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Faculty of Science and Technology

PRATAP COLLEGE, AMALNER

(AUTONOMOUS)

Affiliated to Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon

'A+'

Grade NAAC

Re-Accredited

(3rd Cycle)

Syllabus For

S.Y.B.Sc. (Major Electronics)

(As per NEP-2020)

(With effect from June (2024-25))

Preamble

The University Grants Commission (UGC) has initiated several measures to bring distinction, quality and uniformity in the Higher Education System of the country. The important measures taken to enhance academic standards include enhancements in curriculum, teaching-learning process and examination and evaluation systems .In view of this, Pratap College Amalner affiliated to North Maharashtra University, Jalgaon has taken several initiatives to upgrade and improve the academic excellence, and examination reforms for the overall development of the students. As per the expectations of NEP 2020, Pratap College, Amalner, has already implemented the curriculum for undergraduate program. As per the initiatives led by the Honorable Vice Chancellor, Pro-Vice Chancellor and Dean of the Faculty of Science and Technology and academic bodies of our college, online workshop was organized for syllabus framing. Participants in the workshop cooperated with their constructive minds of framing the syllabi of second year B.Sc. (Electronics) as per the NEP-2020 pattern and it has been finalized during the workshop and the same will be effectively implemented from the academic year 2024-25. The main objective of reforming the syllabi of S.Y.B.Sc.(Electronics) is to create manpower that can cater for the present needs of the society with a perfect understanding of Analog Circuits & Applications, microprocessor 8085/8086 and Electronic Communication and complete skill to serve the industry and the country. It is expected that the students studying this course will apply their practical minds to solve real-life problems of the society to serve mankind.

Board of Studies (Electronics),
Pratap College, Amalner (Autonomous)

Faculty of Science

PRATAP COLLEGE, AMALNER (AUTONOMOUS)

Affiliated to KBC North Maharashtra University, Jalgaon

Class: **S.Y.B.Sc.**

Subject: **Electronics**

NEP (With effect from June 2024-25)

The Board of Studies in Electronics in its meeting has unanimously accepted the revised syllabus (as per NEP pattern) prepared by different committees, discussed and finalized in workshop for S.Y.B.Sc. Syllabi revision. The titles of the papers for S.Y.B.Sc.(Electronics) are as given below:

Sem	Course as per UGC guidelines	Core course		No of Credits	Clock hour/ Sem	Marks	
		Course Code	Course Title			Int	Ext
III	1. Electronics-DSC 2C:Analog Circuit & Applications and Microprocessors (Credits:Theory-04, Practicals-02) ELECTRONICS LAB	ELE-MJ-201	Analog Circuit & Applications	2	30	20	30
		ELE - MJ-202	Microprocessor 8085	2	30	20	30
		ELE - MJP-203	Analog Circuit & Applications Practical Paper-III	2	30	20	30
		ELE - MJP-204	Microprocessor 8085 Practical Paper –IV	2	30	20	30
	2. Electronics- Analog & Digital Communication And ELECTRONICS LAB	ELE-MN-211	Analog & Digital Communication	2	30	20	30
		ELE-MNP-212	Electronic Communication Practical Paper-I	2	30	20	30
	3. Vocational/Skill Enhancement course Group	ELE-VSC-205	Electronics Equipments & Maintenance	2	30	20	30
		ELE-VSCP-206	Electronic Equipments & Maintenance Practical	2	30	20	30

	4. Generic Open Elective course Group	ELE-OE-221	Digital Literacy	2	30	20	30
IV	Electronics-DSC2D: Linear Integrated Circuit And Microprocessor (Credits:Theory-04, Practicals-02) ELECTRONICS LAB	ELE - MJ-251	Linear Integrated Circuit	2	30	20	30
		ELE - MJ-252	Microprocessor 8086 & Interfacing	2	30	20	30
		ELE-MJP-253	Linear Integrated Circuit Practical Paper-V	2	30	20	30
		ELE-MJP-253	Microprocessor 8086 & Interfacing Practical Paper-VI	2	30	20	30
	Microprocessor	ELE-MN-261	Introduction to Microprocessor	2	30	20	30
	OE	ELE-OE-271	Hardware & Networking	2	30	20	30
	CEP	ELE-CEP-255	E-Waste Management	2	30	20	30

