



**Department of Electronics Engineering**

Course Number:ELX701

Course Name: Instrumentation System Design

Unique CO Number	Course Outcome (CO) Statement
EXC7341	Describe the operation of various process control valves.
EXC7342	Choose the transmitter/controller for given process applications.
EXC7343	Design signal conditioning circuit for Instrumentation system.
EXC7344	Develop the electronic controller for a given process or application
EXC7345	Illustrate operation of Programmable Logic Controller
EXC7346	Illustrate the need of advancement in Instrumentation system.

Course Number: ELX702

Course Name: Power Electronics

Unique CO Number	Course Outcome (CO) Statement
ELXC7221	Recall the behaviour of the power semiconductor devices and circuits.
ELXC7222	Describe and compare the various power devices and circuits.
ELXC7223	Calculate the performance parameters of various power converters and associated circuits.
ELXC7224	Compare and analyze the power converters.
ELXC7225	Assess the performance of power converters and conclude the applications of power electronics in emerging areas.
ELXC7226	Design the power electronics circuit by assessing the requirements of application fields.



**Department of Electronics Engineering**

Course Number: EXL703

Course Name: Digital Signal Processing

Unique CO Number	Course Outcome (CO) Statement
EXC7411	To list the defining equations related to discrete transforms ,digital filters and to briefly describe the relevance of multirate DSP,finite length effects and DSP processors
EXC7412	To explain the concepts of DFT and FFT and the design procedure of digital filters and the principles of multirate processing ,processors and their applications and finite word length effects
EXC7413	To apply the signal processing concepts in solving problems of discrete transforms, digital filters and finite word length effects
EXC7414	To analyze the effects of finite word length and illustrate the different methods of filter design
EXC7415	To evaluate and assess the advantages and disadvantages between different methods of digital filter design
EXC7416	To design different types of digital filters and formulate strategies to minimize finite word length effects

Course Number: EXLDLO7032

Course Name: Advanced Networking Technologies

Unique CO Number	Course Outcome (CO) Statement
EXC7521	Describe the characteristic features of various wireless and wired network.
EXC7522	Enumerate various aspects of network security and management
EXC7523	Classify and compare various type of computer network and network protocol.
EXC7524	Identify the different type of network algorithm and protocol.
EXC7525	Evaluate various computer network techniques and network protocol.
EXC7526	Design and configure a network using protocols.



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Affiliated to University of Mumbai, Approved by D.T.E. & A.I.C.T.E. | Awarded 'A' Grade by D.T.E., M.S. | Electronics Engineering Program Accredited by N.B.A., New Delhi for 2 years w.e.f. 6<sup>th</sup> Aug., 2014 | Computer Engineering Program Re-Accredited by N.B.A., New Delhi for 3 years w.e.f. 1<sup>st</sup> July 2019 | Information Technology Program Accredited by N.B.A., New Delhi for 3 years w.e.f. 1<sup>st</sup> July 2019



**Department of Electronics Engineering**

Course Number: ELXDLO7033 Course Name: Robotics

Unique CO Number	Course Outcome (CO) Statement
EXC7421	Identify the major robotic technology components ,classification, work envelope, control system, actuation systems, algorithms for robotic vision, social, economic, ethical consequences and common industrial applications of a robotic manipulator.(Remembering)
EXC7422	Explain method s for describing robots locations ,orientations and movements .(Understanding)
EXC7423	Apply kinematics ,differential motion and vision system algorithms for a robot.(Applying)
EXC7424	Analyze the kinematics, velocity kinematics, dynamics and trajectories for the robot and shape analysis of objects encountered by the robot.(Analyze)
EXC7425	Evaluate various algorithms for robot vision ,task planning and trajectory planning.(Evaluate)
EXC7426	Formulate kinematics, differential motion, statics, dynamics and trajectories to control robots.(Creating)

**Department of Electronics Engineering**

Unique CO Number	Course Outcome (CO) Statement
EXC7831	Identify the principal tools and technologies for storing and accessing information in an organization to improve business performance and decision making.
EXC7832	Explain the importance of information systems and the impact of information technology on an organization to transform business.
EXC7833	Apply knowledge to use the Internet provide a global platform for e-business, business mobility and communications, collaboration, and cloud computing.
EXC7834	Analyze ethical issues related to information technology, potential threat to the privacy of the data and control measures that organizations can use to protect their information resources.
EXC7835	Assess current and emerging technologies and apply them to today's businesses.
EXC7836	Design system development life cycle model.

