

Santosh N Darade Polytechnic

Department of Mechtronics Engineering

Course Outcomes

Semester – 1 (MK1K)		
Course	CO's	Course Outcomes
(311303) Communication Skill (English) <i>C101</i>	C101.1	Construct grammatically correct sentences in English.
	C101.2	Compose paragraphs and dialogues on given situations.
	C101.3	Comprehend passages correctly.
	C101.4	Use contextual words in English appropriately.
	C101.5	Deliver effective presentations in English using appropriate body language
(311305) Basic Science (PHY & CHY) <i>C102</i>	C102.1	Use basic instruments to measure the physical quantities in various engineering situations.
	C102.2	Apply the basic principles of electromagnetics to solve given engineering problems.
	C102.3	Apply basic principles of thermometry and fibre optics to solve engineering problems.
	C102.4	Predict the structure, properties and behaviour of molecules and compounds based on the types of chemical bond
	C102.5	Apply the concepts of electrochemistry and corrosion preventive measures in industry.
	C102.6	Use the appropriate engineering material and catalyst appropriately.
(311302) Basic Mathematics <i>C103</i>	C103.1	Apply the concepts of algebra to solve engineering (discipline) related problems.
	C103.2	Utilize trigonometry to solve branch specific engineering problems.
	C103.3	Solve area specific engineering problems under given conditions of straight lines.
	C103.4	Apply differential calculus to solve discipline specific problems.
	C103.5	Use techniques and methods of statistics to crack discipline specific problems.
(311001) Fundamentals of ICT <i>C104</i>	C104.1	Use computer system and its peripherals for given purpose
	C104.2	Prepare Business document using Word Processing Tool
	C104.3	Analyze Data and represent it graphically using Spreadsheet
	C104.4	Prepare professional Slide Show presentations
	C104.5	Use different types of Web Browsers and Apps
(311006) Engineering Graphics <i>C105</i>	C105.1	Draw geometrical figures and engineering curves.
	C105.2	Apply principles of orthographic projections for drawing given pictorial views.
	C105.3	Draw isometric views of given component or from orthographic projections.
	C105.4	Use various drawing codes, conventions and symbols as per IS SP-46 in engineering drawing.
	C105.5	Draw free hand sketches of given engineering elements.
(311005) Workshop Practice <i>C106</i>	C106.1	Use firefighting tools and equipment
	C106.2	Prepare job using different tools in fitting shop.
	C106.3	Perform various operations using plumbing and carpentry tools.
	C106.4	Prepare various welding joints.
	C106.5	Produce simple job using different sheet metal operations

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Semester – 2 (MK2K)

Course	CO's	Course Outcomes
(312002) PCO C107	C107.1	Communicate effectively (oral / spoken and Written) in various formal and informal situations minimizing the barriers.
	C107.2	Develop listening skills through active listening and note taking
	C107.3	Write circulars, notices and minutes of the meeting.
	C107.4	Draft inquiry letter, complaint letter , Job application with resume / CV, Compose effective E - mails
	C107.5	Write Industrial reports.
(312301) Applied Mathematics C108	C108.1	Solve the broad-based engineering problems of integration using suitable methods.
	C108.2	Use definite integration to solve given engineering related problems.
	C108.3	Apply the concept of differential equation to find the solutions of given engineering problems
	C108.4	Employ numerical methods to solve programme specific problems.
	C108.5	Use probability distributions to solve elementary engineering problems.
(312003) SOCIAL AND LIFE SKILLS C109	C109.1	Enhance the ability to be fully self-aware and take challenges by overcoming all fears and insecurities and grow fully.
	C109.2	Increase self-knowledge and awareness of emotional skills and emotional intelligence at the place of study/work.
	C109.3	Provide the opportunity to realizing self-potential through practical experience while working individually or in group.
	C109.4	Develop interpersonal skills and adopt good leadership behaviour for self-empowerment and empowerment of others.
	C109.5	Set appropriate life goals with managing stress and time effectively
(312308) Applied Science C110	C110.1	Select relevant material in industries by analyzing its physical properties .
	C110.2	Apply the concept of simple harmonic motion , resonance and ultrasonic sound for various engineering applications
	C110.3	Apply the concept of modern Physics (X-rays, LASER, Photosensors and Nanotechnology) for various engineering applications.
	C110.4	Use the relevant metallurgical processes in different engineering applications.
	C110.5	Use relevant water treatment processes to solve industrial problems
	C110.6	Use appropriate fuel and electrolyte for engineering applications.
(312311) engineering drawing	C111.1	Apply principles of sectional orthographic projections for drawing given pictorial views.
	C111.2	Draw projection of lines and planes.
	C111.3	Draw projections of given solids for various orientations.

