ISTAR

M. SC. INSTRUMENTATION & CONTROL

COURSE OBJECTIVE AND OUTCOME

FIRST SEMESTER

PS01CINC21: TRANSDUCERS & INSTRUMENTATION
Faculty:
Mr. Krunal Suthar

Description: To introduce different types of transducers and its operational principles as it is the base for any further signal processing and applications.

Outcome: Students will be able to know how basic signal is acquired with different transducers having different sensing mechanism and circuit design.

PS01CINC22: MICROPROCESSOR & MICROCONTROLLER SYSTEMS
Faculty:
Ms. Feby Sam

Description: To introduce 8-bit microprocessor, microcontrollers and embedded systems with its interfacing circuits and assembly language programming.

Outcome: Students will understand hardware architecture of 8085 microprocessor, 8051 microcontroller and its programming for interfacing.

PS01CINC23: PRINCIPLES OF CONTROL SYSTEMS
Faculty:
Dr. Himanshu Kapse

Description: This course introduces students to theory and applications of different control systems and modelling methods.

Outcome: Students will be able to learn the role of feedback system in control mechanism and various methods to analyse in Laplace, time and frequency domain modes.

PS01EINC21: INSTRUMENTATION OF PROCESSING CIRCUITS
Faculty:
Ms. Feby Sam

Description: This course consists of important applications of Op-amps including filter circuits.

Outcome: This will enable the student to learn Op-amp circuits with wide applications in all fields.

PS01EINC22: NETWORK ANALYSIS
Faculty: (Visiting)
Mr. Bhavesh Hindocha

Description: This course is to impart useful skills to students to enhance their fundamental knowledge and circuit analysis capability.

Outcome: Students will learn different methods involve in analysis of linear and non linear circuits. Also provides basic information about network parameters use for analysis.

SECOND SEMESTER

PS02CINC21:
ANALYTICAL
INSTRUMENTATION
Faculty:
Dr. Himanshu Kapse

Description: The course covers theory operation and working principles of different analytical instruments used for various applications

Outcome: This course has wide applicability in the market. Different instruments operation and working concept understanding.

PS02CINC22:
ADVANCED
MICROPROCESSOR &
MICROCONTROLLERS
Faculty:
Ms. Feby Sam

Description: The course is to provide overview of 16-bit microprocessor and basic concepts of Atmega328 controller.

Outcome: This provides understanding 16-bit architecture, programming, interfacing and basic concepts of Arduino platform.

PS02CINC23:
COMPUTER AIDED
PROCESS CONTROL
Faculty:
Ms. Feby Sam

Description: This course is to introduce various process dynamics, variables and models to control system using computers. Also real time control concepts and designing aspects are included.

Outcome: At the completion student will learn the control with the aid of computer and its designing aspects with different modelling techniques.

PS02EINC21: POWER
ELECTRONICS
Faculty:
Mr. Krunal Suthar

Description: This course consists of theory, working principles of various power semiconductor devices and their switching characteristics.

Outcome: Students will learn about power electronics their switching characteristics in industrial applications including motors and drives.

PS02EINC22 :
BOILER
INSTRUMENTATION
Faculty: (Visiting)
Mr. Bhavesh
Hindocha

Description: This course consists of Boiler mechanism and control process its types and application. Also concept of different power plants is included.

Outcome: This will enable student to understand operational mechanisms of different types of Boilers and different power plants concept.

THIRD SEMESTER

PS03CINC21: BIOMEDICAL INSTRUMENTATION
Faculty:
Ms. Feby Sam

Description: The focus is to provide theory and operating principles of Biomedical measuring and monitoring instruments.

Outcome: Student will gain knowledge of various measuring and monitoring instruments used in Hospitals. Also learn safety measures to handle instruments.

PS03CINC22: INDUSTRIAL COMMUNICATION TECHNIQUES
Faculty:
Dr. Himanshu Kapse

Description: This course is for the concepts of hardware and software used in different communication system. Also includes Industrial standard communication protocols.

Outcome: Students will be aware about and implement the different protocols for communications meant for data transmission as well as industrial applications to control different operations.

PS03CINC23: PLC – DCS - SCADA
Faculty:
Mr. Bhavesh Hindocha

Description: This course is to impart knowledge about Programmable logic controller , distributed control systems and supervisory systems concepts.

Outcome: Student will thoroughly learn PLC programming its application, DCS utilization and SCADA implantation in plants.

PS03EINC21: OPTOELECTRONICS
Faculty: (Visiting)
Dr. Dhananjay Dhruv

Description: This course is specifically designed for optical devices and light propagation through optical fibres.

Outcome: Students will be able to learn working principles of LASER and LED and its applications in various fields through light propagation in optical fibres.

PS03EINC22: SATCOM INSTRUMENTATION
Faculty:
Dr. Himanshu Kapse

Description: This course provides the basics of Microwave techniques and Satellite communication systems.

Outcome: On completion student will gain know how about the up link and down link of microwave signals and functions of transponders. Also learn calculations of signal attenuation and orbital dynamics.

PS03EINC23: DIGITAL SIGNAL PROCESSING
Faculty: (Visiting)
Ms. Heena Kher

Description: This course is to provide concepts on design, processing signal algorithm and implementation for applications.

Outcome: It will help to learn signals and system, different mathematical algorithm and its importance for different circuit design and applications.

FOURTH SEMESTER

PS04CINC21 : MEDICAL IMAGING SYSTEMS & THERAPEUTIC EQUIPMENTS
Faculty:
Dr. Himanshu Kapse

Description: This course provide medical imaging concepts of different instruments used for diagnostic purpose. It also includes therapeutic equipment principles and implementation.

Outcome: Learning of different imaging instrument like X-ray, MRI, Ultrasound etc. With its utility. Also learning of operating principles of therapeutic equipments for treatment purpose.

PS04CINC22 : PROGRAMMING IN C / C++
Faculty:
Mr. Krunal Suthar

Description: Introductory subject to high level procedural programming using C. Also introductory concepts of C++ programming.

Outcome: At the completion of this course student will learn design and development of program for solving problems. Also will enable them to understand object oriented programming concepts.

PS04CINC23 : ROBOTICS AND FUZZY LOGIC
Faculty: (Visiting)
Dr. Ajay Patel

Description: The course has insight of Robotics concepts mechanism and application. Also Fuzzy logic provides other logical method to control systems.

Outcome: Student will learn different types of Robots, its algorithms and functionalities. Fuzzy logic will give alternate control mode through its fuzziness.

PS04EINC21: FABRICATION TECHNIQUES & INSTRUMENTATION
Faculty:
Ms. Feby Sam

Description: This course consists of theory and operating principles of different IC and film fabrication techniques and vacuum systems used for it. Also includes basic concepts of CNC.

Outcome: Students will get knowledge of fabrication techniques and instruments used for it. Analysis of fabricated devices with different methods and learn CNC basic concepts.

PS04EINC22: METEOROLOGICAL INSTRUMENTATION
Faculty:
Mr. Krunal Suthar

Description: To introduce different types of meteorological transducer's operating principles with different instruments.

Outcome: This will enable student to get insight of weather monitoring instruments with its working principles.

PS04EINC23 : ARTIFICIAL INTELLIGENCE & NEURAL NETWORKS
Faculty: (Visiting)
Dr. Parag Moteria

Description: This course is for designing concepts through artificial intelligence and neural networks.

Outcome: Student will learn modelling and simulation of systems. Also learn pattern recognition. Learning of decision making through different models in neural networks.