DON BOSCO INSTITUTE OF TECHONOLGY, KURLA, MUMBAI

Department of Mechanical , (Even semester, 2018-19)

SE Mech

Course Name:	Applied Mathematics IV		
Course Code	MEC401		
Faculty Name:	Satyanarayana N		
Year	2	**Sem**	4

CO Number	Course Outcome
MEC401.1	Students will be able to obtain Eigen values and Eigen vectors for a given square matrix
MEC401.2	Students will be able to 1. Infer properties of Eigen values and Eigen vectors2. Check if a matrix is derogatory or not3. Obtain pdf and cdf of discrete and continuous random variables
MEC401.3	Students will be able to 1. Construct diagonal matrices using the concept of similarity2. Verify Cayley- Hamilton theorem3. Obtain functions of square matrices4. Determine nature of the q
MEC401.4	Students will be able to 1. Use Z-test, t- test, F-test and Chi-square test to test hypotheses2. Find work done by applying divergence and curl.
MEC401.5	Students will be able to 1. Evaluate vector integration using different theorems2. Use Linear Programming methods to solve optimization problems
MEC401.6	Students will be able to 1. Chi-square test to test to check independence of attributes and 'goodness of fit' 2. Obtain probabilities and z-values for normal distributions 3. Apply Big – M method and Dual Simplex method to optimize an LPP and analyze solutions obtained

Course Name:	Fluid Mechanics		
Course Code	MEC402		
Faculty Name:	Babitha Devdas / Dr. S. S. Pawar		
Year	2	**Sem**	4

CO Number	Course Outcome
MEC402.1	Define fluid, its properties and the non-dimensional numbers, identify different types of flows (compressible/incompressible, steady/unsteady, ideal/real, laminar/turbulent etc.), state the fundamental laws governing fluid systems, describe the approaches and methodologies to fluid flow solutions.
MEC402.2	Understand basic concepts in analyzing fluid flow problems (e.g. integral and differential approaches, boundary layer, airfoil theory, propagation of sound waves and shock phenomenon in compressible media etc.)
MEC402.3	Derive the governing equations for analysis of static and dynamic fluid flow systems for compressible and incompressible fluids. Explain concepts in real fluid flow including theories of turbulence.
MEC402.4	Apply the fundamental principles and governing equations to obtain various parameters in static (Pressure, hydrostatic force, buoyant force) fluid systems and in fluid kinematics.
MEC402.5	Analyze the fluid flow systems quantitatively using fundamental principles and governing equations to obtain various parameters (e.g. pressure gradients, velocity profiles, flow rates, shear stresses etc.).
MEC402.6	Design a working model to demonstrate a principle or application of governing laws in fluid mechanics.

Course Name:	Industraial Electronics		
Course Code	MEC403		
Faculty Name:	Madhavi S. Pednekar		
Year	2	**Sem**	4

CO Number	Course Outcome
MEC403.1	Students will be able to assimilate information on various analog & digital circuits and power electronic semiconductor devices.**(Remember)**
MEC403.2	Students will be able to identify and explain the basic functioning of different types of analog & digital integrated circuits, microprocessor and microcontroller with their applications. **(Understand)**
MEC403.3	Students will be able to apply and demonstrate the working of digital logical circuits, operational amplifier and timer IC555 in various configurations of analog and digital applications. **(Apply)**
MEC403.4	Students will be able to identify and compare the use of selected analog, digital, power electronic semiconductor device, microprocessor and microcontroller for particular applications. **(Analyze)**
MEC403.5	Students will be able acquaint with the basics of microcontroller MSP430 programming to analyse the characteristics of electronic semiconductor device, electrical machines, digital circuits for applications like speed control, light dimmer, switching, verification of outputs etc.**(Apply) (Analyze)**
MEC403.6	Students will be able to develop small analog and digital circuits/build small projects for a given specifications. **(Evaluate)**

Course Name:	Production Process II		
Course Code	MEC404		
Faculty Name:	Sudhakar Ambhore		
Year	2	Sem	4

CO Number	Course Outcome
MEC404.1	Student will be able to identify and describe the basic concept of metal cutting principles and mechanism, cutting tool geometry, the cutting parameters influencing tool life, sheet metal
MEC404.2	Student will be able to Distinguish between conventional and non-traditional machining and select best machine tool for respective machining processes. Velocity relationship in metal cutting.
MEC404.3	Student will be able to explain different forces in metal cutting , ASA, ORS tool signature and Non-traditional machining processes.
MEC404.4	Student will be able to illustrate the different forces in metal cutting, tool life, scrap-strip layout, centre of pressure in sheet metal forming and forces in bending operation.