C111	C111.4	Interpret curves of intersection for given solids.
	C111.5	Draw development of lateral surfaces of various solids
(312312) Engineering Mechanics C112	C112.1	Select the suitable machine under given loading condition.
	C112.2	Analyze the given force system to calculate resultant force.
	C112.3	Determine unknown force(s) of given load combinations in the given situation
	C112.4	Apply the laws of friction in the given situation.
	C112.5	Determine the centroid/centre of gravity of the given lamina.
(312313) Manufacturing technology C113	C113.1	Produce a part using a lathe and drilling machine as per given drawing.
	C113.2	Produce a part using a milling machine as per given drawing.
	C113.3	Produce a part using casting processes as per given drawing
	C113.4	Produce a part using forming processes as per given drawing.
	C113.5	Produce a part using joining processes as per given drawing.

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Semester – 3 (MK3K)

(313002) EIC <i>C201</i>	C201.1	List salient features and characteristics of the constitution of India.
	C201.2	Follow fundamental rights and duties as responsible citizen of the country
	C201.3	Analyze major constitutional amendments in the constitution.
	C201.4	Follow procedure to cast vote using voter-id.
(313007) FPP <i>C202</i>	C202.1	Use program designing tools and IDE for python.
	C202.2	Employ python building blocks and data types in the programming
	C202.3	Implement conditional and looping statements in the python programming.
	C202.4	Implement built in functions and modules in the python programming
	C202.5	Use NumPy for performing operations on list and array.
(313311) PDR <i>C203</i>	C203.1	Construct an auxiliary view of given object.
	C203.2	Use convention for representation of material and mechanical components.
	C203.3	Interpret and draw production drawing
	C203.4	Prepare assembly drawing using given details.
	C203.5	Prepare detail drawing based on the given assembly drawing/data.
(313317) <i>C204</i>	C204.1	Select suitable material(s) based on desired properties according to application.
	C204.2	Choose relevant alloy steel & Cast iron for mechanical components.
	C204.3	Select relevant non ferrous & powder material components for the engineering
	C204.4	Select relevant non metallic & Advanced material for the engineering application.
	C204.5	Use relevant heat treatment processes in given situations.
(313318) ADE <i>C205</i>	C205.1	Build different electronic circuits using basic components and diodes.
	C205.2	Interpret working of transistor in electronic circuits.
	C205.3	Use logic gates and Boolean Logic for building digital circuits.
	C205.4	Use combinational and sequential logic circuits for different applications.
	C205.5	Use data converters in electronic systems.
(313319) ADE <i>C206</i>	C206.1	Apply various performance characteristics of measuring instruments
	C206.2	Select relevant mechanical transducers for measuring required parameters.
	C206.3	Choose suitable transducers for measuring pressure and temperature.
	C206.4	Select relevant transducers for level and flow measurement
	C206.5	Use suitable signal conditioning and data acquisition system.

(313320) EEE <i>C207</i>	C207.1	Determine various parameters in a given electrical circuit.
	C207.2	Use principles of magnetic circuits in electrical devices.
	C207.3	Select DC motor and transformer for specific applications.
	C207.4	Select AC motor and special purpose motor for given application.
	C207.5	Select electrical measuring instruments and protective devices.

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Semester – Semester – 4 (MK4K)		
(313313) TOM C208	C208.1	Apply knowledge and skill related to different mechanisms and its motion in given situation.
	C208.2	Determine velocity and acceleration for given mechanism
	C208.3	Develop a Cam profile for given type of Follower and its motions in given situation
	C208.4	Select the suitable power transmission devices for the given field/industrial application.
	C208.5	Use knowledge and skills related to balancing of masses and vibration for various applications.
(314014) EDS C209	C209.1	Identify one's entrepreneurial traits.
	C209.2	Use information collected from stakeholder for establishing/setting up/founding starts up
	C209.3	Use support systems available for Starts up
	C209.4	Prepare project plans to manage the enterprise effectively
(314015) CAM C210	C210.1	Use basic commands in CADD software.
	C210.2	Draw complex 2D drawings in CADD software using draw and modify tools
	C210.3	Use CADD software to give dimensions and write text on 2D geometric entities.
	C210.4	Plot given 2D entities using proper plotting parameters in CADD software.
	C210.5	Draw electromechanical circuits in CADD software.
(314301) EES C211	C211.1	Identify the relevant Environmental issues in specified locality.
	C211.2	Provide the green solution to the relevant environmental problems.
	C211.3	Conduct SWOT analysis of biodiversity hotspot
	C211.4	Apply the relevant measures to mitigate the environmental pollution.
	C211.5	Implement the environmental policies under the relevant legal framework.
(314337) EES C212	C212.1	Interpret the type of control system.
	C212.2	Analyse the given control system for standard test input signal.
	C212.3	Examine the stability of given control system.
	C212.4	Use different control action for controlling various processes.
	C212.5	Maintain different servo system components in industrial applications.
(314338) ESC C213	C213.1	Classify the different types of embedded systems.
	C213.2	Use embedded 'C' language for programming 8051 microcontroller
	C213.3	Interpret the communication protocols of embedded systems.

