



Asansol Engineering College
Department of Electrical Engineering
COURSE OUTCOMES (COs)

Program:-M. Tech in Electrical Engineering

Course Code	Course Outcome
Course Outcome of EMM101	
After successful completion of the course EMM101, students will be able to	
EMM101.1	Formulate mathematical model of mechanical, electrical, thermal, fluid system and different control system components
EMM101.2	Analyze stability of LTI continuous and discrete time system using various methods.
EMM101.3	Design different control law or algorithms and compensators for LTI systems
EMM101.4	Apply state variable techniques for analysis of linear systems.
EMM101.5	Examine the performance of a discrete time system using z-transform.
EMM101.6	Design linear state feedback controller and observer for both continuous and discrete time systems using different method.
Course Outcome of CAM 101	
After successful completion of the course CAM 101, students will be able to	
CAM 101.1	Formulate mathematical model of mechanical, electrical, thermal, fluid system and different control system components
CAM 101.2	Analyze stability of LTI continuous and discrete time system using various methods.
CAM 101.3	Design different control law or algorithms and compensators for LTI systems
CAM 101.4	Apply state variable techniques for analysis of linear systems.
CAM 101.5	Examine the performance of a discrete time system using z-transform.
CAM 101.6	Design linear state feedback controller and observer for both continuous and discrete time systems using different method.
Course Outcome of CAM 102	
After successful completion of the course CAM 102, students will be able to	
CAM 102.1	To collaborate as a team to achieve the objectives
CAM 102.2	To organize as an individual for successful completion of the objective
CAM 102.3	To relate the major and minor concepts with the selected dissertation field
CAM 102.4	To collect all necessary supporting knowledge through practical experience
CAM 102.5	To give outline suitable and easy execution steps
CAM 102.6	To show practical and effectiveness in conveying ideas to the society.
Course Outcome of CAM103(c)	
After successful completion of the course CAM103(c), students will be able to	
CAM103(c).1	able to get knowledge about special operational amplifiers and nonlinear function circuits
CAM103(c).2	able to understand about timing, counting circuits along with oscillators and frequency to voltage converters
CAM103(c).3	able to analysis about VCO, PLL and power electronics devices
CAM103(c).4	able to sketch the outline about optoelectronics devices and filters
Course Outcome of CAM 104 (a)	
After successful completion of the course CAM 104 (a), students will be able to	

CAM 104 (a).1	Present about the fundamental knowledge of soft computing and it's advantages.
CAM 104 (a).2	Understand about the fuzzy set and fuzzy relation
CAM 104 (a).3	Analyze different types of network e.g, Self-Organizing maps, Hopfield Network, LVQ with their performance measurement.
CAM 104 (a).4	Understand about the concept of genetic algorithm and it's application
Course Outcome of CAM 191	
After successful completion of the course CAM 191,students will be able to	
CAM 191.1	Identify various commands associated with MATLAB control system toolbox
CAM 191.2	Determine the Step response and calculate various performace indices for different systems using MATLAB/Hardware setup.
CAM 191.3	Select the suitable PI, PD and PID controller action of various simulated process based on responses obtained using MATLAB and SIMULINK.
CAM 191.4	Sketch and interpret Root locus, Bode plot, Nyquist plot using MATLAB.
CAM 191.5	Design Lead, Lag and Lead-Lag compensation for the given plant transfer function using MATLAB.
CAM 191.6	Solve system equations in state-variable form (state variable models) and determine the gains of state feedback controller using MATLAB.
Course Outcome of CAM 192	
After successful completion of the course CAM 192,students will be able to	
CAM 192.1	To collaborate as a team to achieve the objectives
CAM 192.2	To organize as an individual for sucessscssful completion of the objective
CAM 192.3	To relate the major and minor concepts with the selected dissertation field
CAM 192.4	To collect all necessary supporting knowlwdge through practical experience
CAM 192.5	To give outline suitable and easy execution steps
CAM 192.6	To show practical and effectiveness in conveying ideas to the society.
Course Outcome of CAM 181	
After successful completion of the course CAM 181,students will be able to	
CAM 181.1	Formulate mathematical model of mechanical, electrical, thermal, fluid system and different control system components
CAM 181.2	Analyze stability of LTI continuous and discrete time system using various methods.
CAM 181.3	Design different control law or algorithms and compenstaors for LTI systems
CAM 181.4	Apply state variable techniques for analysis of linear systems.
CAM 181.5	Examine the performance of a discrete time system using z-transform.
CAM 181.6	Design linear state feedback controller and obsterver for both continuous and disctere times systems using different method.
Course Outcome of CAM 201	
After successful completion of the course CAM 201,students will be able to	
CAM 201.1	Identify various types of nonlinearities present in physical systems and explain the their behaviour using methods like describing function and phase trajectories etc.

