.	6 – Problem	14

Assignment Questions

1. Differentiate between working stress methods & limit state method.
2. Plate bracket carrying a load of 150kN at an eccentricity of 100mm is connected to the flange of steel I-section. Determine size of fillet weld. The depth of bracket is 300mm at member face . The weld is applied on both the sides of bracket.
3. Design welded connection for an angle 75 x 75 x 8 carrying an axial tensile load of 100Kn connected to one side of gusset plate 8mm thick.
4. Design a bolted bracket connection to support an end reaction of 400kN because of the factored loads supported by the beam. The eccentricity of the end reaction is shown in the figure. The steel used is of grade Fe410. Use bolts of grade 4.6. The thickness of bracket plate may be taken as 10mm



5. Design a tension member to carry factored load of 500kN by LSAI consisting of pair of unequal angles back to back connected to opposite side of gusset plate by weld. Design connections & draw neat sketch.

6. Explain step by step procedure to be followed in the design of tension member.
 7. Find out design strength of angle $100 \times 100 \times 10$ connected to gusset plate 12mm thick through 100mm long leg using M20 bolt of class 4.6. The yield & ultimate strength of steel are E250 & 420MPa.
 8. Explain step by step procedure to be followed in the design of Compression member
 9. Calculate safe compressive load carrying capacity of double angle discontinuous strut composed of 2ISA $80 \times 50 \times 6$ with long leg connected back to back on either side of gusset plate 10mm thick. The length of strut between c/c of intersection is 3m & tacking done.
 10. Design a single unequal angle strut to carry a load of 90 kN. The angle is connected by its longer leg to 8 mm thick gusset plate. The effective length of the member is 2.5 m. Also design the plate bolted end connections.
 11. Design the base for column carrying compressive load 500kN with an eccentricity of 30mm from column centre line along minor axis (y-y axis). The section of column is 300 ISHB. Draw neat sketch showing all connection details work out in design.
 12. What are the types of column bases provided for steel structures?
 13. Design a column to carry axial compression of 1400kN & having a length of 6m. It is effectively held in position at both ends, but restrained against rotation. Design built-up section by using two channel sections.
 14. Design a slab base for a steel column ISMB 350 having width of flange 250 mm and carrying an axial compressive load of 1000 kN. If permissible compressive stress in concrete is 4 MPa & permissible bending stress in base plate is 185 MPa Take bearing capacity of soil = 300kN/m²
 15. Design a suitable moment resisting base for a column subjected to an axial load of 360 kN and moment of 130 kNm. The column section is ISHB 400 @ 822 N/m. Safe bearing pressure in concrete is 4000kN/m².
-
16. Differentiate between Laterally restrained beam & Laterally unrestrained with neat sketch.
 17. Design laterally restrained beam having effective span of 4m subjected to UDL of 15kN/m including self-weight & point load 10kN at mid-point vertically downwards. Take check for deflection & shear.
 18. Design laterally restrained beam having effective span of 4m subjected to UDL of 10kN/m including self-weight & point load 20kN at mid-point vertically downwards. Take check for deflection & shear
 19. The roof of a hall of 12m x 8m consists of a RC slab 100mm thick. And a 50mm floor finish. The slab is supported on steel beams spaced at 3m Centre to center. The live load on the slab is 2kN/sqm. Design an intermediate steel beam I section. Assume that the slab provides adequate lateral restraint to the compression flange of the steel beam.



20. Draw the neat sketch of crane system with all components.
21. Design a simply supported gantry girder of 6m effective span to carry two cranes of the capacity of 100kn each working in tandem. The weight of each crane excluding the crab is 150KN and weight of each crab is 20KN. The weight of the rail is 300N/m. The minimum approach of the crane hook is 1.0m. The wheel base is 3.8m. The height of rail is 75mm. Assume that the gantry girder is laterally unsupported. The expected number of stress cycles = 2×10^6
-
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Third Year B.Tech. (Civil) Semester – V

Environmental Engineering – I

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical(Marks)	
						Max.	Min. for passing	Max.	Min. for passing
EE-I (PCC 303)	03	--	02	04	ISE	--	--	25	10
					CIE	30	12	--	--
					ESE	70	28	--	--

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESE: End Semester Examination

Course Objectives:

1. To understand various sources of water with respect to quality and quantity of water.
2. To describe and design the various water treatment units.
3. To learn the special water treatments and sequencing of treatment for various qualities of surface & ground water.
4. To design the various components related to transmission and distribution of water.
5. To understand various water supply appurtenances.

Course Outcomes:

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

1. Describe the various sources of water with respect to quality and quantity of water.
2. Design the various water treatment units.
3. Illustrate the special water treatments and sequencing of treatment for various qualities of surface & ground water.
4. Describe the various components related to transmission and design of distribution of water.
5. Summarize the different water supply appurtenances.

SECTION I

Unit 1: Introduction to Water Supply Scheme

6hrs

- 1.1 *Introduction to Water Supply Scheme:* Data collection for water supply scheme. Components and layout. Design period. Factors affecting design period.
- 1.2 *Quantity:* Rate of water consumption for various purposes like domestic, industrial, institutional, commercial; Fire demand and water system losses. Factors affecting rate of demand. Population forecasting.
- 1.3 *Quality:* Water quality parameters. Characteristics & significance in water treatment. Drinking water quality standards- BIS, WHO Standards.
- 1.4 *Water Intake Structures:* General design considerations. Types such as river intake, canal intake and reservoir intake. Concept of rising main and pumping station.

