DON BOSCO INSTITUTE OF TECHONOLGY, KURLA, MUMBAI

Department of Mechanical , (Odd semester, 2016-17)	
SE Mech	

Course Name:	Applied Mathematics III
Course Code	MEC301
Faculty Name:	Pranjalee Kurundkar
Year	2 **Sem** 3

CO Number	**Course Outcome**
MEC301.1	Students will be able to (i) Obtain Laplace Transforms for a given standard function of 't' (ii) Obtain Inverse Laplace Transforms for a given simple function of 's' (iii) Define Karl Pearson's correlation coefficient and Spearman's rank correlation coefficient (iv) Define harmonic functions and Orthogonal trajectories
MEC301.2	Students will be able to (i) Obtain the Laplace Transforms, Inverse Laplace Transforms of combinations of standard functions using the properties of Laplace and Inverse Transforms. (ii) Obtain Karl Pearson's correlation coefficient and Spearman's rank correlation coefficient (iii) Obtain the equations of two lines of regression (iv) Fit the curve by the method of least squares (v) Understand the properties of orthogonal and orthonormal functions (vi) Obtain Fourier series, half-range Fourier series and Fourier sine and cosine series of periodic functions. (vii) Obtain complex form fourier series of functions. (viii) Find Cauchy – Riemann equations to verify if a function is analytic (ix) Obtain the harmonic conjugate and orthogonal trajectory of given family. (x) Define Conformal mapping and obtain the image under given standard transformation (xi) Define and obtain bilinear transformation and its fixed points. (xii) Evaluate the line integral of a function of complex variable. (xiii) Obtain Taylor's and Laurent's series expansion (xiv) Define singularities of complex valued functions.
MEC301.3	Students will be able to (i) Apply Laplace and Inverse Laplace transform concepts to evaluate integrals (ii) Solve initial and boundary value problems using Laplace transform. (iii) Apply the concept of Fourier series to find solution of Wave,Heat and Laplace equations (iv) Using Numerical method find the solution of partial differential equations.
MEC301.4	Students will be able to (i) Understand and analyze the complex valued functions. (ii) Evaluate integrals using Cauchy's integral theorem,Cauchy's integral formula and Residue theorem.

Course Name:	Thermodynamics
Course Code	MEC302
Faculty Name:	Jenifer Abin / Anil Sabat
Year	2 **Sem** 3

CO Number	**Course Outcome**
MEC302.1	Describe the basic concepts of thermodynamics related to quality and quantity of energy, heat and work, enthalpy and entropy.
MEC302.2	Identify system boundaries and extend the application of the laws of thermodynamics to various real life systems.
MEC302.3	Interpret the basic power cycles and calculate parameters like work transfer and efficiency.

Course Name:	Strength of Materials
Course Code	MEC303
Faculty Name:	Swapnil G/ Mandar Damble
Year	2 **Sem** 3

CO Number	**Course Outcome**
MEC303.1	State concepts of various types of stresses induced in given member under given loading conditions.
MEC303.2	Describe the concept of shear force diagram, bending moment diagram, deflection in beams and stress distribution in a member under different loading conditions including shafts subjected to torsion.
MEC303.3	Compute strain energy in mechanical elements and stresses in thin shells.
MEC303.4	Calculate critical load for columns subjected to buckling & crushing.

Course Name:	Production Process I
Course Code	MEC304
Faculty Name:	Dipika Gupta / Sudhkar Ambhore
Year	2 **Sem** 3

CO Number	**Course Outcome**
MEC304.1	Student will be able to identify and describe the basic concept of different primary forming processes like Metal casting, forging, Rolling and welding.
MEC304.2	Student will be able to Distinguish between conventional and modern machine tools and select best machine tool for respective machining processes.
MEC304.3	Student will be able to illustrate the concept of producing polymer components and ceramic components.
MEC304.4	Student will be able to illustrate the Student will be able to solve numerical on riser design, rolling and welding.

