

Department of Mechanical Engineering

Course Outcomes

Academic Year	Name of Course	Course Code	Course Outcomes	
FE	Engineering Graphics	ESC-103-MEC	CO ESC-103-MEC.1	Explain the fundamentals of Engineering Graphics and basic principles of geometric construction and apply the knowledge of Projections, Methods to prepare the drawings for points and lines.
			CO ESC-103-MEC.2	Apply the types of Projections, Methods to prepare the drawings for planes.
			CO ESC-103-MEC.3	Construct the various engineering curves and illustrate the application of various engineering curves and draw the development of the lateral surface of solid.
			CO ESC-103-MEC.4	Apply the concept of orthographic projection of an object to draw several 2D views for visualizing the physical state of the object.
			CO ESC-103-MEC.5	Apply the visualization skill to draw an isometric projection from given orthographic views.

SE	Solid Mechanics	202041	CO 202041.1	DEFINE various types of stresses and strain developed on determinate and indeterminate members.
			CO 202041.2	DRAW Shear force and bending moment diagram for various types of transverse loading and support.
			CO 202041.3	COMPUTE the slope & deflection, bending stresses and shear stresses on a beam.
			CO 202041.4	CALCULATE torsional shear stress in shaft and buckling on the column.
			CO 202041.5	APPLY the concept of principal stresses and theories of failure to determine stresses on a 2-D element.
			CO202041.6	UTILIZE the concepts of SFD & BMD, torsion and principal stresses to solve combined loading application based problems.
SE	Solid Modeling and Drafting	202042	CO 202042.1	UNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management
			CO 202042.2	UTILIZE knowledge of curves and surfacing features and methods to create complex solid geometry
			CO202042.3	CONSTRUCT solid models, assemblies using various modeling techniques & PERFORM mass property analysis, including creating and using a coordinate system.
			CO202042.4	APPLY geometric transformations to simple 2D geometries.
			CO 202042.5	USE CAD model data for various CAD based engineering applications viz. production drawings, 3D printing, FEA, CFD, MBD, CAE, CAM, etc.
			CO202042.6	USE PMI & MBD approach for communication
SE	Engineering Thermodynamics	202043	CO202043.1	DESCRIBE the basics of thermodynamics with heat and work interactions.

			CO 202043.2	APPLY laws of thermodynamics to steady flow and non-flow processes.
			CO202043.3	APPLY entropy, available and non available energy for an Open and Closed System
			CO202043.4	DETERMINE the properties of steam and their effect on performance of vapour power cycle. .
			CO202043.5	ANALYSE the fuel combustion process and products of combustion.
			CO202043.6	SELECT various instrumentations required for safe and efficient operation of steam generator.
SE	Engineering Materials and Metallurgy	202044	CO202044.1	COMPARE crystal structures and ASSESS different lattice parameters.
			CO202044.2	CORRELATE crystal structures and imperfections in crystals with mechanical behaviour of materials.
			CO202044.3	DIFFERENTIATE and DETERMINE mechanical properties using destructive and non-destructive testing of materials.
			CO 202044.4	IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain boundary, and degree of freedom. etc.
			CO 202044.5	ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy.
			CO 202044.6	SELECT appropriate materials for various applications.
SE	Electrical and Electronics Engineering	203156	CO203156.1	APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems
			CO 203156.2	DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board

			CO203156.3	UNDERSTAND the operation of DC motor, its speed control methods and braking
			CO203156.4	DISTINGUISH between types of three phase induction motor and its characteristic features
			CO203156 .5	EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems
			CO203156.6	CHOOSE energy storage devices and electrical drives for EVs
SE	Geometric Dimensioning and Tolerancing Lab	202045	CO202045.1	SELECT appropriate IS and ASME standards for drawing
			CO 202045.2	READ & ANALYSE variety of industrial drawings
			CO202045.3	APPLY geometric and dimensional tolerance, surface finish symbols in drawing
			CO 202045.4	EVALUATE dimensional tolerance based on type of fit, etc
			CO 202045.5	SELECT an appropriate manufacturing process using DFM, DFA, etc.
SE	Engineering Mathematics - III	207002	CO207002.1	SOLVE higher order linear differential equations and its applications to model and analyze mass spring systems.
			CO 207002.2	APPLY Integral transform techniques such as Laplace transform and Fourier transform to solve differential equations involved in vibration theory, heat transfer and related mechanical engineering applications.
			CO 207002.3	APPLY Statistical methods like correlation, regression in analyzing and interpreting experimental data applicable to reliability engineering and probability theory in testing and quality control.
			CO207002.4	PERFORM Vector differentiation & integration, analyze the vector fields and APPLY to fluid flow problems.