Unit 2: Water Treatment

6hrs



- 2.1 *Water Treatment*: Principles of water treatment processes. Introduction to different types of water treatment flow sheets.
- 2.2 *Aeration*: Principle and concept, Necessity, Methods, Design of cascade aerator.
- 2.3 *Coagulation & Flocculation*: Theory, Factors affecting, Destabilization of colloidal particles, Types of dosing of coagulants, Selection of coagulants, Jar tests, Design of rapid mixer & flocculator, Theory of clariflocculator.
- 2.4 *Sedimentation*: Theory, Types of settling, Types of sedimentation tanks, Principles & design, Concept of tube & plate settler.

Unit 3: Water Treatment

6hrs

- 3.1 *Filtration*: Mechanism, Head loss development, Negative head loss, Types of filters- slow sand filter, rapid sand filter & pressure filter, Operation & design of slow sand & rapid sand filter.
- 3.2 *Disinfection*: Theory, Factors affecting disinfection, Types of disinfectants, Types and methods of chlorination break point chlorination
- 3.3 *Water Softening Processes*: Lime-soda process, Ion exchange
- 3.4 *Demineralization*: Reverse osmosis, Electro-dialysis

SECTION II

Unit 4: Distribution Reservoirs and Service Storages

6hrs

- 4.1 Necessity, Location, Head requirement, Capacity determination by analytical & graphical method.
- 4.2 Transmission of water, Pumping & gravity mains, Choice of pipe materials, Forces acting on pressure pipes, Leakage & pressure testing of pipes, Corrosion types & control measures, Thrust block concept.

Unit 5: Water Distribution Systems

6hrs

- 5.1 Method of distributing water, Layout pattern, Basic system requirements for water distribution system
- 5.2 *Methods of Network Analysis*: Equivalent pipe method, Hardy-Cross method, Design problem.

Unit 6: Water Supply Appurtenances

6hrs

- 6.1 *Types of Valve*: Sluice valve, Air relief valve, Gate valve, Non-return valve, Scour valve.
- 6.2 Fire hydrants water meter, Service connections, Maintenance & leak detection of water distribution system.
- 6.3 Necessity of water audit, Water audit in domestic sector, Concept of preparation of DPR.

Term Work:

- A. Analysis of any 10 of the following test parameters for water
1. pH
 2. Acidity
 3. Alkalinity
 4. Chlorides content
 5. Hardness – Total, temporary and permanent
 6. Turbidity
 7. Residual Chlorine
 8. Total dissolved solids through measurement of electrical conductivity
 9. Dissolved Oxygen
 10. Most Probable Number
 11. Optimum dose of alum by jar test.

Unit 2

- 1 Explain Types Of settling
- 2 Write a Note On aeration.
- 3 Explain Theory Of Sedimentation.
- 4.Mention Design Parameters For Rapid Mixer
- 5 Explain in brief Clariflocculator.

Unit 3

- 1 Explain Detail Operation Of Rapid Sand Filter With Diagram
2. Explain Need Of Water Softening, Explain Any One Process In Detail
- 3.Explain Forms Of Chlorination.
- 4.Explain Break Point Chlorination In Detail.

Unit 4

- 1.Explain The Capacity Determination Of Reservoir By Graphical Method
2. Write A Note On Pumping Main And Gravity Main.
- 3.Explain Pressure-Testing Process In Detail.
- 4 Explain The Control Measures Taken For Pipe Of Corrosion.

Unit 5

- 1.What are The Various Methods Of Water Distribution System
- 2.What Are The Various Patterns Of Water Distribution System
- 3.Explain The Requirements Of Water Distribution System
- 4.Explain Hardy Cross Method Of Network Analysis
- 5 Explain equivalent pipe method in brief

Unit 6

- 1.Explain Water Meter In Detail
 - 2.Explain Maintenance Of Water Distribution System
 - 3.Explain Necessity Of Water Audit.
 4. Write A Note On Gate Valve Or Sluice Valve.
-
-

Third Year B.Tech. (Civil) Semester - V

Geotechnical Engineering - I

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical(Marks)	
						Max.	Min. for passing	Max.	Min. for passing
GTE - I (PCC-CV 504)	04	--	02	05	ISE	--	--	50	20
					CIE	30	12	--	--
					ESE	70	28	25	--

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESE: End Semester Examination

Course Objectives:

1. To provide a coherent development to the students for the courses in sector of Geotechnical Engineering & Soil Improvement Techniques etc.
2. To present the foundations of many basic Engineering tools and concepts related Geotechnical Engineering.
3. To give an experience in the implementation of Engineering concepts which are applied in field of Geotechnical Engineering
4. To involve the application of scientific and technical principles of planning, analysis, design of foundation along with soil improvement techniques.