Course Number: ILO7016

Course Name: Cyber Security and Laws

Unique CO Number	Course Outcome (CO) Statement
ILO70161	Understand the types of cybercrimes and its effect on the outside world.
ILO70162	Interpret relevant IT Laws for specific legal issues
ILO70163	Illustrate security challenges posed by Mobile devices and its implications on organizations.
ILO70164	Apply information security standards compliance during software design and development.
ILO70165	Distinguish different tools and methods used for the range of cybercrimes along with different aspects of cyber law.
ILO70166	Develop a case study of real-life example of cyber-attack and derive limitations of existing cyber law.



**Department of Electronics Engineering**

Course Number: ELXL701 Course Name: Instrumentation System Design Laboratory

Unique LO Number	Course Outcome (CO) Statement
EXL7341	Implementation of Ladder diagram for PLC.
EXL7342	Design of ON-OFF Controller using Labview.
EXL7343	Designing of PID Controller.
EXL7344	Demonstrate the action of control valves.
EXL7345	Designing of Instrumentation amplifier using Transducer bridge.
EXL7346	Designing of V-I Converter.

Course Number: ELXL702

Course Name: Power Electronics Lab

Unique LO Number	Course Outcome (CO) Statement
ELXL7221	Remember and implement power electronics circuits.
ELXL7222	Understand the theoretical behavior and relate it with the practical working.
ELXL7223	Demonstrate the correct usage of a method or procedure.
ELXL7224	Identify the difference between theoretical and practical results within permissible limits of errors and assumptions.
ELXL7225	Assess the usage of components and their ratings, make choices based on reasoned arguments, verify value of evidence and justify.
ELXL7226	Build models, prototypes, algorithms to develop diverse set of design solutions.



**Department of Electronics Engineering**

Course Number: ELXL703 Course Name: Digital Signal Processing Laboratory

Unique LO Number	Course Outcome (CO) Statement
EXL7411	To implement and understand the properties of DFT
EXL7412	To understand the fast implementation of DFT using FFT
EXL7413	To design Digital IIR filters from analog filters
EXL7414	To design different types of digital IIR filters
EXL7415	To design digital FIR filters using windowing techniques
EXL7416	To apply DSP techniques in practical applications

Course Number: ELXDLO7032 Course Name: Advance Networking Technologies Laboratory

Unique LO Number	Course Outcome (CO) Statement
EXL7521	Study and design wireless network.
EXL7522	Design switch lan network using opnet.
EXL7523	Design enterprise network using OPNET.
EXL7524	Implement firewall using OPNET.
EXL7525	Implement networking tools using linux.
EXL7526	Implement network security management tools.



**Department of Electronics Engineering**

Course Number:

ELXLDLO703

Course Name: Robotics

Unique LO Number	Course Outcome (CO) Statement
EXL7421	To understand coordinate transformation. (understanding)
EXL7422	To solve direct kinematics of different robots. (Application)
EXL7423	To solve inverse kinematics of different robots. (Application)
EXL7424	To examine image processing techniques for robot vision. (Analyzing)
EXL7425	To explain trajectory planning and path planning using various algorithms. (Evaluating)
EXL7426	To implement a repetitive task (create)

Unique Course Number: ELXL704

Course Name: Project I

Unique CO Number	Course Outcome (CO) Statement
ELX7811	Identify the applications of chosen field in professional practice
ELX7812	Summarize different modules needed in selected application
ELX7813	Determine hardware required for implementing practical application
ELX7814	Select software required for implementation of project
ELX7815	Choose different components and Integrated Circuits required for project
ELX7816	Design complete circuit diagram for project implementation