BACHELOR OF SCIENCE IN ELECTRONICS ENGINEERING
School Year 2018-2019

COURSE DESCRIPTIONS

I. TECHNICAL COURSES

BASIC ENGINEERING SCIENCES

CADRAFTING: Computer-Aided Drafting
Units: Lec: 0 Lab: 1 **Prerequisite: None**

This course covers the concepts of computer-aided drafting with introduction on CAD terminologies and environment with the application of techniques in inputting and executing CAD commands

ENGGECON : Engineering Economics
Units: Lec: 3 Lab: 0 **Prerequisite: 2nd Year Standing**

The course involves the analysis and evaluation of factors for the economic success of engineering projects to ensure the best of capital.

ENGGMGMT: Engineering Management
Units: Lec: 3 Lab: 0 **Prerequisite: 3rd Year Standing**

This course will entail students to learn the basic function of a manager applicable in decision making which are applicable to the real world problems. Furthermore, students would learn how to apply planning, leading, organizing and control principles into the resources in order to increase the efficiency.

TECHENTREP Technopreneurship
Units: Lec: 3 Lab: 0 **Prerequisite : ENGGECON**

Technopreneurship is a philosophy, a way of building a career or perspective in life. The course covers the value of professional and life skills in entrepreneurial thought, investment decisions, and action that students can utilize in starting technology companies or executing R&D projects in companies as they start their careers. The net result is a positive outlook towards wealth creation, high value adding, and wellness in society.

ALLIED COURSES

EPHYSICS2: Physics 2
Units: Lec: 3 Lab: 0 **Prerequisite: CALC1**
Co-requisite: CALC2, EPHYSICS

Vectors; kinematics; dynamics; work, energy, and power; impulse and momentum; rotation; dynamics of rotation; elasticity; and oscillation. Fluids; thermal expansion, thermal stress; heat transfer; calorimetry; waves; electrostatics; electricity; magnetism; optics; image formation by plane and curved mirrors; and image formation by thin lenses.

EPHYSICS2L: Physics 2 Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: CALC1**
Co-requisite: CALC2,EPHYSICS2

This course provides a fundamental laboratory course designed to provide opportunity to observe and apply the principles and theories taught in Physics 2.

MATERIALS **Materials Science and Engineering**
Units: Lec: 3 Lab: 0 **Prerequisite: CHEMENG,CHEMENGL**

This course introduces the students to a broad study on the structure and composition of materials (metals, polymers, ceramics, and composite materials) and their properties and behavior in service environments.

COMFUN1 **Computer Fundamentals and Programming 1**
Units: Lec: 0 Lab: 1 **Prerequisite : None**

This course covers basic information technology concepts; fundamentals of algorithm development; high-level language and programming applications; and computer solutions of engineering problems. Topics are drawn from classes and objects, abstraction, encapsulation, data types, calling methods and passing parameters, decisions, and loops.

COMFUN2 **Computer Fundamentals and Programming 2**
Units: Lec: 0 Lab: 1 **Prerequisite : COMFUN1**

This course deals with advance information technology concepts; advance algorithm development; high-level language and programming applications; and computer solutions of engineering problems. Topics includes nested loops, arrays and importation of library files.

CIRCUITS1 **Circuits 1**
Units: Lec: 3 Lab: 0 **Prerequisite : EPHYSICS2,EPHYSICS2L**

Fundamental relationships in circuit theory, mesh and node equations; resistive networks, network theorems; solutions of network problems using Laplace

transform; transient analysis; methods of circuit analysis.

CIRCUITS1L **Circuits 1 Laboratory**
Units: Lec: 0 Lab: 1 **Prerequisite : EPHYSICS2, PHYSICS2L**
Co-requisite : CIRCUITS1

Fundamental relationships in circuit theory, mesh and node equations; resistive networks, network theorems; solutions of network problems using Laplace transform; transient analysis; methods of circuit analysis.

CIRCUITS2 **Circuits 2**
Units: Lec: 3 Lab: 0 **Prerequisite : CIRCUITS1, CIRCUITS1L**

Complex algebra and phasors; simple AC circuits, impedance and admittance; mesh and node analysis for AC circuits; AC network theorems; power in AC circuits; resonance; three-phase circuits; transformers; two-port network parameters and transfer function.

