Criterion 2 – Teaching ,Learning and Evaluation

Key Indicator -2.6 Student Performance and Learning Outcomes

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the institution are stated and displayed in website of the institution

Sr.No.	Documentary Evidences / Sample Documents	Page No.
1	Sample copies of Course outcomes and CO-PO-PSOmapping	1-39

Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering Satara

Program: Computer Engineering

2018-19			
Class: BE			
Semester: I			

Course	Code	CO	Outcome
Web Technology I	CS167L05	CO 1	Understand The Need For Lifelong Learning And Can Readily Adapt New Software Engineering Environments.
		CO 2	Describe How Css Is Used Control The Presentation Style Of A Web Page.
		CO 3	Outline Different Use Of Xml In Document Creation On Web.
		CO 4	Prepare And Modify Elements In An Xhtml Document And Change Css Styles Dynamically.
		CO 5	Develop Server Side Programs In The Form Of Servlets.
		CO 6	Define The Session Tracking Process And Explain Database Connectivity.
Advanced Database Systems	CS167L03	CO 1	Explain The Features, Implementation Techniques Need And Challenges Of Parallel And Distributed Databases.
		CO 2	Design Advanced Databases Like Object-Based And Object Relational Databases.
		CO 3	Write Advanced Sql Queries ,Functions And Procedures.
		CO 4	Discuss Different Database Design Techniques.
		CO 5	Add Security And Authorization The Databases.
		CO 6	Develop Database For Semi-Structured Data And Xml Data, Business Intelligence System And Data Warehouses.
Distributed System	CS167L02	CO 1	Describe The Function Of Distributed Systems, Grid And Cloud Computing And Virtualization Techniques
		CO 2	Design Distributed Architecture Using Current Technology(Rpc,Rmi)
		CO 3	Define Issue And Challenges In Distributed Systems
		CO 4	Define Key Issue Related Multi Level Interoper Across A Distributed Infrastructure And Across Multiple Hetrogeneous And Distributed Resources In Adynamically Changing Computing
		CO 5	Understand Different Computer Architectures
Advanced Computer Architecture	CS167C01	CO 1	Understand Concepts Of Pipeline Architectures And Different Performance Measures
		CO 2	Understand Memory Organizations
		CO 3	Understand Latest Technologies In Parallel Processing
		CO 4	Understand Loosely Coupled Architectures
		CO 5	Understand Project Management Principles And Practices.

Class:

Semester: II

Course	Code	CO	Outcome
EL I (Mobile Application)	CS167EA04	CO 1	Understand Loosely Coupled Architectures
		CO 2	Write A Survey On OIs And Architectures For Mobile Applications.
		CO 3	Implement Mobile Applications Using Mathematical Models.
Web Technology II	CS168L05	CO 1	Outline Different Use Of Xml In Document Creation On Web.
		CO 2	Prepare And Modify Elements In An Xhtml Document And Change Css Styles Dynamically.
		CO 3	Develop Server Side Programs In The Form Of Servlets.
		CO 4	Define The Session Tracking Process And Explain Database Connectivity.
		CO 5	Develop Real Life Web Applications Using Asp.Net And Php
Data Analytics	CS168C01	CO 1	Understand The Genesis Of Grid Computing
		CO 2	Know The Application Of Grid Computing
		CO 3	Learn The Technology And OI Kits For Facilitating Grid Computing
Project Management	CS168C02	CO 1	Demonstrate Competency In The Creation And Management Of A Project Plan
		CO 2	Understand Impact Of Scope, Time And Cost Management.
		CO 3	Understand The Software Quality Metrics And Quality Assurance.
		CO 4	Develop Strategies Calculate Risk Facrs Involved In It Projects
		CO 5	Describe How Css Is Used Control The Presentation Style Of A Web Page.
EL II (Software Testing and Quality Assurance)	CS168EA04	CO 1	Develop Strategies Calculate Risk Facrs Involved In It Projects
		CO 2	Provide Knowledge About Fundamentals Of Software Testing And Software Quality
		CO 3	Understand The Fundamentals Of Software Verification
		CO 4	Understand And Evaluate Metrics And Models Used In Software Testing
Real Time Operating System	CS168C03	CO 1	Explain The Important Issues In Real Time System Design & Overview Of The Nature Of Real-Time Systems.
		CO 2	Review Of Basic Computer Architecture Concepts From The Perspective Of The Real-Time System Design And Some Basic Concepts Of Electronics.
		CO 3	Demonstrate The Core Elements Of The Text For Those Who Are Building Practical Real- Time Systems.
		CO 4	Explain The Nature Of Requirements Engineering & Structured Analysis And Object-Oriented Analysis For Requirements Writing
		CO 5	List The Importance Of Language Features Desirable In Good Software Engineering Practice In General And Real-Time Systems Design In Particular.
		CO 6	Categorize Several Techniques For Improving The Response Time Of Real Time Systems. And Summarize General Software Engineering Considerations, Including The Use Of Metrics And Techniques For Improving
Programming Laborary-III	CS155L06	CO 1	Explain Features Of Java Programming Environment, Basic Features Of Java,

2018-19

2

Semester: I
Class: TE

Subject	Code	CO	Description
		CO 2	Discuss Fundamental Programming Structures In Java(Class, Interface, Package)
		CO 3	Define Exceptions In Java
		CO 4	Recognize Multiple Thread Handling And Thread Synchronization
		CO 5	Design Gui Using Awt And Swing Packages In Java
		CO 6	Develop A Mini Project Using Java.
System Programming	CS155L02	CO 1	Discuss Language Processing Activities & Write Lex Program With Given Specification.
		CO 2	Explain Pass I And Pass Ii Structure Of Assembler.
		CO 3	Illustrate Macro And Describe Macro Processors.
		CO 4	Examine Aspect Of Compilation And Data Structures Used For Compilers.
		CO 5	Outline Different Functions Of Linkers And Loaders.
		CO 6	Choose Software For Ui'S And Dlls Creation.
Network Technology	CS155L05	CO 1	Explain The Basic Concepts Of Wireless Network And Wireless Generations.
		CO 2	Demonstrate The Different Wireless Technologies Such As Cdma, Gsm, Gprs
		CO 3	Appraise The Importance Of Ad-Hoc Networks Such As Manet And Vanet
		CO 4	Understand Design Considerations For Wireless Networks
		CO 5	Learn And Analyze And Evaluate The Security Threats And Related Security Standards
		CO 6	Explain The Basic Concepts Of Wireless Network And Wireless Generations
Computer Graphics	CS155L01	CO 1	Define The Basis Of Computer Graphics And Transformations Like Scaling,Rotation, Translation.
		CO 2	Differenciate Scan Conversion Techniques And Implement Algorithms Like Line Drawing, Polygon Filling, Circle Drawing.
		CO 3	Apply Different Clipping Algorithms The Objects Display The Real Wordobject Geometry.
		CO 4	Distinguish 4 Different Curve Representation Techniques
		CO 5	Choose 5 Current Graphics Api (Opengl) And Blender 3-D Create Animation.
		CO 6	Use 3 Different Illumination Models And Surface Rendering Methods Refine Visibility Of The Objects.
Computer Algorithms	CS155C04	CO 1	Analyze And Differentiate Different Algorithms Based On Their Time Comlexity
		CO 2	Explain Various Advanced Design And Analysis Techniques Such As Greedy Algorithms,Divide Conquer Techniqur
		CO 3	Apply Dynamic Programming Solve Real Time Problems
		CO 4	Apply Basic Traversal And Search Techniques And Backtracking Solve Real Time Problem

