**EE-Course Description-EIIIR**

01205211       Electric Circuit Analysis I       3(3-0-6)

01205213**    Electronics and Electrical Engineering Laboratory       1(0-3-2)

01205214**    Electrical Machines Laboratory and Electrical Practices       1(0-3-2)

01205215**    Computer Programming for Electrical Engineers       3(3-0-6)

01205216**    Signals and Systems       3(3-0-6)

** Revised
01205217** Electromagnetic Fields and Waves 3(3-0-6)

01205218** Electrical Measurements and Instruments 3(3-0-6)
Prerequisite: 01205211

01205241** Digital Circuits and Logic Design 3(3-0-6)

01205242** Electronic Circuits and Systems I 3(3-0-6)
Prerequisite: 01205211
Semiconductor devices. Current-voltage and frequency characteristics of electronic devices. Analysis and design of basic electronic circuits including diodes and power supply circuit. Bipolar junction transistors (BJT) and field-effect transistors including MOS, CMOS, and BiCMOS. Transistor bias circuits and transistor small signal analysis. Basic amplifiers. Operational amplifiers and its applications in linear and nonlinear circuits. Multistage transistor amplifiers.

01205251** Electromechanical Energy Conversion I 3(3-0-6)
Prerequisite: 01205211

** Revised

01205311** Microprocessor 3(3-0-6)
Prerequisite: 01205241

01205312** Linear Control Systems 3(3-0-6)
Prerequisite: 01205211

01205348** Electrical Engineering Materials 3(3-0-6)

01205351** Electromechanical Energy Conversion II 3(3-0-6)
Prerequisite: 01205251

** Revised
and analysis of induction machines and synchronous machines. AC single phase motor structure and performance. Protection of machines.

01205352** Electric Power System Analysis I 3(3-0-6)
Prerequisite: 01205211


01205354 Electrical System Design in Buildings 3(3-0-6)


01205357** Electric Drives 3(3-0-6)
Prerequisite: 01205351


01205358** Renewable Energy 3(3-0-6)

Introduction to energy systems and renewable energy resources. Potential of renewable resources in Thailand. Difference of conventional and renewable energy technologies. Renewable technologies such as solar, wind, biomass, geothermal, biogas, municipal solid waste, wave energy, fuel cell. Energy storages. Laws, regulations, and policies of renewable energy. Economics aspects.

** Revised
01205359** Power Electronics 3(3-0-6)
Prerequisite: 01205242

Characteristics of power electronics devices. Principles of power converters. AC to DC converter. DC to DC converter. AC to AC converter. DC to AC converter.

01205371** Process Sensors and Transducers 3(3-0-6)


01205373** Embedded Control Systems 3(3-0-6)
Prerequisite: 01205311


01205374** Industrial Automation and Control 3(3-0-6)

01205375  Machine Vision in Robotics  3(3-0-6)
Homography. Image warping. Kinematic relationships between cameras and robots /

01205376  Introduction to 3D Design and Prototyping  3(3-0-6)
Introduction to rapid prototype technologies. Concepts of material forming. CAD
and CAM. 3D product design, 3D prototyping. Hardware and software of 3D rapid
prototype machine.

01205377  Artificial Intelligence in Robotics  3(3-0-6)
learning. Machine vision, Neural Networks Design and Training. Application of Artificial
Intelligent in Industrial Robots and Service Robots.

01205387** Microprocessor Laboratory  1(0-3-2)
Prerequisite : 01205311 or in the same semester
Laboratory experiments on topics covered in Microprocessor.

01205388** Control and Measurement Laboratory  1(0-3-2)
Prerequisite : 01205312 or in the same semester
Laboratory for Electrical Measurements and Instruments, and Linear Control
Systems.

01205389** Industrial Automation and Control Laboratory  1(0-3-2)
Prerequisite : 01205374 or in the same semester
Laboratory for Industrial Automation and Control.

01205399  Internship  1
Internship for Electrical Engineering in private enterprises, government agencies,
government enterprises or academic places at least 240 hours and at least 30 workdays
in order to get experiences from the assignment.

** Revised
01205451** Energy Conservation and Management 3(3-0-6)


01205471** Introduction to Robotic Systems 3(3-0-6)


01205478 Human Robot Interface 3(3-0-6)

Human-Robot Collaboration System is a multidisciplinary area concerned with the controller design, natural language understandings, human-robot interaction and mechatronics. This course is intended to study advanced topics in force control systems. The first part of the course will focus on force measurement and estimation, observer design and model-based development. The second portion of the course will focus on control of robot to interact with an unknown environments and human operators, driven by a number of real-world examples.

01205479 Internet of Things for Electrical Engineering 3(3-0-6)


01205491 Electrical Engineering Project I 1(0-3-2)

Select and prepare interesting project in electrical engineering.

01205497 Seminar 1

Presentation and discussion on current interesting topics in electrical engineering at the bachelor's degree level.
01205498**  Special Problems  1-3
Study and research in electrical engineering at the bachelor’s degree levels and compiled into a written report.

01205499**  Electrical Engineering Project II  3(0-9-5)
Prerequisite: 01205491
Continuing the same project as in electrical engineering project I.

01204111  Computers and Programming  3(2-3-6)

01208111  Engineering Drawing  3(2-3-6)

01208221  Engineering Mechanics I  3(3-0-6)
Prerequisite: 01417167

01213211  Materials Science for Engineers  3(3-0-6)
01403114 Laboratory in Fundamentals of General Chemistry 1(0-3-2)
Prerequisite : 01403117 or in the same semester
Laboratory work for 01403117 Fundamentals of General Chemistry.

01403117 Fundamentals of General Chemistry 3(3-0-6)
Atomic structure. Periodic table and periodic properties. Chemical bonds.

01417167 Engineering Mathematics I 3(3-0-6)
Limits and continuity of functions. Derivatives and applications. Differentials.
Mathematical induction.

01417168 Engineering Mathematics II 3(3-0-6)
Prerequisite : 01417167

01417267 Engineering Mathematics III 3(3-0-6)
Prerequisite : 01417168

01420111 General Physics I 3(3-0-6)

01420112 General Physics II 3(3-0-6)

01420113 Laboratory in Physics I 1(0-3-2)
Prerequisite: 01420111 or in the same semester or 01420117 or in the same semester
Laboratory for General Physics I or Basic Physics I.

01420114 Laboratory in Physics II 1(0-3-2)
Prerequisite: 01420113 and 01420112 or in the same semester or 01420118 or in the same semester
Laboratory for General Physics II or Basic Physics II.