CIRCUITS2L **Circuits 2 Laboratory**
Units: Lec: 0 Lab: 1 **Prerequisite : CIRCUITS1, CIRCUITS1L**
Co-requisite : CIRCUITS2

Complex algebra and phasors; simple AC circuits, impedance and admittance; mesh and node analysis for AC circuits; AC network theorems; power in AC circuits; resonance; three-phase circuits; transformers; two-port network parameters and transfer function.

ENVISCIENG **Environmental Science and Engineering**
Units: Lec: 3 Lab: 0 **Prerequisite : CHEMENG, CHEMENGL**

Environmental Science Knowledge in Ecology and Human Population Control, Variety of Resources and Outline Plans for Attaining Sustainable Society, The Enigma of Pollution and the Legal, Technical and Personal Solutions for it. Study of Environmental Impact Assessment and Environmental Crisis.

PROFESSIONAL CORE COURSES

ADVENGMATH: Advanced Engineering Mathematics for ECE
Units: Lec: 3 Lab: 1 **Prerequisite: DIFFEQNS**

A study of selected topics in mathematics and their applications in advanced courses in engineering and other allied sciences. It covers the study of Complex numbers and complex variables, Laplace and Inverse Laplace Transforms, Power series, Fourier series, Fourier Transforms, z-transforms, power series solution of ordinary differential equations, partial differential equations and numerical methods in engineering.

ELECTROMAG: Electromagnetics
Units: Lec: 4 Lab: 0 **Prerequisite: DIFFEQNS**

This course deals with vector algebra, vector calculus, vector analysis, and their applications in electric and magnetic fields, resistive, dielectric and magnetic materials, coupled circuits, magnetic circuits and fields, time-varying electromagnetic fields, and Maxwell's equations.

ECELAWSCESS: ECE Laws, Contracts, Ethics, Standards and Safety
Units: Lec: 3 Lab: 0 **Prerequisite: 4th Year Standing**

Contracts; warranties; liabilities; patents; bids; insurance; other topics on the legal and ethical positions of the professional engineer. Includes Safety and other standards related to the ECE profession.

EDEVICES: Electronic Devices and Circuits
Units: Lec: 3 Lab: 0 **Prerequisite: EPHYSICS2,EPHYSICS2L**
Co-requisite: CIRCUITS1,CIRCUITS1L

Introduction to quantum mechanics of solid state electronics; diode and transistor characteristics and models (BJT and FET); diode circuit analysis and applications; transistor biasing; small signal analysis; large signal analysis; transistor amplifiers; Boolean logic; transistor switch.

EDEVICESL: Electronic Devices and Circuits Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: EPHYSICS2,EPHYSICS2L**
Co-requisite: CIRCUITS1,CIRCUITS1L, EDEVICES

Introduction to quantum mechanics of solid state electronics; diode and transistor characteristics and models (BJT and FET); diode circuit analysis and applications; transistor biasing; small signal analysis; large signal analysis; transistor amplifiers; Boolean logic; transistor switch.

ECKTSAD: Electronic Circuit Analysis and Design
Units: Lec: 3 Lab: 0 **Prerequisite: EDEVICES,EDEVICESL**

High frequency transistor models; analysis of transistor circuits; multi-stage amplifier, feedback, differential amplifiers and operational amplifiers; integrated circuit families (RTL, DTL, TTL, ECL, MOS).

ECKTSADL: Electronic Circuit Analysis and Design Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: EDEVICES,EDEVICESL**
Co-requisite: ECKTSAD

High frequency transistor models; analysis of transistor circuits; multi-stage amplifier, feedback, differential amplifiers and operational amplifiers; integrated circuit families (RTL, DTL, TTL, ECL, MOS).

