Mapping of course outcome with Program Outcomes

No	Course code	Course Title	Course Outcomes
01	MA713	Mathematical Methods for Engineers	• Developing insight into applications of the concepts in Mechanical Engineering related topics. (a) • Enable the student to become competent in mathematical modeling. (a, e)
02	MC700	Automated Manufacturing System	• Awareness about automation, types, line balancing, FMS and cellular manufacturing (a, c, f) • Applying computing tool for CNC programming and simulation (e) • Exposure to control strategies adopted in CNC and automation.(I, k)
03	MC701 A	Design and Manufacturing	• Developing insight into applications of the concept of machine design in mechatronic product development. (a) • Exposure to manufacturing process and materials relevant to mechatronic discipline. (d)
04	MC701 B	Analog & Digital Electronics	• Become competent to design and analyze electrical circuits. (a, i) • The students will demonstrate the comparison between different electronic components. (b) • Demonstrate ability to arrive at component parameters for mechatronic system (d) • Develop methods of working for circuit analysis of logic circuits (e)
05	MC702	Mechatronics Engineering	• Each individual should develop competence in technologies of automation. (a, c, i) • Capable to develop simple control systems and study the system response. (e, k) • Individual should be able to understand the communication system in automation. (f, g)
06	MC703	Web Based Manufacturing Systems	• Awareness about the need for web based manufacturing (WBM) (e, f) • Identifying and understanding the critical issues in WBM (h) • Capability to plan for LAN/WAN network configuration for distributed set-up (k) • Applying computing tool for plant layout alternatives and simulation (e, j) • Exposure to advanced manufacturing protocols and Open CNC system concepts. (a, c)

07	MC704	ADE & Microcontroller Lab	• Capability to demonstrate the operation of simple digital gates, flip-flop, encoders, decoders, multiplexers. (a, b,g,i) • Exposure to use microcontroller for mechatronic applications. (c,e)
08	MC705 A	Fluid mechanics & Heat transfer	• Awareness about thermal applications in mechatronic systems. (c) • Capability to apply principles related to thermodynamics, fluid mechanics and heat transfer in formulating multidisciplinary problems. (a,d)
09	MC705 B	Electro Mechanics & Motion Control	• Ability to understand and design mechatronic motion logic control system and the key elements in its design. (a, c) • Ability to comprehend the working of various drives systems and design electronic circuits for various applications.(d)
10	MC706	Micro -Electro - Mechanical SystemsDesign	• Ability to describe MEMS fabrication technologies. (c) • Capability to critically analyze microsystems technology for technical feasibility as well as practicality. (d, e, j) • Mathematical formulation solution skill (a,e)
11	MC707	FMS & Simulation Lab	• Ability to design and implement pneumatic and electro pneumatic system for simple applications. (b, c, i) • Capability to simulating mechatronic application using modelling tools. (a,e,j)
12	MC800	Modeling & Simulation of Mechatronic Systems	• Engineering analysis skills (a, c, i • Mathematical formulation solution skill (a, e) • Writing and Presentation Skill (j)
13	MC802	Power Drives	• Ability to design pneumatic and electro-pneumatic circuits for material handling and similar automation process. (a, c, j) • Able to design hydraulic circuits. (c, i)
14	MC804	Robotic Systems	• Ability to use matrix algebra for computing the kinematics and dynamics (a) • Solving the Jacobian for serial and parallel robot (a) • Be able to develop path planning for a Robotic system (e, g)
15	MC806	Rapid Manufacturing Technology	• Awareness about elements of rapid manufacturing system (a • To discuss the stages in the product development cycle through RP and the importance of each stage (c)

			• Be able to understand the role of CAD model in rapid prototyping and hardware involved in it. (j)
16	ME815	Artificial Intelligence	• Solving engineering problems through AI approach (a) • Developing solutions to nonlinear or uncertainty issue related or optimization problems (e) • Developing intelligent decision making systems (d)
17	ME818	Automotive Electronics	• Awareness about engine control algorithms, the safety and environmental norms. (a, c, g) • Ability to diagnose the fault of different system in automobile. (e, j)
18	ME825	Virtual Instrumentation	• Ability to create LabVIEW code for given test and instrumentation / experimental work (b) • Create a test and instrumentation setup for any given application by choosing different sensors and DAQ systems (b, d) • Apply digital signal processing techniques in designing virtual instrumentation (i) • Integrate traditional instrumentation to virtual instruments. (k) • Acquire different sensor input, analyze the data, make decisions and take action or control (b, j) • Design different actuation controls like Motor control, solenoid etc (a, c)