國立中山大學電機工程學系學士班課程結構圖

Course structure diagram of the Bachelor's Program in the Department of Electrical Engineering, National Sun Yat-sen University

Required courses

Grade1	INTRODUCTION TO COMPUTERS ／ COMPUTER PROGRAMMING ／ CALCULUS(I) ／ CALCULUS(II) ／ GENERAL PHYSICS(I) ／ GENERAL PHYSICS(II) ／ DIFFERENTIAL EQUATIONS ／ LINEAR ALGEBRA ／ DESIGN OF DIGITAL SYSTEMS ／ CIRCUIT THEORY (I)
Grade2	ELECTRONICS (I) ／ ELECTRONICS (II) ／ ELECTROMAGNETIC THEORY (I) ／ ELECTROMAGNETIC THEORY (II) ／ CIRCUIT THEORY (II)(3) ／ SIGNALS AND SYSTEMS ／ ELECTRICAL MACHINES ELECTRICAL ENGINEERING LAB. (I) ／ ELECTRICAL ENGINEERING LAB. (II) ／ PROBABILITY THEORY
Grade3	CONTROL SYSTEMS ／ COMMUNICATION SYSTEMS ／ COMPLEX VARIABLES ／ DISCRETE MATHEMATICS ELECTRICAL ENGINEERING LAB. (III) ／ ELECTRICAL ENGINEERING LAB. (IV)

Grade4	ELECTRICAL ENGINEERING LAB. (V)						
INDEPENDENT STUDIES IN ELECTRONIC PRACTICE	INDEPENDENT STUDIES IN CONTROL PRACTICE	INDEPENDENT STUDIES IN COMPUTER PRACTICE	INDEPENDENT STUDIES IN COMMUNICATION PRACTICE	INDEPENDENT STUDIES IN ELECTRIC POWER PRACTICE	INDEPENDENT STUDIES IN WAVE AND OPTICS PRACTICE	INDEPENDENT STUDIES IN SYSTEM-ON-CHIP DESIGN	INDEPENDENT STUDIES IN BIOMEDICAL SIGNAL PROCESSING AND INSTRUMENTATION

Elective Courses

area	Grade2	Grade3	Grade4
Semiconductor Electronics		1. SEMICONDUCTOR DEVICES (I) 2. ELECTRONICS (III) 3. MODERN PHYSICS 4. INTRODUCTION TO SOLID STATE PHYSICS 5. PRINCIPLES IN NANO-MICROSYSTEM ENGINEERING 6. INTRODUCTION TO COMPOUND SEMICONDUCTORS 7. ELECTRONIC MATERIALS AND ENGINEERING	1. SEMICONDUCTOR DEVICES (II) 2. MICROELECTRONIC TECHNOLOGY 3. ADVANCED ELECTRICAL ENGINEERING PROJECT 4. FIELD PROJECT IN ELECTRICAL ENGINEERING(I) 5. FIELD PROJECT IN ELECTRICAL ENGINEERING(II)
Control Systen	MATRIX THEORY AND PPLICATIONS	1. DYNAMIC ANALYSES AND CONTROLS OF ELECTRIC MACHINERY 2. POWER ELECTRONICS 3. AUDIO CIRCUIT DESIGN	1. INTRODUCTION TO LINEAR SYSTEM 2. INTRODUCTION TO OPTIMIZATION 3. INTRODUCTION TO DIGITAL SIGNAL PROCESSING 4. INTRODUCTION TO OPTIMAL CONTROL 5. ADVANCED ELECTRICAL ENGINEERING PROJECT 6. FIELD PROJECT IN ELECTRICAL ENGINEERING(I) 7. FIELD PROJECT IN ELECTRICAL ENGINEERING(II)
AI & Network	1. DATA STRUCTURES 2. LINUX OPERATING SYSTEM	1. OPERATING SYSTEMS 2. INTRODUCTION TO VLSI DESIGN 3. DESIGN AND ANALYSIS OF ALGORITHMS 4. MICROPROCESSORS AND DIGITAL SYSTEMS 5. ARTIFICIAL INTELLIGENCE LANGUAGE – PROLOG 6. INTRODUCTION TO ARTIFICIAL NEURAL NETWORKS 7. IMAGE COMMUNICATION 8. INTRODUCTION TO VIDEO CODING AND STANDARDS 9. INTRODUCTION TO IMAGE PROCESSING 10. INTRODUCTION TO MULTIMEDIA COMMUNICATION 11. SIMULATIONS OF COMMUNICATION SYSTEMS 12. APPLICATIONS OF DIGITAL COMMUNICATIONS 13. INTRODUCTION TO DATA MINING	1. INTRODUCTION TO WIRELESS COMMUNICATION SYSTEMS 2. INFORMATION THEORY AND CODING TECHNIQUE 3. IMAGE PROCESSING TECHNIQUES 4. INTRODUCTION TO DIGITAL SIGNAL PROCESSING 5. DIGITAL COMMUNICATION 6. PROBABILITY MODELS AND APPLICATIONS 7. ADVANCED ELECTRICAL ENGINEERING PROJECT 8. FIELD PROJECT IN ELECTRICAL ENGINEERING(I) 9. FIELD PROJECT IN ELECTRICAL ENGINEERING(II)
Power System	MATRIX THEORY AND PPLICATIONS	1. POWER ELECTRONICS 2. POWER ELECTRONICS LABORATORY 3. DYNAMIC ANALYSES AND CONTROLS OF ELECTRIC MACHINERY 4. POWER SYSTEMS (I)	1. INTRODUCTION TO OPTIMIZATION 2. INTRODUCTION TO LINEAR SYSTEM 3. ENGINEERING ECONOMICS 4. POWER DISTRIBUTIONS 5. INTRODUCTION TO ENERGY AND