ESYSTEMS: Electronic Systems and Design
Units: Lec: 3 Lab: 0 **Prerequisite: ECKTSAD,ECKTSADL**

Theory, operating characteristics and design of electronic devices and control circuits for industrial processes; industrial control applications; electronics instrumentation; transducers; data acquisition system; interfacing techniques; sensors

ESYSTEMSL: Electronic Systems and Design Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: ECKTSAD,ECKTSADL**
Co-requisite: ESYSTEMS

Theory, operating characteristics and design of electronic devices and control circuits for industrial processes; industrial control applications; electronics instrumentation; transducers; data acquisition system; interfacing techniques; sensors

SIGSPECTRA: Signals, Spectra and Signal Processing
Units: Lec: 3 Lab: 0 **Prerequisite: ADVENGMATH**

Fourier transform; z transform; convolution; FIR filters; IIR filters; random signal analysis; correlation functions; DFT; FFT; spectral analysis; applications of signal processing to speech, image, etc.

SIGSPECTRAL: Signals, Spectra and Signal Processing Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: ADVENGMATH**
Co-requisite: SIGSPECTRA

Fourier transform; z transform; convolution; FIR filters; IIR filters; random signal analysis; correlation functions; DFT; FFT; spectral analysis; applications of signal processing to speech, image, etc.

COMSYSTEMS: Principles of Communication Systems
Units: Lec: 3 Lab: 0 **Prerequisite: EDEVICES,EDEVICESL**
Co-requisite: ECKTSAD, ECKTSADL

Bandwidth; filters; linear modulation; angle modulation; phase locked loop; pulse modulation; multiplexing techniques; noise analysis; radio transmitters and receivers.

COMSYSTEMSL: Principles of Communication Systems Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: EDEVICES,EDEVICESL**
Co-requisite: ECKTSAD,ECKTSADL,COMSYSTEMS
Bandwidth; filters; linear modulation; angle modulation; phase locked loop; pulse modulation; multiplexing techniques; noise analysis; radio transmitters and receivers.

MODCODING: Modulation and Coding Techniques
Units: Lec: 3 Lab: 0 **Prerequisite: COMSYSTEMS,COMSYSTEMSL**

Random variables, bit error rate; matched filter; Digital modulation techniques; ASK, FSK, QAM, PSK/QPSK, CDMA and W-CDMA systems; signal space; generalized orthonormal signals; information measures-entropy; channel capacity; efficient encoding; error correcting codes information theory; data compression; coding theory.

MODCODINGL: Modulation and Coding Techniques Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: COMSYSTEMS,COMSYSTEMSL**
Co-requisite: MODCODING

Random variables, bit error rate; matched filter; Digital modulation techniques; ASK, FSK, QAM, PSK/QPSK, CDMA and W-CDMA systems; signal space; generalized orthonormal signals; information measures-entropy; channel capacity; efficient encoding; error correcting codes information theory; data compression; coding theory.

DATACOMS: Data Communications
Units: Lec: 3 Lab: 0 **Prerequisite: MODCODING, MODCODINGL**

Data communication systems; terminals, modems; terminal control units; multiplexers; concentrators; front-end processors; common carrier services; data communication system design; computer network models; TCP/IP; principles; LAN; WAN.

DATACOMSL: Data Communications Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: MODCODING, MODCODINGL**
Co-requisite: DATACOMS

Data communication systems; terminals, modems; terminal control units; multiplexers; concentrators; front-end processors; common carrier services; data communication system design; computer network models; TCP/IP; principles; LAN; WAN.

TRANSMEDIA: Transmission Media and Antenna System and Design
Units: Lec: 3 Lab: 0 **Prerequisite: MODCODING, MODCODINGL**

Transmission media; radiowave propagation wire and cable transmission systems; fiber-optic transmission system; transmission lines and antenna systems.

TRANSMEDIAL: Transmission Media and Antenna System and Design Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: MODCODING, MODCODINGL**
Co-requisite: TRANSMEDIA

Transmission media; radiowave propagation wire and cable transmission systems; fiber-optic transmission system; transmission lines and antenna systems.

LOGICSWITCH: Logic Circuits and Switching Theory
Units: Lec: 3 Lab: 0 **Prerequisite: EDEVICES,EDEVICESL**

Review of number systems, coding and Boolean algebra; inputs and outputs; gates and gating networks; combinational circuits; standard form; minimization; sequential circuits; state and machine equivalence; asynchronous sequential circuits; race conditions; algorithmic state machines; design of digital subsystems.