PRATAPCOLLEGE, AMALNER (AUTONOMOUS)

Affiliated to KBC North Maharashtra University, Jalgaon

Syllabus of S.Y.B.Sc. (Electronics) (NEP System)

Semester III

ELECTRONICS-DSC1A: ELE-MJ-201 ANALOG CIRCUITS AND APPLICATIONS and MICROPROCESSOR 8085

Theory: 30 clock hours

(Credits: Theory-02, Practicals-02, Skill based-02)

Course description:

This course is aimed to provide exposure of analog communications, microprocessors and electrical circuits and networks to students and make them analyze practical circuits of modulation and use of 8085 microprocessors.

Course objectives:

1. To impart knowledge of analog communication.
2. To provide the knowledge and methodology necessary for building modulation circuits.
3. To provide exposure to 8085 microprocessors.
4. To have practical exposure to microprocessors and their applications.
5. To analyze various modulation techniques and explore their potential in consumer electronics.

Course outcome:

Learners will be able to....

1. Apply knowledge to develop circuits of analog modulation and demodulation.
2. Apply the concept and knowledge of microprocessor store a life problems.
3. Analyze modulation circuits and understand the behavior of the systems.
4. Understand and analyze 8085 microprocessor and its programming.
5. Review, prepare and present technological developments.

S.Y.B.Sc. (Electronics) Sem-III (Credit: 02)

ELE-MJ-201 Analog Circuits and Applications

(Course Credits: 2, Total Hours: 30)

Objectives:

1. The goal of this course is to introduce and verify basic principles, operation and applications of the various analog electronic circuits for various functions.
2. To make students understand and analyze the design and working of amplifiers and their configurations.
3. To understand the concept in related to transistorized oscillator, amplifier, etc.

Unit1: Introduction (6H, 6M)

Classification of Amplifier, Single stage Common Emitter Amplifier and its design, Tuned Amplifier, Distortion and noise in amplifier.

Unit 2: Multistage Transistor Amplifiers: (8H, 8M)

Introduction, Block diagram of multistage transistor amplifier, Application of multistage amplifier, block Diagram of PA system, Explanation of terms- gain, frequency response, and decibel gain Bandwidth. RC-coupled transistor amplifiers and their design, transformers coupled transistor amplifier, Direct Coupled Amplifier.

Unit 3: Transistor Power Amplifier (6H, 6M)

Difference between voltage and power amplifiers, Block diagram of a practical power amplifier, Classification of power amplifier, Principle of push pull amplifier, Class B Push Pull Power Amplifier operation, cross over distortion, conversion efficiency, heat sinks.

Unit 4 : Feedback & Oscillator (10H,10M)

Concept of feedback, types of feedback, Topologies of feedback, Effect of negative feedback on gain, non linear distortion, Band width, Noise Input and output impedance, (derivations are not expected). Emitter follower – operation, characteristics and applications. Tank circuit, Bark Hausen criterion, Oscillator types, Phase Shift Oscillator, Hartley Oscillator, Colpitts Oscillator, Crystal Oscillator, (Working, advantages & disadvantages).

Reference Books:

1. Principles of Electronics- V.K. Mehta
2. Electronic Principles- A.P. Malvino
3. Basic Electronics & Linear Circuits – N.N. Bhargrava
4. Integrated Electronics – Millman Halkias

S.Y.B.Sc.(Electronics) Sem-III (Credit:02)

ELE-202: Microprocessors 8085 (30 clock hour)

Unit1: Fundamentals of Microcomputer (6H, 6M)

Simple Microcomputer Architecture, Input/output Devices, Address bus, Data bus, Control bus, Data storage (idea of RAM and ROM),Computer memory, High level language, Low level language, Assembler, Compiler.