		5. POWER SYSTEMS (II) 6. MICROPROCESSORS AND DIGITAL SYSTEMS 7. SPECIAL TOPICS IN POWER CONVERSION	BATTERY MANAGEMENT SYSTEMS 6. DESIGN PRACTICE AND APPLICATIONS OF MACHINE LEARNING SYSTEMS 7. DESIGN PRACTICE OF SMART IOT SYSTEMS 8. ADVANCED ELECTRICAL ENGINEERING PROJECT 9. FIELD PROJECT IN ELECTRICAL ENGINEERING(I) 10. FIELD PROJECT IN ELECTRICAL ENGINEERING(II)
EM Wave		1. MICROWAVE ENGINEERING 2. INTRODUCTION TO MICROWAVE DEVICES 3. MICROWAVE CIRCUIT AND SYSTEM SIMULATION	1. HIGH-SPEED DIGITAL SYSTEM DESIGN 2. MICROWAVE CIRCUIT LABORATORY 3. FUNDAMENTALS AND APPLICATIONS IN RFID SYSTEMS 4. PRACTICE OF SYSTEM-IN-PACKAGE DESIGN 5. ADVANCED ELECTRICAL ENGINEERING PROJECT 6. FIELD PROJECT IN ELECTRICAL ENGINEERING(I) 7. FIELD PROJECT IN ELECTRICAL ENGINEERING(II)
System-on-Chip	1. HARDWARE DESCRIPTION LANGUAGES 2. EMBEDDED SOFTWARE DESIGN AND PRACTICE 3. COMPUTER ORGANIZATIONS 4. LINUX OPERATING SYSTEM	1. INTRODUCTION TO VLSI DESIGN 2. FUNDAMENTALS OF EMBEDDED SYSTEMS 3. MICROPROCESSORS AND DIGITAL SYSTEMS 4. PRACTICAL DIGITAL SYSTEMS DESIGN 5. MICROPROCESSOR-BASED CIRCUIT DESIGN PRACTICE	1. INTRODUCTION TO DIGITAL SIGNAL PROCESSING 2. OVERVIEW OF SYSTEM-ON-CHIP (SOC) DESIGN 3. PRACTICAL ENGINEERING IN MULTIDIMENSIONAL MULTIMEDIA 4. DESIGN AND PRACTICE FOR SMART ELECTRICAL VEHICLES 5. DESIGN PRACTICE AND APPLICATIONS OF MACHINE LEARNING SYSTEMS 6. DESIGN PRACTICE OF SMART IOT SYSTEMS 7. ADVANCED ELECTRICAL ENGINEERING PROJECT 8. FIELD PROJECT IN ELECTRICAL ENGINEERING(I) 9. FIELD PROJECT IN ELECTRICAL ENGINEERING(II)
Biomedical Signal Processing & Instrumentation	PRACTICE OF NUMERICAL COMPUTING	1. INTRODUCTION TO BIOMEDICAL ENGINEERING 2. INTRODUCTION TO ARTIFICIAL NEURAL NETWORKS 3. AUDIO CIRCUIT DESIGN	1. INTRODUCTION TO DIGITAL SIGNAL PROCESSING 2. BIOMEDICAL ENGINEERING LABORATORY 3. MEDICAL IMAGING SYSTEMS 4. INTRODUCTION TO OPTIMIZATION 5. ADVANCED ELECTRICAL ENGINEERING PROJECT 6. FIELD PROJECT IN ELECTRICAL ENGINEERING(I) 7. FIELD PROJECT IN ELECTRICAL ENGINEERING(II)