Course Name	Course Code	CO	Description
Object Oriented Modeling and Design	CS155C03	CO 5	Differentiate Different Problem
		CO 6	Apply The Computational Model And Fundamentals Of Parallel Algorithms
		CO 1	Explain How A Software Design May Represented As A Set Of Interacting Objects That Manage Their Own State And Operations
		CO 2	Describe The Activities In The Object-Oriented Design Process
		CO 3	Outline Various Models That Can Used Describe An Object-Oriented Design
		CO 4	Show How The Uml May Used Represent These Models
		CO 5	Apply Design Patterns Provide Solutions Real World Software Design Problems
		CO 6	Design Flexible And Reusable Software Components
Programming Laborary-IV	CS156L06	CO 1	Acquainted With The Basic Concepts Of .Net Framework.
		CO 2	Analyze How Develop Console And Windows Application
		CO 3	Outline Of Oo Features And Develop Applications For Them
		CO 4	Design & Develop Windows Application With Ado.Net
Database Engineering	CS156L03	CO 1	Describe Fundamental Concepts Of Databases.
		CO 2	Explain The Algorithms Related Database.
		CO 3	Demonstrate The Sql Commands Using Different Dbms.
		CO 4	Discuss The Basic Concepts Of Database Design.
Storage Networks	CS156C04	CO 1	Explain How A Software Design May Represented As A Set Of Interacting Objects That Manage Their Own State And Operations
		CO 2	Describe The Activities In The Object-Oriented Design Process
		CO 3	Outline Various Models That Can Used Describe An Object-Oriented Design
		CO 4	Show How The Uml May Used Represent These Models
		CO 5	Apply Design Patterns Provide Solutions Real World Software Design Problems
		CO 6	Design Flexible And Reusable Software Components
Compiler Construction	CS156L01	CO 1	Explain Phases Of Compiler And Compiler Construction Ols
		CO 2	Discuss Complete Lexical Analyzer In C Language With Symbol Table
		CO 3	Define The Concept Of Parsing Technique Like P Down And Botm Up Parsing
		CO 4	Analyze S And L Attributed Syntax Directed Definitions, Srage Organization And Its Allocations Strategies
		CO 5	Identify The Basics Of Code Optimization Techniques And Data Flow Analysis And Algorithms

4

Course	Code	CO	Description
		CO 6	Illustrate Intermediate Code Generation Techniques With Procedurecalls Issues In Design Of Code Generar And Target Machines
Operating System-II	CS156L02	CO 1	Describe Functions, Structures And Hisry Of Operating Systems.
		CO 2	Demonstrate Concepts Of Memory Management Including Virtual Memory.
		CO 3	Describe System Calls.
		CO 4	Describe Issues Related File System Interface And Implementation
		CO 5	Develop Understanding Of Design Issues Associated With Operating Systems.
		CO 6	Outline Various Types Of Operating Systems Including Unix.
Information Security	CS156C05	CO 1	Identify Information Security Goals, Classical Encryption Techniques And Acquire Fundamental Knowledge On The Concepts Of Finite Fields And Numr Theory
		CO 2	Understand, Compare And Apply Different Encryption And Decryption Techniques Solve Problems Related Confidentiality And Authentication
		CO 3	Apply The Knowledge Of Cryprgraphic Checksums And Evaluate The Performance Of Different Message Digest Algorithms For Verifying The Integrity Of Varying Message Sizes
		CO 4	Apply Network Security Basics,Analyze Different Attacks On Networks And Evaluate The Performance Of Firewalls And Security Procols
		CO 5	Apply Different Digital Signature Algorithms Achieve Authentication And Create Secure Applications
		CO 6	Apply The Knowledge Of Cryprgraphic Utilities And Authentication Mechanisms Design Secure Applications
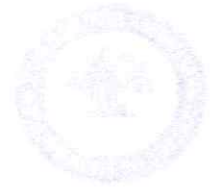
Programme Objectives

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 Objective

1. Apply knowledge in the domain of engineering mechanics, thermal and fluid sciences to solve engineering problems utilizing advanced technology.

2. To promote and develop among the students an ambition of life-long learning and to apply them to professional ethics and codes of professional practices

3. To prepare students for successful careers in industry that meets the needs of an Industries/ society and the country in general.

H.O.D.
Mechanical Engineering Department
K.B.P College of Engineering, Satara

7

Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering Satara

Mechanical Engineering Department
SEM- I (2018-19)

B.E Mechanical Course Outcomes

Course code	Course Name	Course Outcome Statement
ME401	Refrigeration and Air Conditioning	1.Study basic refrigeration cycles and Psychrometry. 2.Performance Evaluation of Refrigeration and Air Conditioning Systems 3.Enable the students to analyze and solve refrigeration related problems by applying principles of mathematics,science and engineering
ME402	Mechanical System design	1.Incorporate aesthetic, ergonomic and creativity considerations in industrial product design. 2. Design different systems such as Pressure vessel, Brakes, Clutches, Machine tool Gear box and I. C. Engine Components etc. 3. Optimize design of various components/systems in mechanical engineering 4. Use IS Codes, Design data books, Handbooks required for system design .
ME403	Finite Element Analysis	Upon successful completion of this course, the student will be able to: 1.Define the basic finite element formulation techniques. 2. Derive the finite element equations for 1d, 2d and 3d problems 3. Formulate and solve basic problems in heat transfer, solid mechanics and fluid mechanics. 4. Develop the computer program based on finite element methods. 5. Use commercial software's to solve basic engineering problems in heat transfer, solid mechanics and fluid mechanics.

HOD
Mechanical Engineering Department
K.B.P. College of Engineering, Satara

8

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering Satara

B.E (2018-2019) Mechanical Course Outcomes

Course code	Course Name	Course Outcome Statement
ME404 C	Elective I- Automobile Engineering	Upon successful completion of this course, the student will be able to: 1. Describe importance and basic knowledge of automobile engineering. 2. Classify various automobile layouts and bodies. 3. Identify types of automobile bodies and materials used for the same. 3. Demonstrate automobile systems, wheels and tyres and automobile electrical and electronic systems for understanding construction and working principle. 4. Enable students to analyze and solve problems on automobile system by focus and critical thinking. 5. Demonstrate use of modern trends, techniques and skill to fulfill industrial needs by arranging industrial visit.
ME405 B	Elective II- Industrial Product Design	Upon successful completion of this course, the student will be able to: 1. Find the Customer Needs for a Quality Product through Market Research in product development process, Concept Generation, Selection and Testing. 2. Describe basics of Product Architecture, Prototyping and Cost and Value Engineering. Select the Standard Ergonomics and Industry Safety parameters in Product Design.
ME406	Industrial Training	Upon successful completion of this course, the student will be able to: 1. Comprehend the knowledge gained in the course work 2. Create, select, learn and apply appropriate techniques, resources, and modern engineering tools.
ME407	Project Phase I	Upon successful completion of this course, the student will be able to: 1. Improve the professional competency and research aptitude in relevant area. 2. Develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

H. HOD

Mechanical Engineering Department

K.B.P College of Engineering, Satara

9

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering Satara

Mechanical Engineering Department
SEM- II (2018-19)

B.E Mechanical Course Outcomes

Course code	Course Name	Course Outcome Statement
ME408	Mechatronics	Upon successful completion of this course, the student will be able to 1. Understand the importance of integration of Mechanical, Electronics and Control in the design of Mechatronics system. 2. Understand key elements of sensors and transducers and interfacing the same with problem under consideration through PLC.
ME409	Energy and Power Engineering	Upon successful completion of this course, the student will be able to 1. Demonstrate need of different energy sources and their importance 2. Analyze the utilization of solar, wind energy etc. 3. Comprehend various equipments/systems utilized in power plants 4. Illustrate power plant economics
ME410	Noise and Vibration	Upon successful completion of this course, the student will be able to 1. Develop mathematical model to represent dynamic system 2. Estimate natural frequency of mechanical element/system 3. Analyze vibratory response of mechanical element/system 4. Estimate the parameters of vibration isolation system 5. Carryout measurement of various vibration parameters 6. Understand relevance of noise in mechanical systems
ME411	Elective III - Industrial Engineering	Upon successful completion of this course, the student will be able to 1. Analyze and design new method of performing job. 2. Measure and estimate standard time for job. 3. Understand different types of plant layouts. 4. Interpret job evaluation and merit rating.