			CO207002 .5	SOLVE Partial differential equations such as wave equation, one and two dimensional heat flow equations.
SE	Kinematics of Machinery	202047	CO202047.1	APPLY kinematic analysis to simple mechanisms
			CO202047.2	ANALYZE velocity and acceleration in mechanisms by vector and graphical method
			CO202047.3	SYNTHESIZE a four bar mechanism with analytical and graphical methods
			CO202047.4	APPLY fundamentals of gear theory as a prerequisite for gear design
			CO202047.5	CONSTRUCT cam profile for given follower motion
SE	Applied Thermodynamics	202048	CO202048.1	DETERMINE COP of refrigeration system and ANALYZE psychrometric processes.
			CO202048.2	DISCUSS basics of engine terminology, air standard, fuel air and actual cycles.
			CO202048.3	IDENTIFY factors affecting the combustion performance of SI and CI engines.
			CO202048.4	DETERMINE performance parameters of IC Engines and emission control.
			CO202048.5	EXPLAIN working of various IC Engine systems and use of alternative fuels.
			CO202048.6	CALCULATE performance of single and multi stage reciprocating compressors and DISCUSS rotary positive displacement compressors
SE	Fluid Mechanics	202049	CO202049.1	DETERMINE various properties of fluid
			CO202049.2	APPLY the laws of fluid statics and concepts of buoyancy
			CO202049.3	IDENTIFY types of fluid flow and terms associated in fluid kinematics

			CO202049.4	APPLY principles of fluid dynamics to laminar flow
			CO202049.5	ESTIMATE friction and minor losses in internal flows and DETERMINE boundary layer formation over an external surface
			CO202049.6	CONSTRUCT mathematical correlation considering dimensionless parameters, also ABLE to predict the performance of prototype using model laws
SE	Manufacturing Processes	202050	CO202050.1	SELECT appropriate moulding, core making and melting practice and estimate pouring time, solidification rate and DESIGN riser size and location for sand casting process
			CO202050.2	UNDERSTAND mechanism of metal forming techniques and CALCULATE load required for flat rolling
			CO202050.3	DEMONSTRATE press working operations and APPLY the basic principles to DESIGN dies and tools for forming and shearing operations
			CO202050.4	CLASSIFY and EXPLAIN different welding processes and EVALUATE welding characteristics.
			CO202050.5	DIFFERENTIATE thermoplastics and thermosetting and EXPLAIN polymer processing techniques
			CO202050.6	UNDERSTAND the principle of manufacturing of fibre-reinforce composites and metal matrix composites
SE	Machine Shop	202051	CO 20205.1	PERFORM welding using TIG/ MIG/ Resistance/Gas welding technique
			CO 202051.2	MAKE Fibre-reinforced Composites by hand lay-up process or spray lay-up techniques
			CO 202051.3	PERFORM cylindrical/surface grinding operation and CALCULATE its machining time

			CO 202051.4	DETERMINE number of indexing movements required and acquire skills to PRODUCE a spur gear on a horizontal milling machine
			CO 202051.5	PREPARE industry visit report
			CO 202051.6	UNDERSTAND procedure of plastic processing
TE	Numerical and Statistical Methods	302041	CO302041.1	SOLVE system of equations using direct and iterative numerical methods.
			CO302041.2	ESTIMATE solutions for differential equations using numerical techniques.
			CO302041.3	DEVELOP solution for engineering applications with numerical integration.
			CO302041.4	DESIGN and CREATE a model using a curve fitting and regression analysis.
			CO302041.5	APPLY statistical Technique for quantitative data analysis.
			CO302041.6	DEMONSTRATE the data, using the concepts of probability and linear algebra.
TE	Heat and Mass Transfer	302042	CO302042.1	ANALYZE & APPLY the modes of heat transfer equations for one dimensional thermal system.
			CO302042.2	DESIGN a thermal system considering fins, thermal insulation and & Transient heat conduction.
			CO302042.3	EVALUATE the heat transfer rate in natural and forced convection & validate with experimentation results.
			CO302042.4	INTERPRET heat transfer by radiation between objects with simple geometries, for black and grey surfaces.
			CO302042.5	ABILITY to analyze the rate of mass transfer using Fick's Law of Diffusion and understands mass diffusion in different coordinate systems.

