DON BOSCO INSTITUTE OF TECHNOLOGY, KURLA, MUMBAI

FE (BASIC SCIENCES AND HUMANITIES) DEPARTMENT, (ODD SEMESTER, 2019-20)

Course Name:	**Engineering Mathematics I**		
Course Code	**FEC101**		
Faculty Name:	**Dr. Revathy S. , Mr. Satyanarayan and Ms. Pallavi Mahadik**		
Year	**1**	**Sem**	**I**

CO Number	Course Outcome
FEC101.1	Students will be able to recall different representations and operations of complex numbers; know the statement of De-Moivre's theorem, Inverse and transpose of a matrix, the derivatives of standard functions.
FEC101.2	Students will be able to Identify different types of matrices, identify the real and imaginary parts of complex numbers appearing in the circular functions, Obtain partial derivatives of elementary functions, nth derivative of functions, obtain functional determinant.
FEC101.3	Students will be able to find partial derivatives of implicit and composite functions and also by using Euler's theorem, separate the real and imaginary parts of complex numbers appearing in hyperbolic and logarithmic functions, classify the vectors as linearly independent or dependent, solve the system of linear equations & transcendental equations by numerical methods, obtain limits of indeterminate forms using L-Hospital's rule
FEC101.4	Apply De Moivre's theorem in finding the powers and roots of complex numbers, determine the rank of a matrix and apply the concept in solving the system of linear equations by analytical methods, apply the concept of matrices to coding theory, apply the concept of partial differentiation in finding maxima and minima of functions , apply the concept of Leibnitz's theorem for successive differentiation, apply Taylor's & Maclaurin's series for expansion of functions as series.
FEC101.5	Apply Open source software Scilab to solve system of linear equations using numerical methods and to find maxima minima of functions of two variables.
FEC101.6	Perform mini projects based on Application of Mathematics

Course Name:	**Engineering Physics I**		
Course Code	**FEC102**		
Faculty Name:	**Dr. Vinod Gokarna and Mr.Sameer Hadkar**		
Year	**1**	**Sem**	**I**

CO Number	Course Outcome
FEC102.1	Students will be able to grasp and recall the basic concepts of core Physics topics like Quantum Physics, Crystallography, Semiconductor Physics, Interference in thin films, superconductivity and supercapacitor & Engineering materials and applications.
FEC102.2	Students will be able to understand and describe the basic concepts of Physics topics like Quantum Physics, Crystallography, Semiconductor Physics, Interference in thin films, superconductivity and supercapacitor & Engineering materials and applications.
FEC102.3	Students will be able to relate, integrate knowledge and explain the principles involved with their engineering disciplines like properties of crystal structure and apply them in crystallography using X-ray diffraction techniques, concepts of semiconductor physics and applications of semiconductors in electronic devices, interference in thin films in measurement, properties of Superconductors and Supercapacitors, properties of engineering materials for their current and futuristic frontier applications.
FEC102.4	Students will be able to review, elucidate with examples and apply the fundamental principles of Physics to solve numericals and problems relating to Quantum Physics, Crystallography, Semiconductor Physics, Interference in thin films, superconductivity and supercapacitor & Engineering materials and applications.
FEC102.5	Students will be able to demonstrate and conclude on the experiment performed in topics like Quantum Physics, Crystallography, Semiconductor Physics, Interference in thin films, superconductivity and supercapacitor & Engineering materials and applications.
FEC102.6	Students will be able to perform mini projects which will encourage engineering students to venture into the research field.

Course Name:	**Engineering Chemistry I**		
Course Code	**FEC103**		
Faculty Name:	**Ms.Kartiki B. And Ms. Anice M.**		
Year	**1**	**Sem**	**I**

CO Number	Course Outcome
FEC 103.1	Students will be able to define and recall fundamental concepts in atomic and molecular structures, aromaticity, intermolecular forces, phase rule, water quality, polymers.

FEC 103.2	Students will be able to state aromaticity, phase rule terms and relative strengths of intermolecular forces, properties and applications of water, polymers in engineering field.
FEC 103.3	Students will be able to describe the various methods or processes involved in the softening and purification of water, synthesis and fabrication of polymers and will be able to explain aromaticity of compounds, one component and two component sytems using phase rule, formation of diatomic molecules based on molecular orbital theory and the intermolcular forces in different systems.
FEC 103.4	Students will be able to suggest/ justify the appropriate methods for treatment of water, fabrication of polymers, justify the properties of molecules based on molcular orbital theory, reason out the effect of intermolecular forces on physical properties of molecules, interpret and infer aromaticity of organic compounds.
FEC 103.5	Students will be able to analyze data, solve numerical problems based on estimation of hardness, COD, BOD of water, determination of molecular weight of polymers and determination of composition of an alloy in phase rule.
FEC 103.6	Seminar/Group Activity : Students will be able to review research literature, analyse complex problems, present new concepts, ideas, propose hypothesis, design experiments.