Course Outcomes:

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

1. Able to evaluate the Index and Engineering properties of soil
2. Understand the fundamental relationships in properties of soils
3. Evaluate the stress calculations in soil under different soil conditions
4. Understands the process and importance of compaction and consolidation
5. Know the shear strength of soil and its determination
6. Analyze the lateral pressure on vertical retaining walls

SECTION I

Unit1: Soil Properties

10hrs

- 1.1 Origin of soil, Soil structure, Soil phase systems, Weight volume relationship
- 1.2 *Index Properties of Soil*: Unit weights, water content, specific gravity, void ratio, porosity, air content, degree of saturation their relationships and significance
- 1.3 Particle size distribution by sieve analysis and hydrometer analysis
- 1.4 Atterberg's consistency limits (Liquid limit, plastic limit, shrinkage limit), Consistency indices, Activity
- 1.5 Classification of soil, Casagrande plasticity chart.



Unit 2: Permeability and Seepage Analysis**6hrs**

- 2.1 Darcy's law and its validity, Factors affecting permeability
- 2.2 Determination of permeability of soil by constant head, Variable head, Permeability of stratified (layered) soil
- 2.3 Concept of total stress, Pore pressure and effective stress, Different forms of water
- 2.4 Seepage pressure, Seepage force, Seepage force per unit volume, Critical hydraulic gradient, Quick sand condition, Piping
- 2.5 Flow net construction and characteristics, Applications of flow net, Determination of seepage loss

Unit3: Compaction and Consolidation**8hrs**

- 3.1 Concept of compaction, factors affecting compaction, Standard proctor test and modified proctor test as per IS 2720, Dry density and moisture content relationship, Zero air void line, Placement water content
- 3.2 Field compaction control, Field compaction equipment with their suitability.
- 3.3 Concept of consolidation, Factors affecting consolidation, Terzaghi's piston and spring analogy model, Terzaghi's theory of one-dimensional consolidation, Lab consolidation test to find coefficient of consolidation, Coefficient of volume change, Compression index, Coefficient of compressibility, NCC, UCC, OCC
- 3.4 Determination of coefficient of consolidation by square root of time fitting method and logarithm of time fitting method.

SECTION II**Unit4: Stress Distribution in Soil****6hrs**

- 4.1 Boussinesq theory assumptions and application to point load, Strip load, Circular sections, Pressure distribution diagrams on horizontal and vertical plane, Radial shear stress
- 4.2 Isobars and pressure bulbs, Use of Newmark's charts, Westergaard theory assumptions and application to uniformly loaded rectangular area.
- 4.3 Contact pressure for different footings in different soils, Equivalent point load method for stress calculation, Approximate method (2V:1H) method for stress calculation

Unit5: Shear Strength of Soil**10hrs**

- 5.1 Concept of shear stress and shear strength, Mohr-Coulomb's theory and failure envelopes for different types of soils such as C-soil, ϕ -soil, and C- ϕ soils. Representation of stress on Mohr's circle
- 5.2 Terzaghi's total stress and effective stress approach, Factors affecting shear strength of cohesive and cohesionless soils
- 5.3 Determination of shear strength of soil by Direct shear test, Triaxial compression test, under UU, CU & CD conditions, Unconfined compression test and vane shear test, Sensitivity, Skempton pore water pressure parameters

Unit6: Earth Pressure Theory**8hrs**

- 6.1 Concept of earth pressure, Plastic equilibrium, Earth pressure at rest, Active and passive condition, its practical applications.
- 6.2 Rankine's earth pressure theory for cohesionless soils under dry, Partially and fully submerged condition, Horizontal back fill with surcharge, Total lateral force on wall
- 6.3 Bell-Rankine's theory for cohesive soils under dry, partially and fully submerged condition, tension cracks in soil, Critical height, Coulomb's wedge theory for earth pressures

Term Work:

- A. Performance of at least ten experiments from the following:
1. Determination of specific gravity by pycnometer/density bottle method
 2. Determination of water content by oven drying method & Pycnometer method
 3. Particle size distribution by dry sieve analysis
 4. Particle size distribution by hydrometer analysis
 5. Determination of consistency limits (LL, PL, SL)
 6. Determination of field density by core cutter method
 7. Determination of field density by sand replacement method
 8. Determination of MDD & OMC by standard/Modified proctor test
 9. Determination of coefficient of permeability by variable head method/Constant head method
 10. Determination of shear strength parameters of soil by using direct shear test
 11. Determination of shear strength of soil using Triaxial, Unconfined and Vane shear Test (Any one)
- B. One assignment per unit with minimum four numerical in each assignment

Text Books:

1. "Soil Mechanics and Foundation Engineering" - B. C. Punmia, Laxmi Publication
2. "Soil Mechanics and Foundation Engineering" - K. R. Arora, Standard Publisher
3. "Soil Mechanics and Foundation Engineering" - V. N. S. Murthy, Marcell Decker
4. "Basic and Applied soil Mechanics" - A. S. R. Rao and Gopal Ranjan, New age International Publication
5. "Geotechnical Testing and Instrumentation" - Alam Singh, CBS Publisher
6. "Geotechnical Engineering" - C. Venkatramiah, New age International Publication
7. "Geotechnical Engineering" - Purushottam Raj

Reference Books:

1. "Soil Mechanics" - Terzaghi and Peck, John Wiley and Sons, New York
2. "Soil Testing" - T. W. Lambe, Wiley Eastern Ltd, New Delhi

Guidelines Regarding Question Paper Setting:

1. Section I - Q. No. 1 to 3 and Section II - Q. No. 4 to 6
2. All questions are compulsory.
3. Internal optional questions are allowed, weightage of optional question should not be more than 30% of total marks i.e. 21 marks out of 70 marks.