Course Name:	Computer Aided Machine Drawing
Course Code	MEL305
Faculty Name:	Hemant H / Johnson V
Year	2 **Sem** 3

CO Number	**Course Outcome**
MEL305.1	Identify the different Conventional representation of different section lines w.r.t.materials. and threaded designation and to prepare 2D drawing, Nuts, Bolts, Keys, Cotter screw,springs etc.
MEL305.2	Illustrate curves of intersection for different solids which penetrate each other w.r.t. their axis and Illustrate true shape and size of inclined surface on the Auxiliary plane.
MEL305.3	Preparation of detail drawing and assembly drawing of joints, shaft couplings, Bearings, Pulleys and pipe joints, Valves and IC Engine parts, Jigs and fixtures with geometric and dimensional tolerances indicating various types of fits.
MEL305.4	Inspection of actual dimensions from a physical model (e.g. cotter joint and other machine element) and preparing 2D and 3D models from those dimensions.
MEL305.5	Construct 3D model assembly in Solid Works platform and decide the tolerance values for the mating parts.

Course Name:	Database and information retrieval sys
Course Code	MEL306
Faculty Name:	Sana Sheikh
Year	2 **Sem** 3

CO Number	**Course Outcome**
MEL306.1	Ability to define and explain the basics of DBMS, RDBMS and design the data model and logical schema of databases including the E-R me
MEL306.2	To apply SQL the standard language for basic and nested queries.
MEL306.3	To understand the functional dependencies and analyze it during design of the database.
MEL306.4	To design the graphical user Interface and retrieve the data from database.
MEL306.5	Ability to evaluate a case study (business scenario) towards design & develop database applications in a team.

Course Name:	I C Engines	
Course Code	MEC501	
Faculty Name:	Sandeep Sabnis / Pawan K	
Year	3	Sem	5

CO Number	Course Outcome
MEC501.1	Differentiate constructional features and operations of 4 stroke & 2 stroke S.I. & C.I. engines.
MEC501.2	Identify and explain construction and working of various subsystems and accessories of I C Engines such as fuel injection system, ignition system, lubrication etc.
MEC501.3	Plot and analyze performance of engines using engine testing and evaluation methods
MEC501.4	Understand and explain Impact of I C engines on environment and air pollution and knows the worldwide regulatory approach of controlling this.
MEC501.5	Describes the recent developments in the I C engines field in terms of new technologies for fuel efficiency, alternate fuels and emission control

Course Name:	Mechanical Measurements and Control	
Course Code	MEC502	
Faculty Name:	B S Chavan / Mahesh R	
Year	3	Sem	5

CO Number	Course Outcome
MEC502.1	Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers for selecting specific measuring instruments and its control systems, depicting a suitable example.
MEC502.2	Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas/Principles for measurement of mass and fluid motion; correlating them by forming a mathematical model and obtaining a Transfer function for a given system.
MEC502.3	Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way to attain iterative capabilities and tackle variety of problems in measuring instruments and Transfer function for a given system.
MEC502.4	Examine and break information into parts/structure by identifying process of measuring instruments operating at mechanical, electrical and electronic control level. Make inferences and find evidence to support generalizations for stabilizing of a given system by varying different variables like damping ratio, gain, poles, zeros, frequency etc for a given system under study.
MEC502.5	Present and defend opinions on error analysis by making judgments about information, validity related to measuring instruments integrating mathematical tools like the PID, root locus, bode plot, frequency response for determination of stability of a system

Course Name:	Production Process-III	
Course Code	MEC503	
Faculty Name:	Dr. Rahul / Sudhakar A	
Year	3	Sem	5

CO Number	Course Outcome
MEC503.1	Demonstrate understanding of sheet metal forming and various stress systems involved in metal forming operations.
MEC503.2	Design jigs and fixtures for a given applications.
MEC503.3	Get knowledge about non-conventional machining operations and its application areas.
MEC503.4	Illustrate advanced concepts such as rapid prototyping and Agile manufacturing.