Unit2: Architecture of 8085 Microprocessor. (10H, 10M)

Features of 8085, Block diagram, function of each block, Registers, ALU, Stack memory, Stack Pointer, Program counter, Concept of Interrupt, Hardware interrupts. Pin-out diagram of 8085,function of each pin, Data and address buses, De-multiplexing the Bus AD7-AD0, Timing states (T-state), Machine Cycle, Instruction cycle. Timing diagram for Read and write operation (MOV A,M and MOV M,A)

Unit3: Instruction set of 8085 Microprocessor. (8H, 8 M)

Study of addressing mode for 8085:-Register Addressing, Immediate Addressing, Direct Addressing, Register Indirect Addressing, Instruction set: Data transfer instructions, Arithmetic Instructions, Logical Instructions, Branching Instructions, Stack, I/O and Machine Control Instructions.

Unit4: Assembly Language Programming. (6H, 6M)

Assembly Language Format, Arithmetic Programs: - 8-bit addition, 8-bit subtraction, Decimal addition and subtraction of two8-bit numbers,8-multiplication,one'sandtwo's complement of 16-bit numbers, find largest and smallest Number from a series of given number.

Reference Books:

1. Hall D. V., "Microprocessor and Interfacing-Programming and Hardware"2ndEd.,Tata McGraw-Hill Publishing Company Limited, 2008

2. Gaonkar R.S.,"Microprocessor Architecture, Programming and Applications", 5th Ed., Penram International,2007.

3. 8080A/8085 Assembly Language Programming by Lance A. Leventhal

S.Y.B.Sc. (Electronics) Sem-III Paper-III (Credit: 02)

ELECTRONICS LAB: DSC 1A LAB: ANALOG CIRCUITS AND APPLICATIONS PRACTICAL

ELE-MJP-203: ELECTRONICS LAB-III

(Students should perform at least 8 experiments from)

Section A: Analog Circuits and Applications Practical

1. Design, Build and test Single stage common Emitter Amplifier.
2. Build and test RC-coupled transistor Amplifier.
3. Study of Directional Characteristics of Microphone.
4. Build and test class B Push Pull Amplifier.
5. Build and test Phase shift oscillator for given frequency using Transistor.
6. Build and test Crystal Oscillator using Transistor.
7. Effect of Heat sink on efficiency of transistor
8. Study of class-A power Amplifier.
9. Study of feedback circuit.
10. Study of Direct coupled Amplifier.
11. Study of PA system.
12. Study of Tank Circuit.

S.Y.B.Sc. (Electronics) Sem-III Paper-IV (Credit: 02)
ELECTRONICSLAB: DSC 1A LAB: MICROPROCESSOR 8085 PRACTICAL

ELE-MJP-204: ELECTRONICSLAB-III

(Student should perform **at least 8** from section B)

Section B: Microprocessors

1. Assembly Language Program for addition/subtraction of two 8-bit numbers using direct Addressing mode.
2. Assembly Language Program for addition/subtraction of numbers using indirect addressing Mode.
3. Assembly Language Program to multiply 8-bit unsigned number by 8-bit unsigned number using repeated addition.
4. Assembly Language Program to divide 8-bit unsigned number by 8-bit unsigned number using repeated subtraction.
5. Assembly Language Program to add two16-bit Numbers.
6. Assembly Language Program to calculate the sum of this rise of number using subroutine.
7. Assembly language program to transfer a block of data from one location to another location of memory.
8. Assembly Language program to find the smallest/largest number from a series of numbers.
9. Write ALP to arrange set 8 bit number starting location in ASCENDING order Display the stored vector in address-data field.
10. Write ALP to arrange set 8 bit number starting location in DESCENDIG order Display the stored vector in address-data field.

Reference Books:

- Electronic Communications, D. Roddy and J. Coolen, Pearson Education, India. 8080A/8085
- Assembly Language Programming by Lance A. Leventhal

S.Y.B.Sc. (Electronics) Sem-III (Credit: 02)

ELE-MN-211: Analog & Digital Communication

Objective

1. To learn the concepts of communication systems.
2. To impart knowledge of pulse modulation, mobile and satellite.

Unit 1 Introduction to Analog Communication (6H, 6M)

Block diagram of Communication system: Information, Transmitter, Channel, Receiver, Definition of Base band signal, Modulation: Definition, Need of modulation, types of modulation (AM, FM, PM). Electromagnetic Spectrum: Band designations and applications (Cover all bands) Noise: Definition, Types of external noise, Types of internal noise, Noise Figure: signal to noise ratio, Noise temperature

Unit 2 Analog Modulation techniques (10H, 10M)

Amplitude modulation theory: Frequency spectrum of AM wave, Representation of AM wave, Power relation, Modulation index, AM transmitter: block diagram, Generation of AM: Collector modulator, AM detection: diode detector, Advantages and Disadvantage of AM wave, Numerical on modulation index, power calculations.