Course Name:	Kinematics of Machinery		
Course Code	MEC405		
Faculty Name:	Sachin S / Bajirao N		
Year	2	Sem	4

CO Number	Course Outcome
MEC405.1	Define concepts of kinematics and kinetics and determine motion parameters of various mechanisms.
MEC405.2	Explain the kinematic configuration to illustrate working of various mechanisms.
MEC405.3	Use the basics of kinematics to power transmission devices and calculate their various working parameters.

Course Name:	Data Base and Information Retrieval		
Course Code	MEL401		
Faculty Name:	Shreeprasad M / Swapnil G		
Year	2	Sem	4

CO Number	Course Outcome
MEL401.1	Ability to define and explain the basics of DBMS, RDBMS and design the data model and logical schema of databases including the E-R method
MEL401.2	To apply SQL - the standard language for basic and nested queries.
MEL401.3	To understand the functional dependencies and analyze it during design of the database.
MEL401.4	To design the graphical user Interface and retrieve the data from database.
MEL401.5	Ability to evaluate a case study (business scenario) towards design & develop database applications in a team.

Course Name:	Fluid Mechanics		
Course Code	MEL402		
Faculty Name:	Babitha Devdas / Dr. Sashikant pawar		
Year	2	Sem	4

CO Number	Course Outcome
MEL402.1	Demonstrate Bernoulli's theorem
MEL402.2	Calculate coefficient of discharge of venturimeter
MEL402.3	Characterize loss coefficient of globe and gate valve
MEL402.4	Estimate minor losses through the piping system
MEL402.5	Observe pressure profile over an aerofoil.
MEL402.6	Verify law of conservation of momentum for a control volume

Course Name:	Industrial Electronics		
Course Code	MEL403		
Faculty Name:	Madhavi S. Pednekar		
Year	2	Sem	4

CO Number	Course Outcome
MEL403.1	Students will be able to identify and operate various electronic instruments and electronic components efficiently with an ease & thorough understanding to perform well in the laboratory.**(Remembering) (Understanding)**
MEL403.2	Students will be able to built and test the characteristics/truth table of various analog & digital circuits and power electronic semiconductor devices. **(Understanding) (Applying)**
MEL403.3	Students will be able to identify and verify the use of selected analog, digital and power electronic semiconductor devices for industrial applications.**(Applying) (Analyzing)**
MEL403.4	Students will be able to demonstrate the working of operational amplifier and timer IC555 in various configurations of analog applications. **(Applying)(Analyzing)**
MEL403.5	Students will be able to analyse the characteristics of electronic semiconductor device, electrical machines, digital circuits using basic programming of microcontroller MSP430 for various applications like motor speed control, light dimmer, switching, verification of truth table etc.**(Analyzing)**
MEL403.6	Students will be able to develop and demonstrate their thinking ability by designing simple applications to built around these components. (Mini project application design) **(Creation)**

Course Name:	Kinematics of Machinery		
Course Code	MEL404		
Faculty Name:	Sachin S / Bajirao N		
Year	2	Sem	4

CO Number	Course Outcome
MEL404.1	Define concepts of kinematics and kinetics and determine motion parameters of various mechanisms.
MEL404.2	Explain the kinematic configuration to illustrate working of various mechanisms.
MEL404.3	Use the basics of kinematics to power transmission devices and calculate their various working parameters.