			CO302042.6	DESIGN & ANALYSIS of heat transfer equipments and investigation of its performance
TE	Design of Machine Elements	302043	CO302043.1	DESIGN AND ANALYZE the cotter and knuckle Joints, levers and components subjected to eccentric loading.
			CO302043.2	DESIGN shafts, keys and couplings under static loading conditions.
			CO302043.3	ANALYZE different stresses in power screws and APPLY those in the procedure to design screw jack.
			CO302043.4	EVALUATE dimensions of machine components under fluctuating loads.
			CO302043.5	EVALUATE & INTERPRET the stress developed on the different type of welded and threaded joints.
			CO302043.6	APPLY the design and development procedure for different types of springs.
TE	Mechatronics	302044	CO302044.1	DEFINE key elements of mechatronics, principle of sensor and its characteristics.
			CO302044.2	UTILIZE concept of signal processing and MAKE use of interfacing systems such as ADC, DAC, Digital I/O.
			CO302044.3	DETERMINE the transfer function by using block diagram reduction technique.
			CO302044.4	EVALUATE Poles and Zero, frequency domain parameter for mathematical modeling for mechanical system.
			CO302044.5	APPLY the concept of different controller modes to an industrial application.
			CO302044.6	DEVELOP the ladder programming for industrial application.
TE	Machining Science & Technolog	302045-B	CO302045-B.1	DEFINE metal cutting principles and mechanics of metal cutting and tool life.
			CO302045-B.2	DESCRIBE features of gear and thread manufacturing processes.

	y		CO302045-B.3	SELECT appropriate grinding wheel and demonstrate the various surface finishing processes.
			CO302045-B.4	SELECT appropriate jigs/fixtures and to draw the process plan for a given component
			CO302045-B.5	SELECT & EVALUATE various parameters of process planning.
			CO302045-B.6	GENERATE CNC program for Turning / Milling processes and generate tool path using CAM software.
TE	Digital Manufacturing Laboratory	302046	CO302046.1	DEVELOP a component using conventional machines, CNC machines and Additive Manufacturing Techniques.
			CO302046.2	ANALYZE cutting tool parameters for machining given job.
			CO302046.3	DEMONSTRATE simulation of manufacturing process using Digital Manufacturing Tools.
			CO302046.4	SELECT and DESIGN jigs and Fixtures for a given component.
			CO302046.5	DEMONESTRATE different parameters for CNC retrofitting and reconditioning.
TE	Skill Development	302047	CO302047.1	APPLY& DEMONSTRATE procedure of assembly & disassembly of various machines.
			CO302047.2	DESIGN & DEVELOP a working/model of machine parts or any new product.
			CO302047.3	EVALUATE fault with diagnosis on the machines, machine tools and home appliances.
			CO302047.4	IDENTIFY & DEMONSTRATE the various activities performed in an industry such as maintenance, design of components, material selection.
TE	Artificial Intelligence & Machine	302049	CO 302049.1	DEMONSTRATE fundamentals of artificial intelligence and machine learning.

	Learning		CO302049.2	APPLY feature extraction and selection techniques.
			CO 302049.3	APPLY machine learning algorithms for classification and regression problems.
			CO302049.4	DEVISE AND DEVELOP a machine learning model using various steps.
			CO 302049.5	EXPLAIN concepts of reinforced and deep learning.
			CO 302049.6	SIMULATE machine learning model in mechanical engineering problems.
TE	Computer Aided Engineering	302050	CO 302050.1	DEFINE the use of CAE tools and DESCRIBE the significance of shape functions in finite element formulations.
			CO 302050.2	APPLY the various meshing techniques for better evaluation of approximate results.
			CO 302050.3	APPLY material properties and boundary condition to SOLVE 1-D and 2-D element stiffness matrices to obtain nodal or elemental solution.
			CO 302050.4	ANALYZE and APPLY various numerical methods for different types of analysis.
			CO 302050.5	EVALUATE and SOLVE non-linear and dynamic analysis problems by analyzing the results obtained from analytical and computational method.
			CO 302050.6	GENERATE the results in the form of contour plot by the USE of CAE tools.
TE	Design of Transmission Systems	302051	CO302051.1	APPLY the principle of Spur & Helical gear design for industrial application and PREPARE a manufacturing drawing with the concepts of GD&T.
			CO302051.2	EXPLAIN and DESIGN Bevel & Worm gear considering design parameters as per design standards.
			CO302051.3	SELECT&DESIGN Rolling and Sliding Contact Bearings from manufacturer's catalogue for a typical application