HOD
Mechanical Engineering Department
K.B.P College of Engineering, Satara

10

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering Satara

B.E SEM-II (2018-2019) Mechanical Course Outcomes

Course code	Course Name	Course Outcome Statement
ME412	Elective IV- Industrial Automation and Robotics	Upon successful completion of this course, the student will be able to 1. Design techniques for the analysis and control of discrete event system 2. Apply knowledge of automation tools and other equipments for manufacturing and assembly components 3. Operate in research and development centre for automation 4. Identify efficiencies and limitation and provide in depth evaluation of robotic system for automated manufacturing applications
	Project Phase –II	Upon successful completion of this course, the student will be able to: 1. Improve the professional competency and research aptitude in relevant area. 2. Develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

M.O.D.
Mechanical Engineering Department
HOD
K. B. Mechanical Engineering, Satara
Mechanical Engineering Department

11

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering Satara

Mechanical Engineering Department
SEM- II (2018-19)

T.E Mechanical Course Outcomes

Course and Course Code	Course Outcomes	Course Outcome Statement
Industrial Management and Operation Research [ME310]	CO 1	Study the concepts of Industrial management and operations research approaches.
	CO 2	Formulate and solve engineering and managerial situations as LPP.
	CO 3	Formulate and solve engineering and managerial situations as Transportation and Assignment problems.
	CO 4	Formulate and solve engineering and managerial situations as Decision theory, Network model and Sequencing models.
Industrial and Fluid Power [ME311]	CO 1	Explain and draw different ISO/JIC symbols used in hydraulic and pneumatic circuits.
	CO 2	Demonstrate hydraulic and pneumatic system components.
	CO 3	Interpret the hydraulic and pneumatic circuits with their application.
	CO 4	Explain safety regulations and troubleshooting in hydraulic and pneumatic system.
	CO 5	Explain fluidics and their application.
Metrology & Quality Control [ME312]	CO 1	Identify and use various measuring instruments and select appropriate instrument for particular feature measurement.
	CO 2	Distinguish and understand quality assurance and quality control. They can use control charts and sampling plans to manufacturing and service sector problems.
	CO 3	Prepare and understand drawings with general dimensions, tolerances and surface finish.
Machine Design –II [ME313]	CO 1	Design machine elements subjected to fluctuating loading.
	CO 2	Analyze the effect and contribution of manufacturing, assembly, and material selection on design of machine elements.
	CO 3	Interpret effect of tribological considerations on design
	CO 4	Select rolling contact bearings from manufacturer's catalogue.
	CO 5	Design sliding contact bearings used in various mechanical systems.
	CO 6	Design various types of gears such as spur, helical, bevel and worm gear.
Internal Combustion Engine [ME314]	CO 1	Demonstrate a basic understanding of engine construction, function of various parts of the engine.
	CO 2	Demonstrate combustion mechanism
	CO 3	Demonstrate importance and functions of various systems on the engine.
	CO 4	Demonstrate need and methods of engine testing.
	CO 5	Know the impact of vehicular pollution and ways to reduce or control the pollution.

HOD
Mechanical Engineering Department
K.B.P College of Engineering, Satara

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING SATARA

B.E Mechanical CO -PO-PSO Mapping (2018-2019) SEM I

Course and Course code	Course Outcome	Course Outcome Statement	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
Refrigeration and Air Conditioning (ME401)	CO 1	Explain basic refrigeration cycles and Psychrometry.	3	3	3	2			3			2					
	CO 2	Performance Evaluation of Refrigeration and Air Conditioning Systems	3	3	3	2			3			2			3		
	CO 3	Enable the students to analyze and solve refrigeration related problems by applying principles of mathematics,science and engineering	2	3	3	3			2			2					
Mechanical System design (ME 4012)	CO 1	Incorporate aesthetic, ergonomic and creativity considerations in industrial product design	3	2											2		
	CO 2	Design different systems such as Pressure vessel, Brakes, Clutches, Machine tool Gear box and I. C. Engine Components etc.	3	3	3	3									3		
	CO 3	Optimize design of various components/systems in mechanical engineering.	3	3	3										2		
	CO 4	Use IS Codes, Design data books, Handbooks required for system design .		3	3												
Finite Element Analysis (ME 403)	CO1	Define the basic finite element formulation techniques.	2	2													
	CO2	Derive the finite element equations for 1d, 2d and 3d problems	2	3	3										3		
	CO3	Formulate and solve basic problems in heat transfer, solid mechanics and fluid mechanics.		3		3											
	CO4	Develop the computer program based on finite element methods.		3	3	2									3		
	CO5	Use commercial software's to solve basic engineering problems in heat transfer, solid mechanics and fluid mechanics.		3	3	2											
Elective I- Automobile Engineering (ME 404 C)	CO1	Describe importance and basic knowledge of automobile engineering.	3														
	CO2	Classify various automobile layouts and bodies.	3					3	3								
	CO3	Demonstrate automobile systems, wheels and tyres and automobile electrical and electronic systems for understanding construction and working principle.	3	3				3	3								
	CO4	Enable students to analyze and solve problems on automobile system by focus and critical thinking.	2	3													3
	CO5	Demonstrate use of modern trends, techniques and skill to fulfill industrial needs by arranging industrial visit.	2														

H.O.D.
Mechanical Engineering Department
K.B.P. College of Engineering, Satara

B.E Mechanical CO -PO-PSO Mapping (2018-2019) SEM I

Course and Course code	Course Outcome	Course Outcome Statement	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
Elective II- Industrial Product Design (ME 405 B)	CO 1	Find the Customer Needs for a Quality Product through Market Research in product		3		3											
	CO 2	Describe basics of Product Architecture, Prototyping and Cost and Value Engineering. Select the Standard Ergonomics and Industry Safety parameters in Product Design					2										2
Industrial Training (ME 406)	CO 1	Comprehend the knowledge gained in the course work		3	3	3						3	2				3
	CO 2	Create, select, learn and apply appropriate techniques, resources, and modern engineering tools.	3	3	3		2		2	2	3	3	2		3	3	3
Project Phase I (ME 407)	CO 1	Improve the professional competency and research aptitude in relevant area		3		3						3	2				3
	CO 2	Develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.	3		3		2		2	2	3	3	2		3	3	3