TE Mech

Course Name:	Metrology and Quality Engineering		
Course Code	MEC601		
Faculty Name:	Madan K / Mahesh Rajwade		
Year	3	Sem	6

CO Number	Course Outcome
MEC601.1	Identify significance of Inspection techniques, construction & working of measuring instruments in relation with concept of Quality and Quality control.
MEC601.2	Classify and select Inspection Technique and Measuring Instruments in lias with manufacturing Process and also select appropriate SQC Tool according to the specific applications and type of data aquired
MEC601.3	Practice Measurement activities using appropriate measurement tool, apply suitable sqc tool and prepare a control chart from statistical data
MEC601.4	Calculate the gauge dimension and determine tolerances depending upon the fit required.
MEC601.5	Analyse the results obtained from the control chart and comment on the stability of the manufacturing process

Course Name:	Machine Design I		
Course Code	MEC602		
Faculty Name:	Mahesh / Bajirao / Hemant Hogade		
Year	3	Sem	6

CO Number	Course Outcome
MEC602.1	Describe the basic considerations while designing the different types of mechanical joints, curved beams, power screws, shafts, springs and couplings
MEC602.2	Explain the type of loading conditions (static or fluctuating), on the component, during working conditions and identify the induced stresses along with the mode of failure
MEC602.3	Use/Perform design calculations based on strength concept referring design data books and choose the standard dimension
MEC602.4	Identify and model a machine element and analyse the stresses induced using application software

Course Name:	Finite Element Analysis		
Course Code	MEC603		
Faculty Name:	Shreeprasad M / Swapnil G		
Year	3	Sem	6

CO Number	Course Outcome
MEC603.1	Solve differential equations using weighted residual methods
MEC603.2	Develop the finite element equations to model engineering problems governed by second order differential equations
MEC603.3	Apply the basic finite element formulation techniques to solve engineering problems by using one dimensional elements
MEC603.4	Apply the basic finite element formulation techniques to solve engineering problems by using two dimensional elements
MEC603.5	Apply the basic finite element formulation techniques to find natural frequency of single degree of vibration system
MEC603.6	Use commercial FEA software ANSYS Mechanical APDL, to solve problems related to mechanical engineering

Course Name:	Refrigiration and Air Conditioning		
Course Code	MEC604		
Faculty Name:	Cleta P / Jenifer A		
Year	3	Sem	6

CO Number	Course Outcome
MEC604.1	Classify and Explain the various refrigeration systems, their components and its functions and the applications for the same in various industries.
MEC604.2	Classify and Designate refrigerants, Explain the protocols and its impact on the scciety and environment.
MEC604.3	Classify and Explain the psychrometric properties and psychrometric processes for various air conditioning systems.
MEC604.4	Compute the performance of refrigeration systems like air and vapour refrigeration systems using refrigerant property tables and refrigerant chart.
MEC604.5	Calculate the psychrometric properties and performance of air conditioning systems for various psychrometric processes.
MEC604.6	Design Air Conditioning system using cooling load calculations

Course Name:	Mechatronics		
Course Code	MEDLO6021		
Faculty Name:	Deepika Gupta		
Year	3	Sem	6

CO Number	Course Outcome
MEDLO6021.1	Learner will be able to identify the suitable sensor and actuator for a mechatronics system
MEDLO6021.2	Learner will be able to select suitable logic controls
MEDLO6021.3	Learner will be able to analyse continuous control logics for standard input conditions
MEDLO6021.4	Learner will be able to develop ladder logic programming
MEDLO6021.5	Learner will be able to Design hydraulic/pneumatic circuits
MEDLO6021.6	Learner will be able to Design a mechatronic system

Course Name:	Robotics		
Course Code	MEDLO6022		
Faculty Name:	B S Chavan		
Year	3	Sem	6

CO Number	Course Outcome
MEC606.1	Identify basic Anatomy of a robot and its control
MEC606.2	Classify various design principles of robotics through forward and inverse kinematics applied to workspace analysis and trajectory planning.
MEC606.3	Explain robot applications in Industry based on Vision inspection and material handling designs.
MEC606.4	Select suitable sensors and actuators for interfacing, based on static and dynamic characteristics.
MEC606.5	Compare various aspects of a robot and its role, as a Humanoid

Course Name:	Metrology and Quality Engineering		
Course Code	MEL601		
Faculty Name:	Madan K / Mahesh Rajwade		
Year	3	Sem	6