	C213.4	Develop embedded 'C' programs for Input/Output devices.
	C213.5	Develop embedded 'C' programs for Input/Output devices.
(314339) IAU C214	C215.1	Use fundamentals of fluid power in hydraulic and pneumatic systems.
	C215.2	Select pump/compressor and accessories for given fluid operated system.
	C215.3	Select valves and actuators for given fluid operated system.
	C215.4	Develop various hydraulic / pneumatic circuits for specified application
	C215.5	Construct simple automated hydraulic / pneumatic circuits.

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Semester – 5 (MK5K)

(315003) SPI C302	C302.1	Identify topics of seminar presenting to the large gathering at the institute/conference.
	C302.2	Collect relevant and updated research-based data and information to prepare a paper of seminar presentation.
	C302.3	Apply presentation skills.
	C302.4	Create conducive environment for learning and discussion through seminar presentation.
	C302.5	Identify a problem statement and establish the action plan for the successful completion of the project.
(315004) ITR C303	C303.1	Observe time/resource management and industrial safety aspects.
	C303.2	Acquire professional experience of industry environment
	C303.3	Establish effective communication in working environment.
	C303.4	Prepare report of assigned activities and accomplishments.
(315008) RPS C304	C304.1	Develop a 3D solid model for a given drawing.
	C304.2	Select a relevant rapid prototyping process.
	C304.3	Select relevant material for manufacturing of prototype.
	C304.4	Develop the given prototype by using the FDM 3D printing process
(315009) MIM C305	C305.1	Apply different industrial maintenance methods.
	C305.2	Troubleshoot electrical and electronic systems in industry.
	C305.3	Troubleshoot mechanical systems in industry.
	C305.4	Troubleshoot industrial robotics systems.
(315363)	C306.1	Select appropriate green fuels for various applications for considering environmental sustainability.
	C306.2	Apply the principles of Autonomous and Sustainable maintenance practices in industry to improve equipment reliability and efficiency.

ETM C306	C306.3	- Identify the levels of autonomy in various mobility systems.
	C306.4	Use data analytics techniques to improve manufacturing processes and systems.
	C306.5	Utilize automated equipment and technologies for various agricultural applications.
(315364) IRO C308	C308.1	Select robot for given application.
	C308.2	Select end effectors, actuators and sensors for given robotic applications.
	C308.3	Apply robot vision system for given application.
	C308.4	Develop robot program for given applications.
	C308.5	Identify future technologies to integrate with industrial applications
(315365) MIT C309	C309.1	Use different blocks of IoT systems.
	C309.2	Select hardware and IoT components for mechatronics Systems.
	C309.3	Integrate IoT hardware and components for given mechatronics Systems.
	C309.4	Apply different platforms and their interfacing for various Systems.
	C309.5	Develop applications of IoT using various hardware components and platforms.

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Semester – 6 (MK6K)

(315301) MIM C310	C310.1	Use relevant management skills to handle work situation
	C310.2	Apply appropriate techniques of product, operations and project management
	C310.3	Use comprehensive tools of recent management practices
	C310.4	Plan suitable marketing strategy for a product / service
	C310.5	Utilize supply chain and human resource management techniques for effective management
(316004) CPE C311	C311.1	Elaborate the identified field problem from the perspective of project work at institute.
	C311.2	Conduct feasibility & viability analysis (using data collection, experiments, Simulation , Coding) to validate required resources, cost, support of the project work.
	C311.3	Apply the acquired knowledge and skills in providing solutions to the real field/industrial problems.
	C311.4	Present Project and its output/ findings / achievements alongwith its exhibits
(316351) AMK C312	C312.1	Identify various automobile systems with their functions and location.
	C312.2	Diagnose performance of given automotive sensors and actuators
	C312.3	Create block diagram of given automotive control system explaining its working and functioning of different components
	C312.4	Perform onboard diagnostics on MPFI and CRDI engine using scan tool and measuring instruments.
	C312.5	Check functionality of vehicle safety device components and advanced driver assistance systems
(316352) PPS C313	C313.1	Interpret the architecture and functions of different elements of PLC
	C313.2	Execute different PLC ladder programming instructions.
	C313.3	Maintain PLC-based automation systems.
	C313.4	Develop SCADA screen for simple application
	C313.5	Select advanced automation systems for industry 4.0 compliance
(316353) MMS C314	C314.1	Identify the types of materials and components and packing processes.
	C314.2	Specify the mechanical and electrical properties and principles implied in the given MEMS.
	C314.3	Explain standard microfabrication processes.
	C314.4	Measure physical quantity using relevant microsensors and microactuators
	C314.5	Prepare a report on the use of MEMS for a given industrial application.

C315	C315.4	Develop comprehensive business plan
	C315.5	Prepare plan to manage enterprise effectively
	C315.6	