End Semester Examination Paper Pattern

Question No.	Based on Unit No.	Marks
1.	1 - Theory and Problem	12
2.	2 - Theory and Problem	11
3.	3 - Theory and Problem	12
4.	4 - Theory and Problem	11
5.	5 - Theory and Problem	12
6.	6 - Theory and Problem	12



Assignment Questions

Unit 1

- Q.1. A soil sample has a porosity of 40%. The specific gravity of soil is 2.7. Calculate (a) Voids ratio, (b) dry density, (c) unit weight of soil if soil is 50% saturated & (d) unit weight of soil if the soil is completely saturated.
- Q.2. If $C_u / C_c = 4$ & $C_u \times C_c = 9$, find C_u , C_c , D_{30} , D_{60} . Assume $D_{10} = 0.1\text{mm}$.
- Q.3. Plastic limit, liquid limit and natural water content of soil sample is 40%, 65% & 48% resp. Find plasticity index, liquidity index and consistency index.
- Q.4. Prove that maximum dry density of soil is 1.4 times the minimum for the value of $G=2.6$, $e_{\min}=0.4$ & $e_{\max}=1$.
- Q.5. For a saturated soil whose $w = 40\%$ & $G = 2.71$, determine saturated and dry unit weights.

Unit 2

- Q.1. A 3.0m thick sandy stratum exists below a clay layer 4.0m thick. The clay layer is at the bed of a lake with standing water height of 4.0m. Saturated density of clay and sand is 19.3 kN/m^3 & 21.8 kN/m^3 resp. Compute total stress, pore pressure and effective stress at mid height of the sandy stratum.
- Q.2. The co-efficient of permeability of soil sample is found to be $1 \times 10^{-3} \text{ cm/sec}$ and the voids ratio of 0.4. Estimate the permeability of sand for a voids ratio of 0.6.
- Q.3. A constant head permeability test was conducted on a cylindrical specimen of 10cm diameter and 15cm height. 160cm^3 of water was collected in 1.75 minutes under a head of 30cm. Compute coefficient of permeability, 'k' in m/year and velocity of flow in m/sec. If porosity of the sample is 40% calculate the seepage velocity.
- Q.4. The water table in silty-sand deposit, 8 m thick, is at a depth of 3m below GL. Sand above WT is saturated by capillarity. γ_{sat} of sand is 19.62 kN/m^3 . Calculate effective pressures at 1m, 3m & 8m depths below GL. Plot pressure variations for σ , u , σ' .

Unit 3

- Q.1. In standard proctor compaction test, the following results are obtained: Optimum moisture content = 20% Maximum dry density = 1.9g/cm^3

- Q.2. Determine the porosity of compacted soil corresponding to OMC & MDD. Also determine dry density at 100% saturation. Take $G = 2.68$. The following observations were made in a Standard Proctor Test, with mould volume of 945c.c. and soil specific gravity of $G = 2.67$

No.	Trial 1	2	3	4	5	6
Mass of wet soil (kg)	1.7	1.89	2.03	1.99	1.96	1.92
Water content	7.7	11.5	14.6	17.5	19.7	21.2

Determine maximum dry density and optimum moisture content. Also plot ZAV line.

Unit 4

Q.1. A saturated layer of 9m thick clay overlies rock strata & is cover on top by a previous overburden .determine the time required for clay layer to reach half of its ultimate settlement. take $C_v = 5 \times 10^{-1} \text{ cm}^2/\text{sec}$ $(T_v)_{50} = 0.196$.

Q.2. The table summarizes the results of an oedometer test on a sample.

Pressure kN/m^2	0	13	27	54	108	214	480	960	1500
Dial reading (cm)	0.0	0.0	0.004	0.16	0.044	0.104	0.218	0.34	0.42

Initial height of sample = $H_i = 2.5 \text{ cm}$ Height of solid particles =
 $H_s = 1.25 \text{ cm}$.

Plot the curve & determine compression index & preconsolidation pressure.

Q.3. A clay layer, 8m thick is subjected to a pressure of 70 kN/m^2 . If the layer has a double drainage and undergoes 50% consolidation ($T_v = 0.196$) in one year. Determine the coefficient of consolidation. If coefficient of permeability is 0.04 m/year , determine the settlement in one year. Use $Y_w = 9.81 \text{ kN/m}^3$.

Q.4. In a consolidation test, the void ratio of the specimen which was 1.068 under the effective pressure of 214 kN/m^2 , changed to 0.994 when the pressure was increased to 429 kN/m^2 . Calculate the coefficient of compressibility, compression index and coefficient of volume compressibility.

Q.5. A saturated soil has $C_c = 0.28$, the void ratio at a stress of 12 kN/m^2 is 2.05 and its permeability is $35 \times 10^{-7} \text{ mm/s}$. Compute:

- change in void ratio if the stress is increased to 21.6 kN/m^2 .
- the settlement in (i) above if the soil stratum is 6m thick.