Unit 3 Introduction to Digital communication (6H, 6M)

Digital versus analog transmission, Channel capacity-Shannon Hartley theorem, Bit rate, Baud rate, Sampling theorem-statement and significance, Block diagram of digital communication, Advantages of digital communication, Comparison of analog and Digital transmission, multiplexing techniques- only introduction.

Unit4: Digital modulation techniques (8H, 8M)

Classification of pulse modulation techniques, PAM-basic principal, ideal, natural and flat top sampling, Generation of PAM signal, PAM detector PWM and PPM - basic principal, waveform, Advantages and disadvantages of PAM, PWM and PPM. PCM-Block diagram, sampling, quantization, quantization error and encoder Amplitude shift keying - principle, waveform, ASK generator, Advantages and disadvantages of ASK, FSK and PSK.

Reference Books:

1. Electronic Communication System, G. Kennedy, Tata McGraw-Hill publishing
2. Electronics and Communication, A. K. Maini, Khanna Publisher

S.Y.B.Sc. (Electronics) Sem-III Paper-I (Credit: 02)

ELE-MNP-212 Electronic Communication Practical Paper-I

Section A: Analog Communication (Any four)

1. To build and test an Amplitude Modulator using transistor
2. To build and test diode detector for demodulation of AM signal.
3. To study Time Division Multiplexing.
4. To study Frequency Division Multiplexing.
5. To study of Pulse Code Modulation & Demodulation

Section-B: Digital Communication (Any four)

1. Study of pulse code modulation system.
2. Study of pulse amplitude system.
3. Study of pulse width modulation system.
4. Study of pulse position modulation system.
5. Study of Amplitude Shift Keying.

Reference Books:

- Communication Systems, S. Haykin, 2006, Wiley India
- Electronic Communications, D. Roddy and J. Coolen, Pearson Education, India.
- 8080A/8085 Assembly Language Programming by Lance A. Leventhal

ELE-VSC-205 Electronics Equipment & Maintenance

(Credit: 02)

Objective:

1. The students will learn about repairing of all types of electronic devices.
2. The students deals with the aspects of electronic mechanics and they get expertise in both theoretical and practical knowledge.
3. Students will be able to understand the principles of electronics design, system testing, circuit troubleshooting and component repair.

Unit 1: Safety and Precautions (6H, 6M)

Importance of Safety, Safety precautions to minimize these hazards (General), Precautions to be taken when preparing a circuit, Precautions to be taken before powering the circuit, Precautions while switching ON the circuit, Precautions while switching off or shutting down the circuit, Soldering Precautions, Concept of Earthing and ground.

Unit2: Measuring Instruments (6H, 6M)

Electronic Instruments: CRO, Function generator, Power Supply, Analog & Digital Multi-meter, IC Tester.

Unit3: Electronic Component & testing (6H, 6M)

Study of electronic components- active & passive, Study of Breadboard, Identifying the components and its location on the PCB, soldering of active and passive components, testing the assembled circuit for correct functionality.

Unit4: Electronic Circuit making & fault finding. (6H, 6M)

Common faults and their symptoms: short circuit, open circuit, reverse connection, incorrect component etc. Making DC Regulated Power supply, Study of transistor as an amplifier, flashing LED using transistor, Seven segments display using IC 7447, Emitter follower, study of Astable multivibrator, half & full subtractor. Making simple alarm, water level indicator, Fire alarm Circuit etc.

References:

Practical Electronics Handbook- Ian Sinclair, John Dunton

ELE-VSCP-206 Electronics Equipment & Maintenance Practical
Credit - 02

Prerequisites: To familiarize with basic electronic components (R, C, L, diodes, transistors), digital Multimeter, Function Generator and Oscilloscope.