CAM 201.2	Analyze the stability of any linear or nonlinear system using Lyapunov methods of stability analysis.
CAM 201.3	Characterize different stochastic process and determine response of systems for different types of noises.
CAM 201.4	Design different types of regulators and filters for control system.
CAM 201.5	Assess stability of robust control systems.
CAM 201.6	Illustrate the effect of Parametric uncertainty on performance of the systems.
Course Outcome of CAM 202	
After successful completion of the course CAM 202, students will be able to	
CAM 202.1	Understand the concept of Optimal Power System Operation under various operating constraints.
CAM 202.2	Understand the load flow studies
CAM 202.3	Understand the methods of various programming for a particular Unit
CAM 202.4	Analyse modern methods of operation & control in energy management systems and security constrained operation.
CAM 202.5	Execute the load frequency control of speed governing system
Course Outcome of CAM 203	
After successful completion of the course CAM 203, students will be able to	
CAM 203.1	differentiate between signal level and power level devices.
CAM 203.2	explain the principle of operation of AC-DC, DC-DC, DC-AC converters, PWM inverters, resonant pulse inverters and multilevel inverters.
CAM 203.3	analyse the performance of AC-DC, DC-DC, DC-AC converters, PWM inverters, resonant pulse inverters and multilevel inverters.
CAM 203.4	apply methods of voltage control and harmonic reduction to inverters.
CAM 203.5	solve numerical problems of switching devices, AC-DC, DC-DC, DC-AC converters, PWM inverters, resonant pulse inverters and multilevel inverters.
CAM 203.6	observe the industrial application considering different power electronic converter system.
Course Outcome of CAM 204(b)	
After successful completion of the course CAM 204(b), students will be able to	
CAM 204(b).1	To collaborate as a team to achieve the objectives
CAM 204(b).2	To organize as an individual for successful completion of the objective
CAM 204(b).3	To relate the major and minor concepts with the selected dissertation field
CAM 204(b).4	To collect all necessary supporting knowledge through practical experience
CAM 204(b).5	To give outline suitable and easy execution steps
CAM 204(b).6	To show practical and effectiveness in conveying ideas to the society.
Course Outcome of CAM205(b)	
After successful completion of the course CAM205(b), students will be able to	
CAM205(b).1	Understand the concept of Optimal Power System Operation under various operating constraints.
CAM205(b).2	Understand the load flow studies
CAM205(b).3	Understand the methods of various programming for a particular Unit
CAM205(b).4	Analyse modern methods of operation & control in energy management systems and security constrained operation.