H.O.D.
Mechanical Engineering Department
K.B.P College of Engineering, Satara

14

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING SATARA

T.E Mechanical CO -PO-PSO Mapping (2018-2019) SEM I

Course and Course Code	Course Outcomes	Course Outcome Statement	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
Control Engineering [ME301]	CO 1	Interpret control system, its type and applications.	2														
	CO 2	Explain model of physical simple systems.		3													
	CO 3	Determine system stability and system response.		2													
	CO 4	Demonstrate various control actions.	3														
	CO 5	Use MATLAB software to analyze control system.					3										
Theory of Machines-II [ME302]	CO 1	Indentify the various types of gears.	2														
	CO 2	Select a gear drive for practical purpose.	2														
	CO 3	Analyze the gyroscopic effects for practical life.	2														
	CO 4	Solve a balancing problem.	2	2													
	CO 5	Do the balancing of practical devices to reduce vibration.	2	2													
	CO 6	Do force analysis of mechanisms	1														
Heat and Mass transfer [ME303]	CO 1	Formulate basic equations for heat transfer problems.	3		3									2	3	2	
	CO 2	Apply heat transfer principles to design and evaluate performance of thermal system	3		3									2	2	2	
	CO 3	Calculate the effectiveness and rating of heat exchangers.	3		3									2	3	2	
	CO 4	Calculate heat transfer by radiation between objects with simple geometries.	3		3									2	2	2	
	CO 5	Calculate and evaluate the impact of boundary conditions on the solutions of heat transfer problems.	3		3									2	3	2	
	CO 6	Evaluate the relative contributions of different modes of heat transfer.	3		3								1	2	2	2	
Machine Design –I [ME304]	CO 1	Apply basic principles of machine design.	3	3													
	CO 2	Design machine elements on the basis of strength concept.	2	3		3									2		
	CO 3	Use design data books and standard practices.	3	3	3										2		
	CO 4	Select machine elements from Manufacturer's catalogue.	3	3	3										2		
Manufacturing Engineering [ME305]	CO 1	Identify parameters of single and multipoint cutting tools	3														3
	CO 2	Design jigs and fixtures	3														3
	CO 3	Explain single spindle automat, tool layout, cam design.	3														3
	CO 4	Select and design dies for press working operations	3														3
	CO 5	Interpret and apply CNC technology.	3				2										3

H.O.D.
Mechanical Engineering Department
K.B.P College of Engineering, Satara

15

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING SATARA

B.E Mechanical CO -PO-PSO Mapping (2018-2019) SEM II

Course and Course code	Course Outcome	Course Outcome Statement	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
Mechatronics (ME 408)	CO 1	Explain the importance of integration of Mechanical, Electronics and Control in the design of Mechatronics system.	3														3
	CO 2	Explain and demonstrate key elements of sensors and transducers and interfacing the same with problem under consideration through PLC.					3				2		2				3
Energy and Power Engineering (ME 409)	CO 1	Demonstrate need of different energy sources and their importance	3														
	CO 2	Analyze the utilization of solar, wind energy etc.	2	2											2		
	CO 3	Comprehend various equipments/systems utilized in power plants	3						2								
	Co 4	Illustrate power plant economics	2	2					3								
Noise and Vibration (ME 410)	CO1	Study basic concepts of vibration analysis	3														
	CO2	Acquaint with the principles of vibration measuring instruments	2	3			3										2
	CO3	Create awareness about principles of sound level measurement and noise			3												
Elective III - Industrial Engineering (ME 411)	CO1	Introduce students to the concept of integration of various resources															
	CO2	Acquaint the students with tools and technique of industrial engineering.				3											
	CO3	Analyze and design new method of performing job.		3	3												
	CO4	Explain work measurement techniques	3														
Elective IV- Industrial Automation and Robotics (ME 412)	CO1	Design techniques for the analysis and control of discrete event system	3														
	CO2	Apply knowledge of automation tools and other equipments for manufacturing and assembly components		3											2		
	CO3	Operate in research and development centre for automation		3												2	
	CO4	Identify efficiencies and limitation and provide in depth evaluation of robotic system for automated manufacturing applications					3	3									3
Project Phase –II	CO1	1. Improve the professional competency and research aptitude in relevant area.		3								3	3				3
	CO2	2. Develop the work practice in students to apply theoretical and practical to solve real life problems related to industry and current research.tools/techniques	3		3		3		3	3	3	3	3		3	3	3

H.O.D.
Mechanical Engineering Department
K.B.P College of Engineering, Satara

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING SATARA

T.E Mechanical CO -PO-PSO Mapping (2018-2019) SEM II

Course and Course Code	Course Outcomes	Course Outcome Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Industrial Management and Operation Research [ME310]	CO1	Interpret the concepts of Industrial management and operations research	3												3	3	
	CO2	Formulate and solve engineering and managerial situations as LPP.							2	2	3	3	3	2	3		3
	CO3	Formulate and solve engineering and managerial situations as Transportation and Assignment problems.	3										3		3		3
	CO4	Formulate and solve engineering and managerial situations as Decision theory, Network model and Sequencing models.	3										3		3		3
Industrial and Fluid Power [ME311]	CO1	Explain and draw different ISO/JIC symbols used in hydraulic and	3														
	CO2	Demonstrate hydraulic and pneumatic system components.	2														
	CO3	Interpret the hydraulic and pneumatic circuits with their application.		3		3					3				3		3
	CO4	Explain safety regulations and troubleshooting in hydraulic and pneumatic		3	3												
	CO5	Explain fluidics and their application.	2														
Metrology & Quality Control [ME312]	CO1	Identify and use various measuring instruments and select appropriate instrument for particular feature measurement.	1			2							2		2		3
	CO2	Distinguish and understand quality assurance and quality control. They can use control charts and sampling plans to manufacturing and service sector problems.	1					2			3				1		3
	CO3	Prepare and understand drawings with general dimensions, tolerances and surface finish.	2	2					1				2		1		3
Machine Design –II [ME313]	CO1	Design machine elements subjected to fluctuating loading.		3													
	CO2	Study the effect and contribution of manufacturing, assembly, and material selection on design of machine elements.	3														
	CO3	Study effect of tribological considerations on design	3	3													
	CO4	Select rolling contact bearings from manufacturer's catalogue.	3	3													
	CO5	Design sliding contact bearings used in various mechanical systems.	3	3	3										3		2
	CO6	Design various types of gears such as spur, helical, bevel and worm gear.	3	3	3										2		3
Internal Combustion Engine [ME314]	CO1	Demonstrate a basic understanding of engine construction, function of various parts of the engine.										3					3
	CO2	Demonstrate combustion mechanism										3					3
	CO3	Demonstrate importance and functions of various systems on the engine.										3					3
	CO4	Demonstrate need and methods of engine testing.										3					3
	CO5	Know the impact of vehicular pollution and ways to reduce or control the pollution.						3				3					3

H.O.D.
Mechanical Engineering Department
K.B.P College of Engineering, Satara

17

Karamaveer Bahaurao Patil College of Engineering,Satara

Mechanical Engineering Department (2018-2019)

S.Y.BTech CO-PO Mapping (SEM-II)

Manufacturing Process-I

BT-MEC401	PCC 5	Manufacturing Processes-I	2-1-0	3 Credits
CO1	Identify castings processes, working principles and applications and list various defects in metal casting			
CO2	Understand the various metal forming processes, working principles and applications			
CO3	Classify the basic joining processes and demonstrate principles of welding, brazing and soldering.			
CO4	Study center lathe and its operations including plain, taper turning, work holding devices and cutting tool.			
CO5	Understand milling machines and operations, cutters and indexing for gear cutting.			
CO6	Study shaping, planing and drilling, their types and related tooling's			