				considering suitable design parameters.
			CO302051.4	DEFINE and DESIGN various types of Clutches, Brakes, used in automobile.
			CO302051.5	APPLY various concept to DESIGN Machine Tool Gear box, for different applications
			CO302051.6	ELABORATE various modes of operation, degree of hybridization and allied terms associated with hybrid electric vehicles.
TE	Composite Materials	302052-A	CO302052-A.1	DEFINE & COMPARE composites with traditional materials.
			CO302052-A.2	IDENTIFY & ESTIMATE different parameters of the Polymer Matrix Composite
			CO302052-A.3	CATEGORISE and APPLY Metal Matrix Process from possessions landscape.
			CO302052-A.4	DETERMINE volume/weight fraction and strength of Composites.
			CO302052-A.5	SELECT appropriate testing and inspection method for composite materials.
			CO302052-A.6	SELECT composites materials for various applications.
TE	Measurement Laboratory	302053	CO302053.1	EVALUATE causes of errors in Vernier calipers, micrometers by performing experiments in standard metrological conditions, noting deviations at actual and by plotting cause and effect diagram, to reduce uncertainty in measurement.
			CO302053.2	ANALYZE strain measurement parameters by taking modulus of elasticity in consideration to acknowledge its usage in failure detection and force variations.
			CO302053.3	EXAMINE surface Textures, surface finish using equipment's like Talysurf and analyze surface finish requirements

				of metrological equipment's like gauges, jaws of vernier calipers, micrometers, magnifying glasses of height gauge and more, to optimize surface finish accuracy requirements and cost of measurement.
			CO302053.4	MEASURE the dimensional accuracy using Comparator and limit gauges and appraise their usage in actual measurement or comparison with standards set to reduce measurement lead time.
			CO302053.5	PERFORM Testing of Flow rate, speed and temperature measurements and their effect on performance in machines and mechanisms like hydraulic or pneumatic trainers, lathe machine etc. to increase repeatability and reproducibility.
			CO302053.6	COMPILE the information of opportunities of entrepreneurships/business in various sectors of metrology like calibrations, testing, coordinate and laser metrology etc in an industry visit report.
TE	Fluid Power & Control Laboratory	302054	CO302054.1	DEFINE working principle of components used in hydraulic and pneumatic systems.
			CO302054.2	IDENTIFY & EXPLAIN various applications of hydraulic and pneumatic systems.
			CO302054.3	SELECT an appropriate component required for hydraulic and pneumatic systems using manufactures' catalogues.
			CO302054.4	SIMULATE & ANALYSE various hydraulic and pneumatic systems for industrial/mobile applications.
			CO302054.5	DESIGN a hydraulic and pneumatic system for the industrial applications
			CO302054.6	DESIGN & DEMONESTRATE various IoT, PLC based controlling system using

				hydraulics and pneumatics.
TE	Internship/Mini project	302055	CO302055.1	DEMONSTRATE professional competence through industry internship.
			CO302055.2	APPLY knowledge gained through internships to complete academic activities in a professional manner.
			CO302055.3	CHOOSE appropriate technology and tools to solve given problem.
			CO302055.4	DEMONSTRATE abilities of a responsible professional and use ethical practices in day to day life.
			CO302055.5	DEVELOP network and social circle, and DEVELOPING relationships with industry people.
			CO302055.6	ANALYZE various career opportunities and DECIDE career goals.
BE	Heating, Ventilation, Air Conditioning and Refrigeration	402041	CO402041.1	Analyze different Air craft Refrigeration System and explain the properties and application and environmental issues of different refrigerant.
			CO402041.2	ANALYSE multi pressure refrigeration system used for refrigeration applications.
			CO402041.3	DISCUSS types of compressors, condensers, evaporators and expansion valves along with regulatory and safety controls and DESCRIBE Transcritical and ejector refrigeration systems.
			CO402041.4	ESTIMATE cooling load for air conditioning systems used with concern of design conditions and indoor quality of air.
			CO402041.5	DESIGN air distribution system along with consideration of ventilation and infiltration.
			CO402041.6	EXPLAIN the working of types of desiccants, evaporative, thermal storage, radiant cooling, clean room