Course Name:	Theory of Machines- II	
Course Code	MEC504	
Faculty Name:	Pradeep Suryavanshi / Zishan khan	
Year	3	Sem	5

CO Number	Course Outcome
MEC504.1	Describe working principles of clutches, Brakes and Dynamometers, Governors, Gear Trains and Gyroscope
MEC504.2	Derive the expressions for torque in clutches, Brakes and Dynamometers, Gear Trains and Gyroscope.
MEC504.3	Explain gyroscopic effect on Airplanes, Ships and Automobiles.
MEC504.4	Analyse dynamic forces for Engine and Flywheel.

Course Name:	Heat Transfer	
Course Code	MEC505	
Faculty Name:	Dr. R k Sarangi / Jenifer abin	
Year	3	Sem	5

CO Number	Course Outcome
MEC505.1	and transient.
MEC505.2	Student analyses and estimates heat transfer and designs the equipment for heating and cooling such as furnace, heat treatment, engines, refrigerators, nuclear fuel elements, current carrying conductors, pipe carrying hot/cold fluids etc.
MEC505.3	Student develops mathematical model for each mode of heat transfer to analyze heat transfer in any typical heat exchange equipment.
MEC505.4	Student demonstrates and explains mechanism of boiling and condensation occurring in thermal processes.
MEC505.5	Student classifies, analyses and designs different types of heat exchangers.

Course Name:	Business Communication and Ethics	
Course Code	MEL501	
Faculty Name:	Dr. Mohini / Renjith	
Year	3	Sem	5

CO Number	Course Outcome
MEL501.1	Utilize communication skills effectively in both oral and written form
MEL501.2	Demonstrate knowledge of professional and ethical responsibilities
MEL501.3	Develop an attitude for life-long learning
MEL501.4	Manifest an entrepreneurial approach
MEL501.5	Participate and succeed in Campus placements and competitive examinations like GATE, CET.
MEL501.6	Demonstrate an awareness of contemporary issues
MEL501.7	Develop thinking skills necessary for analysing the impact of engineering solutions on Society

	BE Mech	
Course Name:	Machine Design -II	
Course Code	MEC701	
Faculty Name:	Dilip Manohar / Shreeprasad M	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEC701.1	Select appropriate gears for power transmission on the basis of given load and speed.	
MEC701.2	Design gears based on the given conditions.	
MEC701.3	Select bearings for a given applications from the manufacturers catalogue.	
MEC701.4	Select and/or design belts for given applications.	
MEC701.5	Design cam and follower and clutches	

Course Name:	CAD/CAM/CAE	
Course Code	MEC702	
Faculty Name:	Shreeprasad M / Deepika G	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEC702.1	Identify proper computer graphics techniques for geometric modelling	
MEC702.2	Transform, manipulate objects and store and manage graphical data	
MEC702.3	Design/Model and Prepare part programming applicable to CNC machines using modern tools i.e. Solidworks and MasterCAM	
MEC702.4	Identify the tools for Analysis of a complex engineering component using FEA analysis	
MEC702.5	Use rapid prototyping and tooling concepts in any real life applications for cost effective and fast prototyping	

Course Name:	Mechanical Utility Systems	
Course Code	MEC703	
Faculty Name:	Cleta P / Pawan k	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEC703.1	Describe operating principles of compressors and pumps	
MEC703.2	Compute performance of reciprocating/rotary compressors and pumps	
MEC703.3	Illustrate and analyze characteristic curves of pumps	
MEC703.4	Interpret possibilities of energy conservation in pumping and compressed air systems	

Course Name:	Production Planning and Control	
Course Code	MEC704	
Faculty Name:	Sandeep Dasgupta / Mandar D	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEC704.1	Students will be able to define and list down PPC and its components,inventory control and its methods, forecasting and various techniques,networking techniques.	
MEC704.2	Students will be able to paraphrase different production process,planning process, work order preparation, inventory control, forecasting, LPP and networking techniques.	
MEC704.3	Students will be able to use knowledge of management, quantitative techniques, logical and analytical skill to solve problems of inventory control, forecasting, LPP, project management, networking.	
MEC704.4	Students will be able to compare factors of PPC, EOQ, linear programming models, quantitative forecasting techniques, product scheduling and cost analysis of network diagram.	
MEC704.5	Students will be able to assess the scope of improvement of project duration through network crashing.	