Unit 5

Q.1. On either side of point P the loads 600 kN and 1000 kN are located at 2.0m and 3.0m respectively. Find the total stress developed 2.0m below the point P using Boussinesq's equation.

Q.2. On ground surface a rectangular plate 1m x 1.5m is loaded with intensity of 800 kN/sqm . Find the stress 1.2m below the centre of the plate. Compare this if an approximate method of 1V:2H method is adopted.

Q.3. A rectangular area 4m x 2m is uniformly loaded with a load intensity 10 t/m^2 at the ground surface. Calculate the vertical pressure at a point 3m below one of its corners. By equivalent - area method. (making four parts).

Q.4. A point load of 1000 kN acts on the ground surface. Find and show the variation of vertical stress on a horizontal plane at a depth of 5m below the surface. for radial distances of 0, 1, 2 and 4m.

Q.5. A point load of 1000 kN acts on the ground surface. Find and show the variation of vertical stress on a vertical plane at a radial distance of 1m and at depths of 0.5, 1, 2 and 6m.

Q.6. A rectangular footing 2.4m x 2.0m carries a udl of 320 kN/m^2 . Find the vertical pressure at a depth of 4.2m below the center of the footing using

Equivalent point load method.

Unit 6

Q.1. A cylindrical specimen of sand was tested in a triaxial test apparatus. Failure occurred under a cell pressure of 120 kN/sqm , at a deviator stress of 100 kN/sqm . Determine :



Third Year B.Tech. (Civil) Semester - V

Building Planning and Design

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical(Marks)	
						Max.	Min. for passing	Max.	Min. for passing
BPD (PCC-CV505)	02	--	04	04	ISE	--	--	50	20
					CIE	--	--	--	--
					ESL	--	--	50	20

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESL: End Semester Examination

Course Objectives:

1. To study dimensions and space requirements for various elements of the building in relation to human body measurements.
2. To study Planning, designing of various public buildings considering principles of planning and Building Bye- Laws and regulations.
3. To study procedures for preparing perspective drawings of various objects as well as buildings.
4. To study Architectural composition and terms.

Course Outcomes:

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

1. Specify dimensions and space requirements for various elements of the building in relation to human body measurements.
2. Plan, design public building considering principles of planning and Building Bye- Laws and regulations.
3. Prepare the submission and working drawings of public building.
4. Illustrate the procedures for preparing perspective drawings of various objects as well as buildings.
5. Apply knowledge of architectural composition and terms for betterment of aesthetic view.

Unit 1:Introduction

2hrs

- 1.1 Dimensions & space requirement in relation to body measurements
- 1.2 Human body figures and its applications in space design of service elements.

Unit 2:Planning and Design

14hrs

Site selection, site layout for various types of building such as:

- 2.1 *Educational Buildings:* Younger age range, Middle age range
- 2.2 *Building for Health:* Health centers, Hospitals
- 2.3 *Assembly Buildings:* Recreational halls, Cinema theatres, Restaurants, Hotels, Clubs



- 2.4 *Business and Mercantile Buildings*: Shops, Banks, Markets and malls
- 2.5 *Industrial Buildings*: Factories, Workshops, Cold storages
- 2.6 *Office Buildings*: Administrative buildings, Corporate office
- 2.7 *Buildings for Transportation*: Bus stations, Railway / metro stations

Unit 3: Perspective Drawings

6hrs

- 3.1 Elements of perspective drawings
- 3.2 Parallel perspective and angular perspective : of different objects and small buildings

Unit 4: Nature of Architecture

2hrs

- 4.1 Architectural composition and terms such as mass, space, proportion, symmetry, balance, contrast, pattern.

Term Work:

1. Sheet for human body dimensions for space design (different human body figures, dimensions and their relevant applications)
2. Visit to a building complex and a report based on that.
3. Planning and designing of a public building project (Max. five students group) for which drawings shall be prepared covering scope of:
 - i) Municipal drawing
 - ii) Layout plan showing site development details (Internal roads, parking, secondary structures for allied services)
 - iii) Working drawings with suitable scale (Furniture, electrification, plumbing)
 - iv) Elevation treatment.
4. Perspective view of the buildings planned above.
5. Line plan of buildings on graph paper of at least five remaining types of buildings not covered in 2.
6. Two exercises on parallel and angular perspective of simple objects.
7. Report for the building project stated in 2, including necessary sketches and design details.
8. Minimum one exercise of preparing a plan and elevation on CAD.

Text Books:

1. "Building Drawing with an integrated approach to Built-Environment" - Shah, Kale and Patki, Tata McGraw Hill publication.
2. "Principles of Building Drawing" – M.G.Shah and C.M.Kale, Macmillan India Ltd.
3. "Planning and Designing Building" – Y.S.Sane, Modern Publication House, Pune

References Books:

1. "Building Planning" – Kumar Swami, Charotar Publication
2. "Civil Engineering Drawing" – M.Chakaborty, UBS publication.