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1		1	1				1		1
CO2	2	2	1		1	1				1		1
CO3	2	1	1		1	1				1		1
CO4	1		1		1	1				1		1
CO5	2		1		1	1				1		1
CO6	1				1	1				1		1

Theory of Machines- I

BT-MEC 402	PCC 6	Theory of Machines-I	3-1-0	4 Credits

CO1	Define basic terminology of kinematics of mechanisms
CO2	Classify planar mechanisms and calculate its degree of freedom
CO3	Perform kinematic analysis of a given mechanism using ICR and RV methods
CO4	Perform kinematic analysis of a given mechanism analytically using vector or complex algebra method
CO5	Perform kinematic analysis of slider crank mechanism using Klein's construction and analytical approach

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1				1								3
CO2				1								3
CO3	1	1		2								3
CO4	1	1		2								2
CO5	1	1		3								2

Strength of Materials

BT-MEC 403	PCC 7	Strength of Materials	3-1-0	4 Credits

CO1	State the basic definitions of fundamental terms such as axial load, eccentric load, stress, strain, E, μ, etc.
CO2	Recognize the stress state (tension, compression, bending, shear, etc.) and calculate the value of stress developed in the component in axial/eccentric static and impact load cases.
CO3	Distinguish between uniaxial and multiaxial stress situation and calculate principal stresses, max. shear stress, their planes and max. normal and shear stresses on a given plane.
CO4	Analyze given beam for calculations of SF and BM
CO5	Calculate slope and deflection at a point on cantilever /simply supported beam using double integration, Macaulay's , Area-moment and superposition methods
CO6	Differentiate between beam and column and calculate critical load for a column using Euler's and Rankine's formulae

Numerical Methods in Mechanical Engineering

BT-MEC 404	BSC 8	Numerical Methods in Mechanical Engineering	2-1-0	3 Credits

CO1	Describe the concept of error
CO2	Illustrate the concept of various Numerical Techniques
CO3	Evaluate the given Engineering problem using the suitable Numerical Technique
CO4	Develop the computer programming based on the Numerical Techniques

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		1	3·							
CO2	3	3		1	3							
CO3	3	3		1	3							
CO4	3	3		1	3							

Interpersonal Skills

BT-MEC406C	OEC 1	Interpersonal Skills	3-0-0	3 Credits

CO1	Acquire interpersonal communication skills
CO2	Develop the ability to work independently.
CO3	Develop the qualities like self-discipline, self-criticism and self-management.
CO4	Have the qualities of time management and discipline.
CO5	Present themselves as an inspiration for others
CO6	Develop themselves as good team leaders

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1								1				
CO2										2		
CO3												2
CO4									1			
CO5										2		
CO6											3	

Manufacturing Processes Lab-I

BT-MEL 407	PCC 9	Manufacturing Processes Lab- I	0-0-2	1 Credit

CO1	Perform plain turning, step turning, knurling, eccentric turning, chamfering and facing operations on lathe.
CO2	Prepare setup and fabricate composite job using milling, shaping and drilling machine.
CO3	Making spur gears on a milling machine.
CO4	Prepare sand casting setup using split pattern for simple component.
CO5	Perform joining of two plate using TIG/MIG welding.
CO6	Demonstrate cutting of a sheet metal using flame cutting.

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1		3	1		1		1	2		1
CO2	1	1		3	1		1		1	2		1
CO3	1	1		3	1		1		1	2		1
CO4	2	1		3	1		1		1	2		1
CO5	2	1		3	1		1		1	2		1
CO6	1	1		3	1		1		1	1		1

Theory of Machines Lab-I

BT-MEL 408	PCC 10	Theory of Machines Lab- I	0-0-2	1 Credit

CO1	Perform graphically kinematic analysis of any planar mechanism using ICR and RV methods.
CO2	Perform graphically kinematic analysis of slider crank mechanism using Klein's construction.
CO3	Demonstrate use of graphical differentiation method for kinematic analysis of slider crank mechanism or any other planar mechanism with a slider.
CO4	Sketch polar diagram for a Hooke's joint.

Karamaveer Bahaurao Patil College of Engineering,Satara

Mechanical Engineering Department (2018-2019)

S.Y.BTech CO-PO Mapping (SEM-I)

BT-MEC 302	ESC 11	Materials Science and Metallurgy		3-1-0			4 Credits						

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1 — Define fluid, define and calculate various properties of fluid	3	3	2	2	1							1
CO2 — Calculate hydrostatic forces on the plane and curved surfaces and explain stability of floating bodies	3	3	1	1	1							1
CO3 — Explain various types of flow. Calculate acceleration of fluid particles	3	3	1	1	1							1
CO4 — Apply Bernoulli's equation and Navier-Stokes equation to simple problems in fluid mechanics	3	3										1
CO5 — Explain laminar and turbulent flows on flat plates and through pipes	3	3										1
CO6 — Explain and use dimensional analysis to simple problems in fluid mechanics	2	3										1
CO7 — Understand boundary layer, drag and lift	2	3										1

21

BT-MEC303	PCC 1	Fluid Mechanics			3-1-0		4 Credits						

Course Outcomes (FM)	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1 Calculate hydrostatic forces on the plane and curved surfaces and explain stability of floating bodies	3	3	2	2	1							1
CO2 Explain various types of flow. Calculate acceleration of fluid particles	3	3	1	1	1							1
CO3 Apply Bernoulli's equation and Navier-Stokes equation to simple problems in fluid mechanics	3	3	1	1	1							1
CO4 Explain laminar and turbulent flows on flat plates and through pipes	3	3										1
CO5 Explain and use dimensional analysis to simple problems in fluid mechanics	3	3										1
CO6 Understand boundary layer, drag and lift	2	3										1
CO7	2	3										1

BT-MEC304	PCC 2	Machine Drawing and Computer Aided Drafting			2-0-0		2 Credits						

Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1 Interpret the object with the help of given sectional and orthographic views.	2								3	2		1
CO2 Construct the curve of intersection of two solids	2	1							2	1		1
CO3 Draw machine element using keys, cotter, knuckle, bolted and welded joint	2								2	1		
CO4 Assemble details of any given part. i. e. valve, pump , machine tool part etc.	2	2			1				2	1		1
CO5 Represent tolerances and level of surface finish on production drawings	1	1			1				2	1		1
CO6 Understand various creating and editing commands in Auto Cad	1	1			1				2	2		1

BT-MEC 305	ESC 12	Thermodynamics		3-1-0		4 Credits							
Course Outcomes		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Define the terms like system, boundary, properties, equilibrium, work, heat, ideal gas, entropy etc. used in thermodynamics.	1	1										
CO2	Study different laws of thermodynamics and apply these to simple thermal systems like balloon, piston-cylinder arrangement, compressor, pump, refrigerator, heat exchanger, etc. to study energy balance.	1	2	1										
CO3	Study various types of processes like isothermal, adiabatic, etc. considering system with ideal gas and represent them on p-v and T-s planes.		1	1										
CO4	Apply availability concept to non-flow and steady flow type systems.	2				1								
CO5	Represent phase diagram of pure substance (steam) on different thermodynamic planes like p-v, T-s, h-s, etc. Show various constant property lines on them.	1	1											