Course Name:	Elective- I (Energy Management)	
Course Code	MEE7013	
Faculty Name:	Sabnis Sandeep	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEE7013.1	Student will be able to summarise and explain need for energy management and economics	
MEE7013.2	Student will be able audit small installation or equipment for energy efficiency and suggest improvements.	
MEE7013.3	Student will be able to describe importance of and analyze efficiency in thermal and electrical utilities.	
MEE7013.4	Student will be able to explain need of waste heat recovery and cogeneration	

Course Name:	Elective- II (CFD)	
Course Code	MEE7015	
Faculty Name:	Dr. P Nambiar	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEE7015.1	Student gains an overview of CFD, its applications, its relative position as compared to traditional experimental and theoretical methods used in the analysis, physical boundary conditions and their implementation in numerical scheme, working of a typical commercial software and its structure.	
MEE7015.2	Student derives and understands the meaning of terms in the set of governing equations, viz. conservation of mass, momentum and energy.	
MEE7015.3	Student develops an understanding of different types of structured and unstructured grids, classification of differential equations, discretization concept and methods of discretizing the equations viz. Taylor series, variational method, Weighted residual method and control or finite volume method and under and over relaxation technique.	
MEE7015.4	Student derives the stream function vorticity formulation for incompressible flow, understands SIMPLE and SIMPLER algorithms, learns how to determine pressure in viscous flow, learns Reynolds averaged equations in turbulent flow and turbulence modelling.	
MEE7015.5	Student understands the finite volume formulation and solves steady one, two and three dimensional diffusion problems, unsteady one and two dimensional diffusion problems and one and two dimensional convection-diffusion problems.	
MEE7015.6	Student discretizes and solves the governing equations with appropriate initial and boundary conditions in steady and unsteady one dimensional conduction, two and three dimensional conduction, steady one and two dimensional convection-diffusion and unsteady one dimensional convection.	

Course Name:	Elective- III (Piping Engineering)	
Course Code	MEE7017	
Faculty Name:	Mahesh Rajwade	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEE7017.1	Discuss different governing codes and dimensional standards for piping commodities and select the appropriate commodities according to the function	
MEE7017.2	Interpret piping drawing symbols and relate the information available in all the supporting documents and drawings	
MEE7017.3	Develop plot plan, equipment layout, Piping layout, piping isometrics and all the relevant layouts making use of the relevant information from other supporting documents	

Course Name:	Elective- IV (Robotics)	
Course Code	MEE70111	
Faculty Name:	B. S. Chavan	
Year	4 **Sem** 7	
CO Number	**Course Outcome**	
MEE70111.1	Describe Metaphor of a Human arm as an Industrial robotic Manipulator, system Anatomy with DOF Constraints, Sensors in Robotics, Tactile Sensors, Proximity & Range Sensors, Sensor Based Systems, Vision systems Equipment. Frame Assignment and classification of Robotics.	
MEE70111.2	Apply Euler's principle for Homogeneous Transformations and Assignment of Frames, Robot Activation and feedback components, Power Transmission and control systems	
MEE70111.3	Use of Image Processing for Machine vision. Robot Programming for path in space, Motion interpolation and Applications.	
MEE70111.4	Practice Robot Kinematics i.e. Forward & reverse. Manipulator Path control (Trajectory planning) and Robot Dynamics.	
MEE70111.5	Root Intelligence & Task Planning Introduction, State space search, Problem reduction, use of predictive logic Means. Ends Analysis, Problem solving, Robot learning, Robot task planning.	
MEE70111.6	Robot application in manufacturing Material transfer, machine loading & un loading, processing operation, Assembly & inspection, robotic Cell design & control, Social issues & Economics of Robotics.	