LOGICSWITCHL: Logic Circuits and Switching Theory Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: EDEVICES,EDEVICESL**
Co-requisite: LOGICSWITCH

Review of number systems, coding and Boolean algebra; inputs and outputs; gates and gating networks; combinational circuits; standard form; minimization; sequential circuits; state and machine equivalence; asynchronous sequential circuits; race conditions; algorithmic state machines; design of digital subsystems.

MICROSAD: Microprocessor and Microcontroller Systems and Design
Units: Lec: 3 Lab: 0 **Prerequisite: LOGICSWITCH,LOGICSWITCHL**

The course covers concepts involving microprocessor/ microcontroller systems architecture/organization including microprocessor/microcontroller programming, interfacing techniques, memory systems and bus standards. In the laboratory, the students will be involved with experiments using micro controllers and the use of microprocessor/ micro controller development systems and other tools.

MICROSADL: Microprocessor and Microcontroller Systems and Design Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: LOGICSWITCH,LOGICSWITCHL**
Co-requisite: MICROSAD

The course covers concepts involving microprocessor/ microcontroller systems architecture/organization including microprocessor/microcontroller programming, interfacing techniques, memory systems and bus standards. In the laboratory, the students will be involved with experiments using micro controllers and the use of microprocessor/ micro controller development systems and other tools.

FEEDBACK: Feedback and Control Systems
Units: Lec: 3 Lab: 0 **Prerequisite: ADVENGMATH,CIRCUITS2, CIRCUITS2L**

This course deals with time and frequency response of feedback control systems. The topics covered include, time response of first order and second order systems, modeling, transfer functions, pole-zero map, stability analysis, root locus, bode plots, compensators, PID controllers, and introduction to state space techniques.

FEEDBACKL: Feedback and Control Systems Laboratory
Units: Lec: 0 Lab: 1 **Prerequisite: ADVENGMATH,CIRCUITS2, CIRCUITS2L**
Co-requisite: FEEDBACK

This course deals with time and frequency response of feedback control systems. The topics covered include, time response of first order and second order systems, modeling, transfer functions, pole-zero map, stability analysis, root locus, bode plots, compensators, PID controllers, and introduction to state space techniques.

RMETHODS : Methods of Research
Units: Lec: 3 Lab: 0 **Prerequisite: 4th Year Standing**

This course deals with research preparation methods, research tools, research proposals, and the implementation, presentation and publication of research work.

ECEDESIGN1: Design 1 / Capstone Project 1
Units: Lec: 0 Lab: 1 **Prerequisite: 4th Year Standing**

This is the capstone course which utilizes the fundamentals of electronics engineering in the design of an electronic system. It includes the synthesis of processes, analysis of process conditions and the analytic, heuristic and optimum design of equipment and processes. Economic analysis is included to estimate the cost of equipment, capital investment, total product cost and profitability.

ECEDESIGN2: Design 2 / Capstone Project 2
Units: Lec: 0 Lab: 1 **Prerequisite: ECEDESIGN1**

This is the capstone course which utilizes the fundamentals of electronics engineering in the design of an electronic system. It includes the synthesis of processes, analysis of process conditions and the analytic, heuristic and optimum design of equipment and processes. Economic analysis is included to estimate the cost of equipment, capital investment, total product cost and profitability.

ECESEMINARS: Seminars / Colloquium
Units: Lec: 0 Lab: 1 **Prerequisite: 4th Year Standing**

This course deals with a series of lectures and seminars on selected topics that are highly relevant to electronics engineering but are not covered in any of the other formal courses. It covers recent advances in electronics engineering. It is also a venue for the students to present their projects and researches.

ECEONJOBT: ECE On-the-Job Training (240 hours)
Units: 3 (240 HOURS) **Prerequisite: 3rd Year Standing, Permission of Program Chair or School Dean**

This course deals with the actual on-the-job training or industry internship in the field of specialization.

INFOCOMTECH1 Routing and Switching Essentials
Units: Lec: 1 Lab: 1 Prerequisite: COMFUN2

Introduces the architecture, structure, functions, components, and models of the Internet and computer networks. The principles of IP addressing and fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.