				and heat pump systems.
BE	Dynamics of Machinery	402042	CO402042.1	APPLY balancing technique for static and dynamic balancing of multi cylinder inline and radial engines.
			CO402042.2	ANALYZE the gyroscopic couple or effect for stabilization of Ship, Airplane and Four wheeler vehicles.
			CO402042.3	ESTIMATE natural frequency for single DOF un-damped & damped free vibratory systems.
			CO402042.4	DETERMINE response to forced vibrations due to harmonic excitation, base excitation and excitation due to unbalance forces.
			CO402042.5	ESTIMATE natural frequencies, mode shapes for 2 DOF un-damped free longitudinal and torsional vibratory systems.
			CO402042.6	DESCRIBE noise and vibration measuring instruments for industrial / real life applications along with suitable method for noise and vibration control.
BE	Turbo machinery	402043	CO402043.1	VALIDATE impulse moment principle using flat, inclined and curved surfaces and INVESTIGATE performance characteristics of hydraulic turbines.
			CO402043.2	DETERMINE performance parameters of impulse and reaction steam turbine along with discussion of nozzles, governing mechanism & losses.
			CO402043.3	MEASURE performance parameters of single & multistage centrifugal pumps along with discussion of cavitation and selection.
			CO402043.4	EXPLAIN performance parameters of centrifugal compressor along with discussion of theoretical aspects of axial compressor.
BE	Industrial Engineering	402044D	CO 402044D.1	EVALUATE the productivity and IMPLEMENT various productivity

				improvement techniques.
			CO 402044D.2	APPLY work study techniques and UNDERSTANDS its importance for better productivity.
			CO 402044D.3	DEMONSTRATE the ability to SELECT plant location, appropriate layout and material handling equipment.
			CO 402044D.4	USE of Production planning and control tools for effective planning, scheduling and managing the shop floor control.
			CO 402044D.5	PLAN inventory requirements and EXERCISE effective control on manufacturing requirements
			CO 402044D.6	APPLY Ergonomics and legislations for human comfort at work place and UNDERSTANDS the role of value engineering in improving productivity.
BE	Additive Manufacturing	402045C	CO 402045C.1	USE and CLASSIFY the fundamentals of Additive Manufacturing Technologies for engineering applications.
			CO 402045C.2	IDENTIFY and CATEGORIZE the methodology to manufacture the products using light-based photo-curing, LASER based technologies and STUDY their applications, benefits.
			CO 402045C.3	IDENTIFY and CATEGORIZE the methodology to manufacture the products using extrusion-based deposition, inkjet-based technologies and STUDY their applications, benefits.
			CO 402045C.4	SYNTHESIZE, RECOMMEND and DESIGN the suitable material and process for fabrication and build behavior of varieties of product.
			CO 402045C.5	DESIGN and CONSTRUCT the AM equipment's for appropriate applications and the input CAD model.

			CO 402045C.6	DEVELOP the knowledge of additive manufacturing for various real-life applications.
BE	402046 Data Analytics Laboratory	402046	CO 402046.1	UNDERSTAND the basics of data analytics using concepts of statistics and probability.
			CO 402046.2	APPLY various inferential statistical analysis techniques to describe data sets and withdraw useful conclusions from acquired data set.
			CO 402046.3	EXPLORE the data analytics techniques using various tools.
			CO 402046.4	APPLY data science concept and methods to solve problems in real world context.
			CO 402046.5	SELECT advanced techniques to conduct thorough and insightful analysis and interpret the results
BE	402047 Project (Stage I)	402047	CO 402047.1	IMPLEMENT systems approach.
			CO 402047.2	CONCEPTUALIZE a novel idea / technique into a product.
			CO 402047.3	THINK in terms of a multi-disciplinary environment
			CO 402047.4	TAKE ON the challenges of teamwork, and DOCUMENT all aspects of design work.
			CO 402047.5	UNDERSTAND the management techniques of implementing a project.
			CO 402047.6	DEMONSTRATE the final product for Functionality, Designability, and Manufacturability.
BE	Computer Integrated Manufacturing	402048	CO 402048.1	EXPLAIN CIM and factory automation.
			CO 402048.2	UNDERSTAND the integration of hardware and software elements for CIM