BT-HMC 306 | HSMC 3 | Basic Human Rights | 2-0-0 | Audit

Program Outcomes

Course Outcomes		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Understand the history of human rights.						2						
CO2	Learn to respect others caste, religion, region and culture.												
CO3	Be aware of their rights as Indian citizen.												
CO4	Understand the importance of groups and communities in the society.									3			
CO5	Realize the philosophical and cultural basis and historical perspectives of human rights.								2		2		
CO6	Make them aware of their responsibilities towards the nation.												1

Fluid Mechanics Lab

BT-MEL 308 | PCC 3 | Fluid Mechanics Lab | 0-0-2 | 1 Credit

Course Outcomes		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Understand laminar and Turbulent flow and determine Critical Reynolds number using Reynolds Apparatus	1	1	1	3	1				1	2		1
CO2	Verify Bernoulli's theorem	1	1	1	3	1				1	2		1
CO3	Determine pressure drop in flow though pipes and pipe fittings	1	1	1	3	1				1	2		1
CO4	Verify momentum equation using impact of jet apparatus	1	1	1	3	1				1	2		1
CO5	Determine viscosity using viscometer	1	1	1	3	1				1	2		1
CO6	Do calibration of pressure gauges, rotameter	1	1	1	3	1				1	2		1
CO7	Use manometers for pressure measurement	1	1	1	3	1				1	2		1

BT-MEL 309	PCC 4	Machine Drawing and Computer-aided Drafting Lab	0-0-4	2 Credits

Course Outcomes		Program Outcomes											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	Draw Conventional representation of standard machine components, welds, material etc.	1	1	1		1				1			
CO2	Draw sectional view of a given machine component.	2	1	1		1				1			1
CO3	Develop Assemble view from details of given component i.e. valve, pump, machine tool part, etc.	3	1	1		1				2	1		2
CO4	Combine details of given machine component and draw assembled view.	3	1	1		1				2	1		1
CO5	Use various Auto-Cad commands to draw orthographic projection	2	1	1		2				2	2		1
CO6	Draw sectional view from pictorial view of given machine component using Auto-Cad	1	1	1		1				1	1		1

Program: - Electronics (62704)
Course: Video Engineering (EL308)
Class: T.E. Sem-II Academic year: 2018-19

Course Objectives

1. To analyze the Monochrome television with greater emphasis on television standards.
2. To analyze various color television systems with greater emphasis on television standards.
3. To explain the various video systems and audio systems.
4. To describe the digital television and HDTV.
5. To describe advanced display systems.
6. To explain different advanced TV systems.

Course Outcomes

1. Student should able to analyze the monochrome television. Also able to list CCIR –B television standards.
2. Student should able to compare various color television systems. Also able to list CCIR –B television standards.
3. Student should able to explain various video systems and audio systems.
4. Student should able to describe the digital television and HDTV.
5. Student should able to explain working of advanced display system and also able to compare all display systems.
6. Student should able to explain different advanced TV systems.

Course: Electronics Engineering   **Subject:- Microprocessor**   **Class: S.Y. B. Tech**

Course Objective

1. Objective of this course is to introduce to the students the fundamentals of microprocessor.

2. After learning Microprocessor course, students will get advantage to pursue higher studies in Embedded Systems or employment in core industries.

3. The learner can design microprocessor based systems and thus can become successful entrepreneur and meet needs of Indian and multinational industries.

4. The learners will acquaint optimization skills and undergo concepts design metrics for embedded systems.

5. The students will get acquainted with recent trends in microprocessor like pipelining, cache memory etc.

6. To understand the applications of Microprocessors.

7. To learn interfacing of real world input and output devices.

8. To study various hardware and software tools for developing applications.

Course Outcomes

1. Learner gains ability to apply knowledge of engineering in designing different case studies.

2. Students can identify and formulate control and monitoring systems using Microprocessors

3. This course understanding will enforce students to acquire knowledge of recent trends like superscalar and pipelining and thus finds recognition of continuous updation.

4. Students get ability to conduct experiments based on interfacing of devices to or interfacing to real world applications.

5. Students get ability to interface mechanical system to function in multidisciplinary system like in robotics, Automobiles.

Hatte S.C.

27

COMPUTER NETWORK

Course Objectives:

1. To provide students with an overview of the concepts and fundamentals of data communication and computer networks

2. Review the state of art in open research area such as LAN, MAN, WLAN & applications Computer Networking

3. Acquire the required skill to design simple computer networks.

Course Outcomes:

After completion of this 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. Understand basics of network security.

Rayat Shikshan Sanstha's
Karmaveer Bhaurao Patil College of Engineering, Satara
Department of Electronics
Academic Year 2018-19   **Sem-I**

Program: Electronics Engineering   **Program Code:62704**
Course: VLSI Design   **Course Code:**
Class: T.E. Electronics   **Course Coordinator: Sheetal S.Kokare**

Course Objectives:

1. To use the concept of hardware description language.
2. To design and test combinational and sequential logic using VHDL.
3. To implement digital systems.
4. To Illustrate various methods of testing ASIC and FPGA based designs

Course outcomes:

CO
1. Ability to use the concept of hardware description language.
2. Ability to design and test combinational and sequential logic using VHDL.
3. Ability to implement digital systems
4. Ability to Illustrate various methods of testing ASIC and FPGA based designs

Sskokar.
(Kokare s.s)
2018

Co-Attainment Theory TW CG

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING SATARA

For the Course Having Theory and termwork

Academic Year: 2018-2019

Program with Code: UG(Computer)

Class: T.E

Course: Computer Graphics

Course:CG	Course Outcomes				
	CO1	CO2	CO3	CO4	CO5
TW	0.15	0.25	0.20	0.20	0.20
Oral Marks	0.20	0.20	0.20	0.20	0.20