INFOCOMTECH2: Advanced Routing and Switching
Units: Lec: 1 Lab: 1 Prerequisite: INFOCOMTECH1

Describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement DHCP and DNS operations in a network.

INFOCOMTECH3: Scaling and Connecting Networks
Units: Lec: 1 Lab: 1 Prerequisite: INFOCOMTECH2

Describes the architecture, components, and operations of routers and switches in a large and complex network. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, STP, and VTP in both IPv4 and IPv6 networks.

INFOCOMTECH4: Cybersecurity Essentials
Units: Lec: 1 Lab: 1 Prerequisite: INFOCOMTECH3

Discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. It demonstrates the skills required to develop a security infrastructure, recognize threats and vulnerabilities to networks, and mitigate security threats. It also emphasizes core security technologies, the installation, troubleshooting and monitoring of network devices to maintain integrity, confidentiality and availability of data and devices, and competency in the technologies of security infrastructure. Students develop the knowledge and skills needed to implement IPSec and virtual private network (VPN) operations in a complex network.

ELECTIVE COURSES

a. TELECOMMUNICATIONS

ADVCOMSAD/L: Advanced Communication System and Design (Wireless)
Units: Lec: 3 Lab: 1 **Prerequisite: TRANSMEDIA/L**

Covers Signal Transmission Modes; Spread Spectrum Modulation System; Terrestrial Microwave; Satellite Systems; Satellite Multiple Access Techniques; Terrestrial and Satellite Systems Path Calculations and Link Budgets.

ADVNETWORK/L: Advanced Networking
Units: Lec: 3 Lab: 1 **Prerequisite: TRANSMEDIA/L**

Operating performance and interface standards for voice and data circuits; telecommunications facility planning; outside plant engineering; surveying; switching and handling systems; mobile systems and standards; cellular radio systems ; PSTN.

b. MICROELECTRONICS

ICDESANLOG/L: Analog IC Design
Units: Lec: 3 Lab: 1 **Prerequisite: ESYSTEMS/L**

Focuses on Analog IC Fabrication processes, Analog device Modeling and Circuit simulation. Design and Characterization of Analog circuit building blocks such Amplifiers, Comparators, Operational Amplifiers and other analog systems.

ICDESDIGIT/LDigital IC Design
Units: Lec: 3 Lab: 1 **Prerequisite: ESYSTEMS/L**

Focuses on the practice of designing VLSI systems from circuits to architectures and from sub-systems to systems. Top-down design techniques are taught using VHDL to design and model digital systems.

c. POWER ELECTRONICS

ADVPWRSYS/L : Advanced Power Supply Systems
Units: Lec: 3 Lab: 1 **Prerequisite: ECKTSAD/L**

This course introduces power electronics scope and applications. The semiconductor devices for power electronics applications are presented. Ideal switch model is used in the study of converter topologies. Fast recovery diodes are discussed for switch mode dc-dc converters and dc-to-ac inverters; Developments on resonant-mode converter topologies for zero-loss switching; switch mode and uninterruptible power supplies.

RNWENERSYS/L: Renewable Energy Systems
Units: Lec: 3 Lab: 1 **Prerequisite: CIRCUITS2/L**

The course provides an introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and application. The class will explore society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels and nuclear energy, and then focus on alternate, renewable energy sources such as solar, biomass (conversions), wind power, geothermal, and hydro. Energy conservation methods will be emphasized.

d. BIOTECH/BIOMEDICAL ELECTRONICS

BIOMEDENGG/L: Fundamentals of Biomedical Engineering
Units: Lec: 3 Lab: 1 **Prerequisite: EPHYSICS2/L**

Introduction to the concepts of Human Anatomy and Medical Terminology; Basic Pathology, Diagnostics and Therapy; Origins and Meaning of Bio-signals; Electrodes for Measurement of Bio-signals; Physiological Instrumentation; Methods for Measurements of pressure flow and volume in the context of blood and respiratory gases; Sources of ionizing radiation; Radiation protection and safety, societal issues in biomedical engineering