Course Name:	**Engineering Mechanics**			
Course Code	**FEC104**			
Faculty Name:	**Ms.Georgena K. And Mr.Juned A.**			
Year	**1**	**Sem**	**I**	

CO Number	**Course Outcome**
FEC 104.1	Students will be able to state the fundamental laws, basic principles and definitions that describe the state of rest and motion of rigid bodies under the influence of forces.
FEC 104.2	Students will be able to convert a system of coplanar/Non-coplanar forces into its equivalent resultant force system using the understanding of FBD,support reactions, equilibrium equations and distributed loads.
FEC 104.3	Students will be able to demonstrate the understanding of basic concepts and principles learnt in the subject.
FEC 104.4	Students will be able to apply the equilibrium equations for problems on static bodies/structures to determine the internal forces and external forces(friction etc) in magnitude and direction.
FEC 104.5	Students will be able to interpret the different types of motion performed by a particle using kinematic and kinetic analysis and solve for the motion parameters(velocity, acceleration,time etc) in magnitude and direction.
FEC 104.6	Students will be able to apply the basic principles/laws learnt in the subject to determine unknown parameters.

Course Name:	**Basic Electrical Engineering**			
Course Code	**FEC105**			
Faculty Name:	**Ms.Gejo G. , Ms.Anjum K., Dr. Mande, Ms. Pratibha D. And Ms. Lakshmi**			
Year	**1**	**Sem**	**I**	

CO Number	**Course Outcome**
FEC 105.1	The students will be able to define or state the basic principle and definations of an electrical network(DC+AC), basic operation of single phase transformer and DC motors and Generators
FEC 105.2	The students will be able to explain the fundamentals of DC circuits, single phase AC circuits, three phase AC circuits , construction of transformers and DC motors and generators
FEC 105.3	The students will be able to apply the fundamental laws of electricity to solve any given electrical circuit
FEC 105.4	The students will be able to analyze the various parameters for the given AC (single andthree phase) and DC circuits and the performance of single phase transformer
FEC 105.5	The students will be able to evaluate the various parameters for the given AC (single and three phase) and DC circuits and single phase transformer

FEC 105.6	The students will be able to design/ simulate AC and DC circuits and analyze various parameters related to AC and DC Networks.			
Course Name:	**Engineering Physics I**			
Course Code	**FEL101**			
Faculty Name:	**Dr. Vinod Gokarna and Mr.Sameer Hadkar**			
Year	**1**	**Sem**	**I**	
CO Number	**Course Outcome**			
FEL 101.1	Perform the experiments based on interference in thin films and analyze the results.			
FEL 101.2	Verify the theory learned in the module crystallography.			
FEL 101.3	Perform the experiments on various semiconductor devices and analyze their characteristics.			
FEL 101.4	Perform simulation study on engineering materials.			
Course Name:	**Engineering Chemistry I**			
Course Code	**FEL102**			
Faculty Name:	**Ms.Kartiki B. And Ms. Anice M.**			
Year	**1**	**Sem**	**I**	
CO Number	**Course Outcome**			
FEL 102.1	Students will be able to define and recall different properties and fundamental concepts related to water hardness, molecular weight of polymers, phase rule/ lubricating oils.			
FEL 102.2	Students will be able to describe the procedure/ process involved in determining the water hardness, molecular weight of polymers, and properties of lubricating oils /eutectic composition and temperature of a binary mixture based on phase rule.			
FEL 102.3	Students will be able to explain the various mechanisms and processes involved in the determining the water hardness, molecular weight of polymers,and properties of lubricating oils / eutectic composition and temperature of a binary mixture based on phase rule.			
FEL 102.4	Students will be able to reason out and justify the efficacy of softening method of water, suitability of lubricant for engineering application.			
FEL 102.5	Students will be able to perform experiments, obtain data, solve numerical problems, analyze data and draw inference on basis of their study on water,polymers and lubricants/phase rule			
Course Name:	**Engineering Mechanics**			
Course Code	**FEL103**			
Faculty Name:	**Ms.Georgena K. And Mr.Juned A.**			
Year	**1**	**Sem**	**I**	
CO Number	**Course Outcome**			

FEL 103.1	Students will be able to explain the fundamental laws, basic principles state of rest and in motion of rigid bodies under the influence of forces.
FEL 103.2	Students will be able to solve for support reactions.
FEL 103.3	Students will be able to apply the various procedures and techniques for the experiments .
FEL 103.4	Students will be able to apply the mathematical concepts/equations/laws to obtain unknown forces.
FEL 103.5	Students will be able to apply the mathematical concepts/equations/laws for unknown motion parameters.
FEL 103.6	Students will be able to analyse kinematics and kinetics of particles.

Course Name:	**Basic Electrical Engineering**			
Course Code	**FEL104**			
Faculty Name:	**Ms.Gejo G. , Ms.Anjum K., Dr. Mande, Ms. Pratibha D. And Ms. Lakshmi**			
Year	**1**	**Sem**	**I**	

CO Number	**Course Outcome**
FEL 104.1	The students will be able to define or state the basic principle and definations of an electrical network(DC+AC), basic operation of single phase transformer and DC motors and Generators
FEL 104.2	The students will be able to explain the fundamentals of DC circuits, single phase AC circuits, three phase AC circuits , construction of transformers and DC motors and generators
FEL 104.3	The students will be able to apply the fundamental laws of electricity to solve any given electrical circuit
FEL 104.4	The students will be able to analyze the various parameters for the given AC (single andthree phase) and DC circuits and the performance of single phase transformer
FEL 104.5	The students will be able to evaluate the various parameters for the given AC (single and three phase) and DC circuits and single phase transformer
FEL 104.6	The students will be able to design/ simulate AC and DC circuits and analyze various parameters related to AC and DC Networks.