Theory & TW Weightage

Final Theory Examination	Term work Marks
0.70	0.30

Total Number of Students: 78

Roll No	Name of the Student	TW 100	POE 25	CO 1 %	CO 1 M/N	CO 2 %	CO 2 M/N	CO 3 %	CO 3 M/N	CO 4 %	CO 4 M/N	CO 5 %	CO 5 M/N
1	AGNANI MANISH LAXMAN	58	33	8.07	M	12.13	M	10.1	M	10.1	M	10.1	M
2	AWALE RUTUJA RAMESH	40	35	6.3	N	9.1	N	7.7	N	7.7	N	7.7	N
3	BAGWAN SABA IMTIYAJ	47	35	7.035	N	10.325	N	8.68	N	8.68	N	8.68	N
4	BARGE ROHIT KRISHNAT	47	32	6.855	N	10.145	N	8.5	N	8.5	N	8.5	N
5	BHILARE ROHIT ANANDA	53	32	7.485	N	11.195	N	9.34	N	9.34	N	9.34	N
6	BHOSALE KAVERI SANJAY	62	44	9.15	M	13.49	M	11.32	M	11.32	M	11.32	M
7	BHOSALE SAYALI MAHENDRA	45	33	6.705	N	9.855	N	8.28	N	8.28	N	8.28	N
8	BODAKE SONALI HANMANT	52	37	7.68	N	11.32	N	9.5	N	9.5	N	9.5	N
9	CHAVAN PALLAVI SUDHAKAR	59	44	8.835	M	12.965	M	10.9	M	10.9	M	10.9	M
10	CHORAGE AKSHAY RAJENDRA	36	33	5.76	N	8.28	N	7.02	N	7.02	N	7.02	N
11	DESHMUKH MEGHA SHARAD	48	32	6.96	N	10.32	N	8.64	N	8.64	N	8.64	N
12	DESHPANDE CHINMAY MAHESH	40	31	6.06	N	8.86	N	7.46	N	7.46	N	7.46	N
13	DEVALE MANJIRI VINAYAK	59	35	8.295	M	12.425	M	10.36	M	10.36	M	10.36	M
14	DEVI APURVA HEMANT	55	38	8.055	M	11.905	M	9.98	M	9.98	M	9.98	M
15	DHUMAL PRANAV PRAVIN	52	33	7.44	N	11.08	N	9.26	N	9.26	N	9.26	N
16	DOSHI SALONI MAHESH	64	33	8.7	M	13.18	M	10.94	M	10.94	M	10.94	M
17	DOSHI PRACHI SANTOSH	53	34	7.605	N	11.315	N	9.46	N	9.46	N	9.46	N
18	GAIKWAD ANKITA DILIP	43	36	6.675	N	9.685	N	8.18	N	8.18	N	8.18	N
19	GHADAGE GAURI SHAMRAO	42	36	6.57	N	9.51	N	8.04	N	8.04	N	8.04	N
20	GHODKE PRATHMESH NITIN	42	34	6.45	N	9.39	N	7.92	N	7.92	N	7.92	N
21	GHORPADE MANAVI UTTAM	61	33	8.385	M	12.655	M	10.52	M	10.52	M	10.52	M
22	GODBOLE HRISHIKESH ABHAY	54	35	7.77	M	11.55	M	9.66	M	9.66	M	9.66	M
23	GOLE RUTUJA GULAB	57	41	8.445	M	12.435	M	10.44	M	10.44	M	10.44	M
24	GUJAR SEJAL ABHAY	49	39	7.485	N	10.915	N	9.2	N	9.2	N	9.2	N
25	GUNDAWAR SHREYAS SUNIL	48	36	7.2	N	10.56	N	8.88	N	8.88	N	8.88	N
26	HIRVE AARTI BHASKAR	49	38	7.425	N	10.855	N	9.14	N	9.14	N	9.14	N

Page 1

Co-Attainment Theory TW CG

#	Name												
27	INGALE KOMAL POPAT	57	35	8.085	M	12.075	M	10.08	M	10.08	M	10.08	M
28	INGAWALE PRAGATI DATTATRAY	60	40	8.7	M	12.9	M	10.8	M	10.8	M	10.8	M
29	JADHAV KOMAL LAXMAN	50	38	7.53	N	11.03	N	9.28	N	9.28	N	9.28	N
30	JAGADALE SHUBHAM DATTATRAY	49	31	7.005	N	10.435	N	8.72	N	8.72	N	8.72	N
31	JAYKAR SURYADEEP ASHOK	40	32	6.12	N	8.92	N	7.52	N	7.52	N	7.52	N
32	JOSHI SHALAKA PRAMOD	60	45	9	M	13.2	M	11.1	M	11.1	M	11.1	M
33	JOSHI ADITYA VINAY	51	35	7.455	N	11.025	N	9.24	N	9.24	N	9.24	N
34	KATKAR SRUSHTI RAMESH	57	45	8.685	M	12.675	M	10.68	M	10.68	M	10.68	M
35	KAVADE PRANAV DILIP	40	34	6.24	N	9.04	N	7.64	N	7.64	N	7.64	N
36	KENDE VAISHNAVI PRADIP	52	36	7.62	N	11.26	N	9.44	N	9.44	N	9.44	N
37	KHATAVKAR ABHISHEK SHRIKANT	45	34	6.765	N	9.915	N	8.34	N	8.34	N	8.34	N
38	KORADE SHRUTI DIPAK	54	37	7.89	M	11.67	M	9.78	M	9.78	M	9.78	M
39	KSHIRSAGAR MITHALI RAVINDRA	57	47	8.805	M	12.795	M	10.8	M	10.8	M	10.8	M
40	KUDALE SNEHAL SANJAY	38	31	5.85	N	8.51	N	7.18	N	7.18	N	7.18	N
41	LANGADE AMRUTA ARVIND	52	37	7.68	N	11.32	N	9.5	N	9.5	N	9.5	N
42	MAGAR PRATIKSHA HANMANT	61	44	9.045	M	13.315	M	11.18	M	11.18	M	11.18	M
43	MANE ANKITA SATISH	57	40	8.385	M	12.375	M	10.38	M	10.38	M	10.38	M
44	MANE GAURAV SHANKARRAO	49	32	7.065	N	10.495	N	8.78	N	8.78	N	8.78	N
45	MULANI ALTAMESH SHIKANDAR	57	33	7.965	M	11.955	M	9.96	M	9.96	M	9.96	M
46	NAGPURKAR SHRUTI DEEPAK	61	35	8.505	M	12.775	M	10.64	M	10.64	M	10.64	M
47	PALANGE AISHWARYA VINAYAK	53	37	7.785	M	11.495	M	9.64	M	9.64	M	9.64	M
48	PATIL ANKITA ANANT	53	35	7.665	N	11.375	N	9.52	N	9.52	N	9.52	N
49	PATIL SNEHAL SUBHASH	32	32	5.28	N	7.52	N	6.4	N	6.4	N	6.4	N
50	PAWAR PRANOTI MUKUND	59	36	8.355	M	12.485	M	10.42	M	10.42	M	10.42	M
51	PAWAR AAKANKSHA ANKUSH	53	44	8.205	M	11.915	M	10.06	M	10.06	M	10.06	M
52	PAWAR RUNALI DILIPKUMAR	31	31	5.115	N	7.285	N	6.2	N	6.2	N	6.2	N
53	PHADTARE PRANALI MADHUKAR	64	43	9.3	M	13.78	M	11.54	M	11.54	M	11.54	M
54	PHALKE AARTI ASHOK	47	36	7.095	N	10.385	N	8.74	N	8.74	N	8.74	N
55	PISAL SNEHAL SHIVAJI	64	34	8.76	M	13.24	M	11	M	11	M	11	M
56	PISAL ANJALI SUDHIR	68	39	9.48	M	14.24	M	11.86	M	11.86	M	11.86	M
57	PUJARI ABHILASH LALASO	49	31	7.005	N	10.435	N	8.72	N	8.72	N	8.72	N
58	RAUT PRADNYA HANMANT	55	36	7.935	M	11.785	M	9.86	M	9.86	M	9.86	M
59	RAUT ROHIT VAIBHAV	53	32	7.485	M	11.195	M	9.34	M	9.34	M	9.34	M
60	SALUNKHE SHRUTI NITIN	50	42	7.77	M	11.27	M	9.52	M	9.52	M	9.52	M
61	SALUNKHE ANIMESH	52	34	7.5	N	11.14	N	9.32	N	9.32	N	9.32	N
62	SALUNKHE HRUSHIKESH RAJENDRA	50	31	7.11	N	10.61	N	8.86	N	8.86	N	8.86	N
63	SARADE SIDDHI	66	35	9.03	M	13.65	M	11.34	M	11.34	M	11.34	M
64	SHELAR SAURABH EKANATH	67	35	9.135	M	13.825	M	11.48	M	11.48	M	11.48	M
65	SHELAR TRUPTI ANANDARAO	42	34	6.45	N	9.39	N	7.92	N	7.92	N	7.92	N
66	SHINDE TEJAL SANJAY	53	42	8.085	M	11.795	M	9.94	M	9.94	M	9.94	M
67	SHINDE PRAJAKTA VIKAS	75	39	10.215	M	15.465	M	12.84	M	12.84	M	12.84	M
68	SHINDE RUTUJA RAJENDRA	59	42	8.715	M	12.845	M	10.78	M	10.78	M	10.78	M
69	SHINDE SAYALI ANIL	62	41	8.97	M	13.31	M	11.14	M	11.14	M	11.14	M
70	SHITOLE POOJA RAJIV	58	32	8.01	M	12.07	M	10.04	M	10.04	M	10.04	M
71	SHIVDAS RUSHIKESH DHANANJAY	45	36	6.885	N	10.035	N	8.46	N	8.46	N	8.46	N
72	SWAMI GAURI SUDESH	56	35	7.98	M	11.9	M	9.94	M	9.94	M	9.94	M
73	TARASE SONALI SHAHAJI	57	40	8.385	M	12.375	M	10.38	M	10.38	M	10.38	M
74	WADHWANI DIVYA SATISH	62	46	9.27	M	13.61	M	11.44	M	11.44	M	11.44	M
75	YADAV ANIKET ANIL	39	35	6.195	N	8.925	N	7.56	N	7.56	N	7.56	N
76	YEWALE JYOTI NIVRUTTI	52	34	7.5	N	11.14	N	9.32	N	9.32	N	9.32	N