MEDIMAGE/L: Medical Imaging
Units: Lec: 3 Lab: 1 **Prerequisite: EPHYSICS2/L**

Focuses on the on the theory of 2-D Signals and systems; Image Sampling and Quantization; Image Transforms: 2-D Discrete; Fourier Transforms: 2-D Discrete Cosine Transform; Image Enhancement; Image Restoration; Image coding (JPEG, MPEG); electromagnetic spectrum, ultrasound physics, Basic Atomic and Nuclear Physics, Principles of operation of X-ray machine and film developer, computed tomography Scan, Magnetic Resonance Imaging, Positron Emission Tomography, Gamma Camera, Ultrasound Machine. Image creation and its acquisition by equipment and nuclear image processing.

e. INSTRUMENTATION AND CONTROL

ADVINSTCON/L: Advanced Instrumentation and Control Systems
Units: Lec: 3 Lab: 1 **Prerequisite: FEEDBACK/L**

Introduction to advanced instrumentation and control systems to include study on Non Linear Systems, Stability, Model Reference Adaptive Control, Self Tuning Regulators, Recent trends and applications of adaptive Control and Optimal Control.

ROBOTECH/L: Robotics Technology
Units: Lec: 3 Lab: 1 **Prerequisite: ESYSTEMS/L**

Introduction to Robotics to include Actuators & Drives, Control Components, Control Software, Kinematics, Differential Motion, Statics, Energy Method, Hybrid Position – Force Control, Non-holonomic Systems, Dynamics, Computed Torque Control.

f. BUILDING INFORMATION AND COMMUNICATIONS TECHNOLOGY INFRASTRUCTURE

ICTINFRA/L ICT Infrastructure
Units: Lec: 3 Lab: 1 **Prerequisite: NONE**
This course introduces a variety of topics to build students' skills and understanding of Information and Communication Technology. The course also introduces ICT devices and the IOS operating system. Students will learn how ICTs are set up, how devices are configured, how communication takes place on a network, and the basics of implementing network security best practices.

EANCILLSYS/L Electronics Ancillary System
Units: Lec: 3 Lab: 1 **Prerequisite: ESYSTEMS/L**
Ancillary services refer to functions that help grid operators maintain a reliable electricity system. Ancillary services maintain the proper flow and direction of electricity, address imbalances between supply and demand, and help the system recover after a power system

g. COMPUTER

COMSYSARC/L: Computer Systems Architecture
Units: Lec: 3 Lab: 1 **Prerequisite: COMFUN2**

This course deals with the design and performance evaluation of advanced/high performance computer systems. The emphasis is on microprocessors, chip-multiprocessors and memory hierarchy design. Historical information is presented as well along with data storage and low-power dissipation schemes. Special attention is paid to pipelining, ILP (instruction-level parallelism), DLP (data-level parallelism) and TLP (thread-level parallelism) using hardware and/or software techniques to yield high performance.

OSADVPLANG/L: Operating Systems and Advanced Programming Languages
Units: Lec: 3 Lab: 1 **Prerequisite: COMFUN2**

The topics are primarily based on CPU and memory management starting from the hardware architecture before moving to process scheduling and resource allocation. Here only central memory allocation is considered because the disk allocation has been considered in the first part of the course. Some general properties of process synchronization are investigated dealing with the classical

problem of critical regions, producer-consumer relationship and the more general framework of the client-server schema.

h. BROADCASTING

BCPRODENG/L: Broadcast Production Engineering
Units: Lec: 3 Lab: 1 **Prerequisite: TRANSMEDIA/L**

Discusses operation of audio and video equipment including amplifiers, processors, audio/video mixers, distribution amps, TV cameras, microphones, monitors systems integration, studio electro-acoustics and lighting , TV and radio transmitters and propagation, coverage map calculation and frequency analysis, broadcast networking , broadcast ancillary services (STL's and satellite links). Also includes CATV technology and DTH.

BCTRANSDIS/L Broadcast Transmission and Distribution
Units: Lec: 3 Lab: 1 **Prerequisite:BCPRODENG/L**

Course includes the applications in different areas of broadcasting such as television, AM, FM, cable television, telecommunications, data communications, studio acoustics etc. through experiments and field researches; basic equipment or devices used for transmission of signals such as filters and oscillators, radio frequency power amplifiers and mixers, basic circuits of modulation and demodulation, transmitters and studio equipment