Third Year B.Tech. (Civil) Semester - V

Open Elective – I (Energy & Environment)
(Offered by Faculty of Civil Engineering to All Faculties)

Course	Teaching Scheme				Evaluation Scheme				
	L	T	P	Credit	Scheme	Theory (Marks)		Practical (Marks)	
						Max.	Min. for passing	Max.	Min. for passing
OE - I (OEC-CV506)	03	--	--	03	ISE	--	--	--	--
					CIE	30	12	--	--
					ESE	70	28	--	--

ISE: In Semester Evaluation CIE: Continuous Internal Evaluation ESE: End Semester Examination

Course Objectives:

1. To study energy needs, demand and various renewable alternatives.
2. To understand potential of renewable energy resources.
3. To study technologies to harness the energy.
4. To understand advantages, limitations of resources and energy management.

Course Outcomes:

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

1. Compare conventional and renewable energy resources
2. Identify scope and potential of renewable energy
3. Analyze suitability of renewable energy resource.
4. Explain energy management principles and strategies

SECTION I

Unit 1: Introduction

5 hrs

- 1.1 Global energy, Environmental resources
- 1.2 Energy needs
- 1.3 Indian scenario- Energy consumption, Needs and crisis

Unit 2: Renewable Sources of Energy

9 hrs

- 2.1 *Biogas*: Types & factors affecting, Community biogas plant
- 2.2 *Solar Energy*: Introduction, Utilization methods, Merits and demerits & potential
- 2.3 *Wind Energy*: Site selection criteria, Potential & scope
- 2.4 *Tidal Energy*: Site suitability, Types

Unit 3: Non-Renewable Sources of Energy

4 hrs

- 3.1 *Energy from Coal and Oil*: Introduction, Merits and demerits
- 3.2 *Natural Gas & Geothermal Energy*: Introduction, Merits and demerits
- 3.3 Relevance to other branches, Green building



SECTION II

Unit 4: Environmental Impacts	5 hrs
4.1 Global Warming	
4.2 Greenhouse effect	
4.3 Acid rain	
Unit 5: Environmental Impact Assessment (E.I.A.)	6 hrs
5.1 Objectives	
5.2 General E.I.A. process	
5.3 Capability & limitations	
Unit 6: Energy Audit and Management	7 hrs
6.1 Definition and objectives	
6.2 Types and general guidelines for energy audit	
6.3 Principles of energy management. Energy planning	

NOTE: One assignment on each unit.

Text Books:

1. "Non-Conventional Energy Sources" - G. D. Rai, Khanna Publishers, 5th Edition, 2014.
2. "Solar Energy and Non-Conventional Energy Sources" - Dr. V. M. Domkundwar, Dhanpar Rai & Co. Ltd., 1st Edition, 2010.
3. "Non-Conventional Energy Sources" - R. K. Singal, Katson Publication, 2nd Edition, 2009

Reference Books:

1. "Renewable Energy Resources" - John Twidell and Tony Weir, Routledge Publication, 2nd Edition, 2005.
2. "Solar Energy" - Dr. S. P. Sukhatme, McGraw Hill Publication, 2nd Edition, 2005.
3. "Non-Conventional Resources of Energy" - G. S. Sawhney, PHI Publication, 5th Edition, 2010.

Guidelines Regarding Question Paper Setting:

1. Section I - Q. No. 1 to 3 and Section II - Q. No. 4 to 6
2. All questions are compulsory.
3. Internal optional questions are allowed, weightage of optional question should not be more than 30% of total marks i.e. 21 marks out of 70 marks.

End Semester Examination Paper Pattern

Question No.	Based on Unit No.	Marks
1.	1	11
2.	2	12
3.	3	12
4.	4	11
5.	5	12
6.	6	12

Assignment Questions

1. Explain global energy
2. Explain environmental resources of energy
3. What is energy consumption
4. Explain mechanism of Biogas power plant
5. Explain solar energy and its applications
6. Explain mechanism of wind turbine and its applications
7. Explain applications of tidal energy
8. Explain mechanism of thermal power plant
9. Write impact of Global warming on environment
10. Write impact of Greenhouse effect on environment
11. Write impact of Acid rain on environment
12. Write objectives of Environmental Impact Assessment
13. Explain E.I.A Process
14. What are the types of Energy Audit
15. What are the general guidelines for Energy Audit
16. What are the principles of Energy management
17. What is energy planning?
18. Write a note on -Energy Need
19. Explain Green Building.
20. What are the limitations of EIA process.



End Semester Examination Paper Pattern

Question No.	Based on Unit No.	Marks
1.	1	11
2.	2	12
3.	3	12
4.	4	12
5.	5	11
6.	6	12

Assignment Questions

ASSIGNMENT NO 1

1. Define Waste. Types, Sources and properties
2. Give the difference between
 - Bio-degradable waste and non de gradable waste.
 - Industrial waste and commercial waste.
3. What are the effects on human beings and animals?
4. Enlist and explain about different acts and rules for controlling waste in India.

ASSIGNMENT NO 2

1. Give importance of water and water quality standards.
2. Explain how waste water is treated with flow diagram.
3. Explain about Nitrification and De-nitrification process.
4. Write about remedial measures for waste water.

ASSIGNMENT NO 3

1. Enlist the types of Industries responsible for waste water.
2. Explain about volume and strength reduction, Equalization and neutralization
3. Explain with flow diagram about treatment methods about pulp and paper industry, sugar and textile industry.