CAM205(b).5	Execute the load frequency control of speed governing system
CAM205(b).6	Evaluate the state of the system and the effect in current scenario
Course Outcome of CAM 291	
After successful completion of the course CAM 291, students will be able to	
CAM 291.1	Construct the P&I diagrams for various process control loops.
CAM 291.2	Acquire knowledge about the different elements associated with the real time flow, level, pressure and temperature control loop
CAM 291.3	Develop ladder logic program in PLC.
CAM 291.4	Design control loop with the help of different elements associated with the real time flow, level, pressure, temperature and DCS.
Course Outcome of CAM 292	
After successful completion of the course CAM 292, students will be able to	
CAM 292.1	To collaborate as a team to achieve the objectives
CAM 292.2	To organize as an individual for successful completion of the objective
CAM 292.3	To relate the major and minor concepts with the selected dissertation field
CAM 292.4	To collect all necessary supporting knowledge through practical experience
CAM 292.5	To give outline suitable and easy execution steps
CAM 292.6	To show practical and effectiveness in conveying ideas to the society.
Course Outcome of CAM 281	
After successful completion of the course CAM 281, students will be able to	
CAM 281.1	Organize themselves to form and work independently
CAM 281.2	Use individual skills for the best attainment of team goal
CAM 281.3	Identify a suitable area for deliberation
CAM 281.4	understand the social and ethical background and impact of the selected field
CAM 281.5	demonstrate good verbal, visual and written skills
CAM 281.6	Explain the creativity and innovation in the selected field
Course Outcome of CAM 282	
After successful completion of the course CAM 282, students will be able to	
CAM 282.1	Organize themselves to form and work independently
CAM 282.2	Use individual skills for the best attainment of team goal
CAM 282.3	Identify a suitable area for deliberation
CAM 282.4	understand the social and ethical background and impact of the selected field
CAM 282.5	demonstrate good verbal, visual and written skills
CAM 282.6	Explain the creativity and innovation in the selected field
Course Outcome of EMAN301	
After successful completion of the course EMAN301, students will be able to	
EMAN301.1	Formulate mathematical model of mechanical, electrical, thermal, fluid system and different control system components
EMAN301.2	Analyze stability of LTI continuous and discrete time system using various methods.
EMAN301.3	Design different control law or algorithms and compensators for LTI systems
EMAN301.4	Apply state variable techniques for analysis of linear systems.
EMAN301.5	Examine the performance of a discrete time system using z-transform.

EMAN301.6	Design linear state feedback controller and observer for both continuous and discrete time systems using different method.
Course Outcome of CAM301(b)	
After successful completion of the course CAM301(b), students will be able to	
CAM301(b).1	To collaborate as a team to achieve the objectives
CAM301(b).2	To organize as an individual for successful completion of the objective
CAM301(b).3	To relate the major and minor concepts with the selected dissertation field
CAM301(b).4	To collect all necessary supporting knowledge through practical experience
CAM301(b).5	To give outline suitable and easy execution steps
CAM301(b).6	To show practical and effectiveness in conveying ideas to the society.
Course Outcome of CAM391	
After successful completion of the course CAM391, students will be able to	
CAM391.1	collaborate as a team to achieve the project objectives.
CAM391.2	develop the project prototype.
CAM391.3	prepare the detailed dissertation report.
CAM391.4	express the content of their dissertation work through visual and verbal communication skills.
CAM391.5	defend their dissertation as a team and individual.
CAM391.6	recognize the need for continuous improvement through future scope of work.
Course Outcome of CAM392	
After successful completion of the course CAM392, students will be able to	
CAM392.1	Formulate mathematical model of mechanical, electrical, thermal, fluid system and different control system components
CAM392.2	Analyze stability of LTI continuous and discrete time system using various methods.
CAM392.3	Design different control law or algorithms and compensators for LTI systems
CAM392.4	Apply state variable techniques for analysis of linear systems.
CAM392.5	Examine the performance of a discrete time system using z-transform.
CAM392.6	Design linear state feedback controller and observer for both continuous and discrete time systems using different method.
Course Outcome of CAM491	
After successful completion of the course CAM491, students will be able to	
CAM491.1	Formulate mathematical model of mechanical, electrical, thermal, fluid system and different control system components
CAM491.2	Analyze stability of LTI continuous and discrete time system using various methods.
CAM491.3	Design different control law or algorithms and compensators for LTI systems
CAM491.4	Apply state variable techniques for analysis of linear systems.
CAM491.5	Examine the performance of a discrete time system using z-transform.
CAM491.6	Design linear state feedback controller and observer for both continuous and discrete time systems using different method.
Course Outcome of CAM492	
After successful completion of the course CAM492, students will be able to	

CAM492.1	Formulate mathematical model of mechanical, electrical, thermal, fluid system and different control system components
CAM492.2	Analyze stability of LTI continuous and discrete time system using various methods.
CAM492.3	Design different control law or algorithms and compensators for LTI systems
CAM492.4	Apply state variable techniques for analysis of linear systems.
CAM492.5	Examine the performance of a discrete time system using z-transform.
CAM492.6	Design linear state feedback controller and observer for both continuous and discrete time systems using different method.