CO Number	Course Outcome
MEL601.1	Measure linear and angular dimensions
MEL601.2	Measure surface roughness, flatness
MEL601.3	Measure various parameters of gear tooth profile
MEL601.4	Use optical profile projector for measurement
MEL601.5	Use various instruments for measurement of screw threads

Course Name:	Machine Design I		
Course Code	MEL602		
Faculty Name:	Mahesh / Bajirao / Hemant Hogade		
Year	3	Sem	6

CO Number	Course Outcome
MEL602.1	Design shaft under various conditions
MEL602.2	Design Knuckle Joint / cotter joint
MEL602.3	Design Screw Jack/C-clamp along with frame
MEL602.4	Design Flexible flange couplings/ Leaf spring
MEL602.5	Convert design dimensions into working/manufacturing drawing

Course Name:	Finite Element Analysis		
Course Code	MEL603		
Faculty Name:	Shreeprasad M / Swapnil G / Johnson / Dipikia / Hemant		
Year	3	Sem	6

CO Number	Course Outcome
MEL603.1	To introduce the concepts of Mathematical Modeling of Engineering Problems.
MEL603.2	To study the applicability of FEM to a range of Engineering Problems.
MEL603.3	To acquaint with applications of numerical techniques for solving problems using weighted residual methods
MEL603.4	To be able to apply FEM concepts to any engineering problems and predict the performance of the system under certain specific characteristic
MEL603.5	To learn and use leading FEA software tool in market i.e. ANSYS Mechanical APDL and perform industry like analysis through course project
MEL603.6	To apply FEA concepts to solve 1D, 2D problems and understand coordinate transformation matrix, Jacobean matrix etc.

Course Name:	Refrigiration and Air Conditioning		
Course Code	MEL604		
Faculty Name:	Cleta P / Jenifer A		
Year	3	Sem	6

CO Number	Course Outcome
MEL604.1	Demonstrate fundamental principles of refrigeration and air conditioning
MEL604.2	Identify and locate various important components of the refrigeration and air conditioning system
MEL604.3	Represent various refrigeration and air conditioning processes using refrigerant chart or psychometric chart
MEL604.4	Calculate the preformance of the refrigerating and airconditioning system
MEL604.5	

Course Name:	Mechatronics		
Course Code	MEL605		
Faculty Name:	B S Chavan / Deepika Gupta		
Year	3	Sem	6

CO Number	Course Outcome
MEL605.1	Demonstrate implementation of interfacing sensors and actuators using micro-controllers
MEL605.2	Demonstrate discrete control system using PLC micro-controller
MEL605.3	Implement program to PLC system and demonstrate its application
MEL605.4	Develop pneumatic circuits for specific application
MEL605.5	Develop electro-pneumatic circuits for specific application

BE Mech

Course Name:	Design of Mechanical Systems		
Course Code	MEC801		
Faculty Name:	Johnson Nellisery/ Pradeepkumar		
Year	4	Sem	8

CO Number	Course Outcome
MEC801.1	Describe the principles and applications of EOT crane, belt conveyors, gear boxes, I . C engines compressors and pumps.
MEC801.2	Select the basic components to form a suitable power transmission system to satisfy given requirements and then will be able to evolve detail design and calculation of the basic
MEC801.3	Evaluate the types of loading and resulting stresses needed while solving design and then design formulation by using the allowable or permissible values to examine the designed
MEC801.4	Compare and choose appropriate drives by justifying the metallurgical and other technical aspect of the system design
MEC801.5	Minimize the characteristic dimension of the system condsideraing space requirment.