ASSIGNMENT NO 4

1. Explain about Municipal solid waste.
2. Explain about Biomedical solid waste.
3. Explain about Construction and demolition waste.

ASSIGNMENT NO 5

1. Define - Hazardous waste and its processing techniques.
2. Rules and regulation for disposal of waste. Write in brief.

ASSIGNMENT NO 6

1. What is meant by E-Waste?
2. Explain about recycling process about E waste.
3. Write about E waste management rules 2016.

Project/Seminar Form

RUBRIC for Project-Work Assessment

	UNACCEPTABLE	DEVELOPING	GOOD	EXCELLENT
Selection of Project	<input type="checkbox"/> Neither Sponsored nor well explored. <input type="checkbox"/> Very Low Utility. <input type="checkbox"/> Low Scope for Skills demonstration.	<input type="checkbox"/> Not Sponsored but some exploration; <input type="checkbox"/> Low Utility. <input type="checkbox"/> Some Scope for Skills demonstration.	<input type="checkbox"/> Partially Sponsored and sufficiently explored. <input type="checkbox"/> Acceptable Utility. <input type="checkbox"/> Adequate Scope for Skills demonstration.	<input type="checkbox"/> Fully Sponsored and well explored. <input type="checkbox"/> High Utility. <input type="checkbox"/> High Scope for Skills demonstration.
Clarity of Objectives.	<input type="checkbox"/> Little efforts put in Identification & Formulation. <input type="checkbox"/> Objectives Need major reworking. <input type="checkbox"/> Unclear Presentation of Intentions.	<input type="checkbox"/> Some efforts put in Identification & Formulation. <input type="checkbox"/> Objectives Need Some reworking. <input type="checkbox"/> Needs some clarity in Presentation of Intentions.	<input type="checkbox"/> Sufficient efforts put in Identification & Formulation. <input type="checkbox"/> Acceptable Objectives. <input type="checkbox"/> Acceptable clarity in Presentation of Intentions.	<input type="checkbox"/> Thorough efforts put in Identification & Formulation. <input type="checkbox"/> Very Clear Objectives. <input type="checkbox"/> High Clarity in Presentation of Intentions.
Problem Solving	<input type="checkbox"/> Little use of Engg. Knowledge. <input type="checkbox"/> No Engineering tools used. <input type="checkbox"/> Little use of Design Skills	<input type="checkbox"/> Some use of Engg. Knowledge. <input type="checkbox"/> Some Engineering tools used. <input type="checkbox"/> Some Design Skills used.	<input type="checkbox"/> Sufficient use of Engg. Knowledge. <input type="checkbox"/> Acceptable use of Engineering tools. <input type="checkbox"/> Acceptable use of Design Skills.	<input type="checkbox"/> Excellent use of Engg. Knowledge. <input type="checkbox"/> Sufficient use of Engineering tools. <input type="checkbox"/> Sufficient use of Design Skills
Team-Work.	<input type="checkbox"/> Unclear work distribution. <input type="checkbox"/> Very Low Team Communication. <input type="checkbox"/> Team attitudes are Negative.	<input type="checkbox"/> Some form of work distribution. <input type="checkbox"/> Low Team Communication. <input type="checkbox"/> Team Attitudes need improvement.	<input type="checkbox"/> Clear work distribution. <input type="checkbox"/> Acceptable Team Communication. <input type="checkbox"/> Team Attitudes are Acceptable.	<input type="checkbox"/> Very Clear work distribution. <input type="checkbox"/> Good team Communication. <input type="checkbox"/> Team Attitudes are very positive.
Demonstration and Report.	<input type="checkbox"/> Un-organized demonstration. <input type="checkbox"/> Very Low Attainment of objectives. <input type="checkbox"/> Report is imprecise, incomplete & inconclusive.	<input type="checkbox"/> Some order in Demonstration. <input type="checkbox"/> Low Attainment of Objectives. <input type="checkbox"/> Report is somewhat imprecise, incomplete & inconclusive.	<input type="checkbox"/> Acceptable order in Demonstration. <input type="checkbox"/> Adequate Attainment of Objectives. <input type="checkbox"/> Report is precise, complete & conclusive.	<input type="checkbox"/> Very Clear order in Demonstration. <input type="checkbox"/> Full attainment of Objectives. <input type="checkbox"/> Report is very precise, complete & conclusive.