31

Co-Attainment Theory TW CG

77	HARALE PRATIBHA NAVNATH	49	38	7.425	N	10.855	N	9.14	N	9.14	N	9.14	N
78	KADAM SUPRIYA BAPURAO	54	38	7.95	M	11.73	M	9.84	M	9.84	M	9.84	M
	Average			7.69019	M	11.3616	M	9.525897	M	9.5259	M	9.5259	M

* If Attainment is more than 50 % then, "Yes" otherwise "No"

CO Attainment	CO1		CO2		CO3		CO4		CO5	
Total number of Students meeting requirement (M)	38	48.718	38	48.72	37	47.44	37.00	47.436	37.00	47.436
Total number of Students not meeting requirement (N)	40	51.282	40	51.28	41	52.56	41.00	52.56	41.00	52.56
Total Students	78		78		78		78		78	

CO Attainment	CO1	CO2	CO3	CO4	CO5
Attainment %	48.7	48.7	47.4	47.4	47.4
Attained	Yes	Yes	Yes	Yes	Yes

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING SATARA
PO and PSO Attainment
Academic Year: 2018 – 2019

Program with Code: UG(Computer)
Class: T.E.
Course: Computer Graphics

Course Outcomes	Program Outcomes												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	1	1			3			2	2				3		
CO 2	3	3	2	1	1										
CO 3					2				3						
CO 4	3		2					2	1			1			
CO 5						3	3		2			1			
			CO1	CO2	CO3	CO4	CO5								
Attainment			51.3	52.6	68.40	68.40	68.40								

Course Outcomes	Program Outcomes												Program Specific Outcomes (PSOs)		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	17.10	17.1			51.3			34.2	34.2				51.3		
CO 2	52.60	52.6	35.07	17.5333	17.5333		68.4								
CO 3			45.60		45.6				68.4			22.8			
CO 4	68.4							45.60	22.80						
CO 5						68.40	68.40		45.60			22.80			
Average	46.03	34.85	40.34	17.53	38.14	68.40	68.40	39.90	42.75			22.80	51.30		

We set the attainment target is to 50%

Performance Levels:

Level 1: Below expectations   : Attainment less than 25 %

Level 2: Progressing to criterion : Attainment between 26 - 50 %

Level 3: Meets criterion   : Attainment between 51 - 75 %

Level 4: Exceeds criterion : Attainment more than 75 %

CG

	Pos												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1 Define the basis of computer graphics and transformations like scaling,rotation, translation.	1	1			3			2	2				3		
CO 2 Differenciate scan conversion techniques and implement algorithms like line drawing, polygon filling, circle drawing.	3	3	2	1	1										
CO 3 Apply different clipping algorithms to the objects to display the real word object geometry.					2				3			1			
CO 4 Distinguish 4 different curve representation techniques			2					2	1						
CO 5 Choose 5 current graphics API (OpenGL) and Blender 3-D to create animation.	3					3	3		2			1			

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 Objective

1.Ability to apply knowledge of computer science and engineering effectively

2.Use Open source tools for engineering practice

3: Demonstrate professional skills and ethics.

4: The graduate will be able to recognize the need for and be open to continuing professional development as per technology change .

34

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering, Satara

CO - PO and PSO Mapping

Program: Electronics Engineering   **Program code:** 62704

Course: Electronics System Design   **Course code:** EL311

Class: T. E. Electronics Sem VI

Program: Electronics Engineering

Course and course outcome:	POs												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1			X	X	X								X	
CO2	X	X	X										X	X
CO3			X										X	X
CO4			X	X	X								X	X
CO5	X		X	X									X	

Note : Mark the appropriate box by X

Faculty Sign

Head of the Department

35

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering, Satara

CO - PO and PSO Mapping

Program: Electronics Engineering   Program code: 62704

Course: Electronics System Design   Course code: EL311

Class: T. E. Electronics Sem VI

Course and course outcome:	Program: POs												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1			1	1		1							1	
CO2	1	2	3	1	1								2	2
CO3			2										2	2
CO4			3	1	2								2	3
CO5		1	2	1										1

Note: Write the level of mapping for appropriate CO, PO and PSO

3 : Substantial (High / Strong)   2: Moderate (Medium)   1: Slight (Low / Poor)

Faculty Sign

Head of the Department

36

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering, Satara

CO - PO and PSO Mapping

Program: Electronics Engineering (2018-19) **Program code:** 62704

Course: Embedded System Design **Course code:** EL402

Class: B. E. Electronics Sem VII

Program: Electronics Engineering

Course and course outcome:	POs												PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1		X					X						X	
CO2	X	X	X										X	X
CO3		X	X	X									X	X
CO4				X									X	X
CO5		X	X										X	X
CO6	X	X	X										X	X

Note : Mark the appropriate box by X

Faculty Sign

Head of the Department

Rayat Shikshan Sanstha's

Karmaveer Bhaurao Patil College of Engineering, Satara

CO - PO and PSO Mapping

Program: Electronics Engineering   **Program code:** 62704

Course: Embedded System Design   **Course code:** EL402

Class: B. E. Electronics Sem VII

Course and course outcome:	Program: POs												Program: PSOs	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1	1	1											1	
CO2	1	1	2				1						2	3
CO3		1	3	1									3	2
CO4				1									1	1
CO5		1	3										3	2
CO6		1	1										2	1

Note: Write the level of mapping for appropriate CO, PO and PSO

3 : Substantial (High / Strong)   **2: Moderate (Medium)**   **1: Slight (Low / Poor)**

Faculty Sign

Head of the Department

38

CO and PO Mapping and Attainment

Program: Electronics Engineering
Program code: 62704
Course: Information Theory and Coding Techniques
Course code: EL-404
Class: B.E.-I

Course and course outcome		PO 1	PO 2	PO 3	P O4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Information Theory and Coding Techniques															
CO1		X										X		X	
CO2		X	X											X	
CO3			X	X											X
CO4				X	X			X						X	X

Nanaware J.D.
Course Coordinator

Head Of Electronics Department