Course Name:	Industrial Engineering and Management		
Course Code	MEC802		
Faculty Name:	Sandeep Dasgupta/ Sandeep Sabnis		
Year	4	Sem	8

CO Number	Course Outcome
MEC802.1	Students will be able to list down objective of industrial engineering, various FMS layouts, name the contributors of IE, define productivity & factors influencing productivity, value engg., & value analysis, work study, method study, work measurement, ergonomics and recall concepts of PMTS, NPV, IRR etc.
MEC802.2	Students will be able to demonstrate the factors influencing the productivity, explain the productivity improvement techniques, bio-mechanics, anthropometry, compare the value engg.& value analysis, illustrate significance of ergonomics in IE, depreciation, balance sheet etc.
MEC802.3	Students will be able to apply the knowledge of mathematics, science, and engineering in determining productivity, performance rating, standard time of work, NPV, IRR, develop flow charts for real life jobs, value streaming of common product, identify various plant layouts, construct the annuity table.
MEC802.4	Students will be able to compare value analysis & value engg., job evaluation & merit rating, assets & liability, distinguish between production & productivity, classify various method study techniques, examine line balancing & ergonomical aspects of working environments, categorize various plant layout and examine a balance sheet.
MEC802.5	Students will be able to assess scope of improvement in work study, decide the investment decision based on NPV, evaluate the various jobs in an organization, compare balance sheet & P/L a/c.

Course Name:	Refrigeration and Air Conditioning		
Course Code	MEC803		
Faculty Name:	Dr Padiya Y / Pawan K		
Year	4	Sem	8

CO Number	Course Outcome
MEC803.1	State different terminologies and components used in refrigeration and air conditioning systems
MEC803.2	Explain the different terminologies, components and working principal of refrigeration and air conditioning unit
MEC803.3	Interpret the performance of refrigeration and air conditioning unit at given operating conditions.
MEC803.4	Compare the performance of refrigeration and air conditioning unit at different operating conditions
MEC803.5	Select refrigeration and air conditioning unit for given operating conditions
MEC803.6	Design of basic air conditioning systems

Course Name:	Renewable Energy Sources		
Course Code	MEE8022		
Faculty Name:	Pawan kulkarni		
Year	4	Sem	8

CO Number	Course Outcome
MEE8022.1	Exemplify to recognize the value of worldwide and national renewable energy need, importance, hurdles/ challenges for implementation, potential, strategic plan and promoting socio-economic policies
MEE8022.2	Determine parameters and illustrate considerations related to analysis, evaluation and design of renewable energy sources and applications
MEE8022.3	Summarize basic principle, features and recent investigations of various renewable energy sources and related equipment
MEE8022.4	Explain principles of and procedure for energy conservation and management

Course Name:	Project Management		
Course Code	MEE8023		
Faculty Name:	Sandeep Sabnis		
Year	4	Sem	8

CO Number	Course Outcome
MEE8023.1	Student defines project and describes project selection methods, differentiates between project and operation, types of project life cycles, various organisational types and stage gate
MEE8023.2	Student selects project investment options based on selection models such as NPV,IRR scoring etc.Translates the project scope using WBS into workable modules and developes
MEE8023.3	Student developes a time plan for the project using scheduling techniques like PERT, CPM, GANTT Chart etc. and reorganises project using techniques to reschedule, replan project
MEE8023.4	Student practices monitoring and control of the project using techniques like Earned Value Management and Control ratio
MEE8023.5	Student describes various project termination methods and summarize lessons learned from the project and documents the same for future reference

Course Name:	Process Equipment Design		
Course Code	MEE8027		
Faculty Name:	Dr.Rao		
Year	4	Sem	8

CO Number	Course Outcome
MEE8027.1	1. Understand basics knowledge, operating parameters, basic considerations, essentiality/importantance of various documents
MEE8027.2	2. Use standards and various codes for designing process equipment and develop datasheets
MEE8027.3	3. Design of various components of process equipment
MEE8027.4	4. Analyse and provide the right design
MEE8027.5	5. Demonstatre the proficiency in design of process equipment as per the process requirement

Course Name:	World Class Manufacturing
Course Code	MEE80210
Faculty Name:	Madan Kulkarni

Year	4	Sem	8	
CO Number	**Course Outcome**			
MEE80210.1	Demonstrate the relevance and basics of World Class Manufacturing			
MEE80210.2	Identify the factors of competitiveness and performance measures based on which, global manufacturing success is bench marked			
MEE80210.3	Draw current Status of Indian Manufacturing scenario and design and develop a roadmap to achieve world class manufacturing status			