Student Self Assessment RUBRIC for Term-Work Assessment

CRITERIA	UNACCEPTABLE	DEVELOPING	GOOD	EXCELLENT
Lecture Attendance & Involvement.	<input type="checkbox"/> My Attendance is Very Low. <input type="checkbox"/> I am Inattentive in class <input type="checkbox"/> I Never involve in the Q/A during Lecture	<input type="checkbox"/> My Attendance is Low <input type="checkbox"/> I am Sometimes Attentive in class <input type="checkbox"/> I Sometimes involve in Q/A during Lecture	<input type="checkbox"/> My Attendance is Acceptable. <input type="checkbox"/> I am Mostly Attentive in class <input type="checkbox"/> I Generally involve in Q/A during the Lecture	<input type="checkbox"/> I have full Attendance <input type="checkbox"/> I am Always Attentive in class <input type="checkbox"/> I Eagerly involve in Q/A during the Lecture
Lab work Attendance & Involvement.	<input type="checkbox"/> My Attendance is Very Low <input type="checkbox"/> I don't Come prepared. <input type="checkbox"/> I Avoid involvement in Lab work.	<input type="checkbox"/> My Attendance is Low <input type="checkbox"/> Sometimes I come prepared. <input type="checkbox"/> I am Sometimes involved in Lab work.	<input type="checkbox"/> My Attendance is Acceptable. <input type="checkbox"/> Mostly I am prepared. <input type="checkbox"/> I am Generally involved in Lab work.	<input type="checkbox"/> I have Full Attendance. <input type="checkbox"/> I come Always prepared. <input type="checkbox"/> I Eagerly involve in all Lab work.
Lab work report writing , Assignments & Submissions	<input type="checkbox"/> None of my submissions are on Time. <input type="checkbox"/> My Submission lack readability & clarity.	<input type="checkbox"/> Few of my submissions are on time <input type="checkbox"/> Some of my submissions are readable & clear.	<input type="checkbox"/> Most of my submissions are on time. <input type="checkbox"/> Most of my submissions are readable & clear.	<input type="checkbox"/> All of my submissions are on time. <input type="checkbox"/> All of my submissions are readable & clear.
Efforts made in Class Tests.	<input type="checkbox"/> I Appear Unprepared. <input type="checkbox"/> My Average Score is Very Low	<input type="checkbox"/> My Preparation & presentation is not sufficient. <input type="checkbox"/> My Average Score is Low	<input type="checkbox"/> My preparation & presentation is Adequate <input type="checkbox"/> My Average Score is Acceptable	<input type="checkbox"/> My preparation & presentation is excellent <input type="checkbox"/> My Average Score is High
Oral Communication to Questions on Subject/ course contents.	<input type="checkbox"/> I become Anxious & Uncomfortable. <input type="checkbox"/> I Make No effort to understand the Questions <input type="checkbox"/> My Communication is not clear.	<input type="checkbox"/> Sometimes I am Relaxed & Comfortable. <input type="checkbox"/> I Make Some effort to understand the Questions. <input type="checkbox"/> My Communication is barely clear.	<input type="checkbox"/> Mostly I am Relaxed & Comfortable. <input type="checkbox"/> I Make effort to understand the Questions. <input type="checkbox"/> My Communication is mostly clear	<input type="checkbox"/> I am Always Relaxed & Comfortable. <input type="checkbox"/> I Understand the Questions Effortlessly. <input type="checkbox"/> My Communication is always very clear.



Dr. J.J. Magdum College of Engineering, Jaysingpur.
Department of Civil Engineering
Department Staff
Academic Year – 2022-23

	Name of the Faculty	Designation	Personal Mobile No.	Mail Id
01	Prof. Dr. D. B. Desai	Asso.Professor	9421114007	dadaso.desai@jmcce.ac.in
02	Prof. Dr. R. S. Chougule	Asst.Professor	9422049332	ravinda.chougule@jmcce.ac.in
03	Prof. Dr. J. S. Lambe	Asso.Professor & HOD	9523388211	jandish.lambe@jmcce.ac.in
04	Prof. K. G. Ghodake	Asst.Professor	9422343536	kiran.ghodake@jmcce.ac.in
05	Prof. A. S. Sajane	Asst.Professor	9922994443	amitkumar.sajane@jmcce.ac.in
06	Prof. A. P. Chougule	Asst.Professor	7498935055	arati.chougule@jmcce.ac.in
07	Prof. R. S. Shresthi	Asst.Professor	8208168189	rohan.shresthi@jmcce.ac.in
08	Prof. Ms.S.S Khot	Asst.Professor	9730837523	shruti.khot@jmcce.ac.in
09	Prof.S. V. Mane	Asst.Professor	9833630304	shridhar.mane@jmcce.ac.in
10	Prof.Mrs.D.A.Lathe	Asst.Professor	7249593925	ghanashree.lathe@jmcce.ac.in
11	Prof.Mrs.S.P.Madnaik	Asst.Professor	9075769391	sneha.madnaik@jmcce.ac.in
12	Prof.V.K.Wandre	Asst.Professor	8805847960	vjay.wandre@jmcce.ac.in
13	Prof.V.A.Patil	Asst.Professor	9089895828	vironda.patil@jmcce.ac.in
14				
15				
16				





Dr. J.J. Magdum College of Engineering, Jaysingpur.
Department of Civil Engineering
Department Staff

Sr. No	Name of the Staff	Designation	Contact Numbers
01	Mr. Patil A.V.	Sr. Tech.Asst.	8390243660
02	Mr. Kolap G.G.	Tech.Asst.	9890624396
03	Mr. Mandlik S.A.	Tech.Asst.	9011442291
04	Mr. Nitave S.A.	Tech.Asst.	9665558872
05	Mrs. Chavan S.V.	Peon	7066192075
06	Mr. Ghatage S.R.	Peon	8308386021

**ACTIVITY RECORD
(COUNSELING, CO/EXTRA CURRICULAR, LEAVE)**

Counseling Staff Name:

Date	Topic	Suggestion

Co/Extra Curricular Activities:

Date	Activity Name	Participation level	Outcome

Leave Record:

Sr. No.	From	To	Reason	Permitting Staff	Remark