			CO 402048.3	APPLY CNC program for appropriate manufacturing techniques.
			CO 402048.4	ANALYZE processes planning, quality and MRP integrated with computers.
			CO 402048.5	INTERPRET flexible, cellular manufacturing and group technology.
			CO 402048.6	ANALYZE the effect of IOT, Industry-4.0 and cloud base manufacturing.
BE	Energy Engineering	402049	CO 402049.1	EXPLAIN the power generation scenario, the layout components of thermal power plant and ANALYZE the improved Rankine cycle.
			CO 402049.2	ANALYZE the performance of steam condensers, cooling tower system; RECOGNIZE an environmental impact of energy systems and methods to control the same.
			CO 402049.3	EXPLAIN the layout, component details of diesel engine plant, hydel and nuclear energy systems.
			CO 402049.4	ANALYZE gas and improved power cycles.
			CO 402049.5	EXPLAIN the fundamentals of renewable energy systems.
			CO 402049.6	EXPLAIN basic principles of energy management, storage and economics of power generation.
BE	Quality & Reliability Engineering	402050A	CO402050A.1	UNDERSTAND basic concepts of quality and RELATE various quality tools.
			CO402050A.2	DEVELOP analytical competencies to SOLVE problems on control charts and process capability.
			CO402050A.3	UNDERSTAND fundamental concepts of reliability.
			CO402050A.4	EVALUATE system reliability.

			CO402050A.5	IDENTIFY various failure modes and CREATE fault tree diagram.
			CO402050A.6	UNDERSTAND the concept of reliability centered maintenance and APPLY reliability tests methods.
BE	Automation and Robotics	402051C	CO 402051C.1	UNDERSTAND the basic concepts of Automation
			CO 402051C.2	UNDERSTAND the basic concepts of Robotics
			CO 402051C.3	IDENTIFY and EVALUATE appropriate Drive for Robotic Applications
			CO 402051C.4	COMPARE and SELECT End-effectors and Sensors as per Application
			CO 402051C.5	DEVELOPE the Mathematical Modeling Approaches of Robot
			CO 402051C.6	EVALUATE the fundamentals of robot programming and CLASSIFY the Applications.
BE	Mechanical Systems Analysis Laboratory	402052	CO 402052.1	DEVELOP an understanding of the Systems Engineering Process and the range of factors that influence the product need, problem-specific information collection, Problem Definition, Task Specification, Solution Concept inception, Concept Development, System's Mathematical Modelling, Synthesis, Analysis, final solution Selection, Simulation, Detailed Design, Construction, Prototyping, Testing, fault-finding, Diagnosis, Performance Analysis, and Evaluation, Maintenance, Modification, Validation, Planning, Production, Evaluation and use of a system using manual calculation, computational tools to automate product development process, redesign from customer feedback and control of technological systems.
			CO 402052.2	ILLUSTRATE the concepts and USE the developed skill-set of use of computational tools (FEA, CFD, MBD,

				FSI, CAE) to automate the complete product development process.
			CO 402052.3	EVALUATE the knowledge of new developments and innovations in technological systems to carry forward to next stage of employment after passing your Undergraduate Degree Examination.
			CO 402052.4	APPRAISE how technologies have transformed people's lives and can be used to SOLVE challenges associated with climate change, efficient energy use, security, health, education and transport, which will be coming your ways in the coming future.
			CO 402052.5	PRIORITIZE the concept of quality and standards, including systems reliability, safety and fitness for the intended purpose.
			CO 402052.6	INVENT yourself to face the challenges of future technologies and their associated Problems.
BE	Project (Stage II)	402053	CO 402053.1	IMPLEMENT systems approach.
			CO 402053.2	CONCEPTUALIZE a novel idea / technique into a product.
			CO 402053.3	THINK in terms of a multi-disciplinary environment
			CO 402053.4	TAKE ON the challenges of teamwork, and DOCUMENT all aspects of design work.
			CO 402053.5	UNDERSTAND the management techniques of implementing a project.
			CO 402053.6	DEMONSTRATE the final product for Functionality, Designability, and Manufacturability.