Section A: (Attempt any 8)

1. Measurement of Amplitude, Frequency and Phase difference using Oscilloscope.
2. To design and study DC regulated power supply (5V).
3. To design and study DC regulated dual power supply (12V).
4. To design and study DC variable power supply (12V/5V).
5. To design and build simple alarm.
6. To design and build water level indicator.
7. Test given circuit and find its fault.
8. To design & test Transistor as CE/ CB amplifier.
9. To design & test flashing LED using transistor.
10. To design & test Astable multivibrator using IC 555.
11. To design & built Half/ Full subtractor.
12. To design & build fire alarm.

ELE-OE-221 Digital Literacy

(Credit: 02)

Course objectives:

- Familiarize with basics of Computer/laptop and accessories.
- Understand the practical use of internet and its use in daily life.
- Have the knowledge of various apps like BHIM, Google, etc.
- Understand the practical use of online platforms like ZOOM, Google meet etc.

Course Outcomes (COs):

At the end of this course, student will be able to

CO No.	CO	Cognitive Level
CO 1	Acquire basic skills of using computer and smart phone	2
CO 2	Use Google tools effectively	4
CO 3	Operate different day to day useful apps on mobile or laptop	5
CO 4	Use digital technology effectively for various purposes	3

...

Unit 1: Basic computer and smart phone skills: (6 Hour, 6 Marks)

Introduction and working of parts of computer/laptop, computer and laptop accessories: Headphone, mouse, keyboard and web cam, smart phone skills: connecting laptop to projector.

Unit 2: Digital skills for daily life: (10Hour, 10 Marks)

Configuring and activating internet connection for smart phone, data connection, mobile hotspot (tethering), opening and operating Gmail account, Smart typing skills: figure placement for efficient typing, Effective use of email templates, scheduling emails, configuring emails Using Wi-Fi at home to access high speed internet, wired connections for connecting computers, WhatsApp on desktop, creating business account, sharing files, book marking, pinning chats.

Unit 3: UPI Payment & E-tools: (8 Hour, 8Marks)

Using BHIM app, Google pay, QR code, online shopping apps. UPI payment, Photo scan by google photos, google meet, Google tools, presentation modes in google meet, captions and host controls, sharing video recording and chat transcript, searching location using google maps, Social Media Applications, creating poll or quiz, sharing large files.

Unit 4: Collaboration tools: (6 Hour, 6 Marks)

Virtual conferencing applications, background in Zoom and using different features in Zoom, Google assistant in smart phone, Google translate, converting smart phone to digital microscope, learning new language using Duolingo app, Google lens.

References Books:

1 Digital Literacy: Concepts, Policies and practices by Colin Lankshear
2 Understanding Digital literacy by Rodney H. Jones
3 Digital Literacy by Paul Glister
4 Digital Literacy's for learning by Allan Martin and Dan Madigan

ELECTRONICS-DSC 2D: Linear Integrated Circuits & Microprocessor 8086 & Interfacing
(Credits: Theory-02, Practicals-02)

Course Description:

This is a course on the design of operational amplifiers and analog integrated circuits. and provide hands-on training of handling microprocessor and digital communication circuits.

Course objectives:

1. This course is intended to develop the skill to built, test, diagnose and rectify the Op-Amp based electronic circuits.
2. To provide the knowledge and methodology necessary for using microprocessor chips
3. To have practical exposure to handling microprocessors and interfacing applications.

Course outcome:

Learner will be able to....

1. Use Op-Amp in linear electronic circuits.
2. Use various configuration of op-Amp for different application.
3. Maintain filters and oscillators used in various electronic circuits.
4. Apply practice all knowledge of microprocessors to solve real-life problems of the society.
5. Understanding of the course and creating scientific temperament and giving exposure to the students for independent use of microprocessors for innovative applications.
6. Gain knowledge of microprocessor programming.
7. Handle hardware and software to shoot problems of society.
8. Handle hardware and software to shoot problems of society.

ELE-MJ-251 Linear Integrated Circuits
(Credit:02)

Unit 1: Operational Amplifiers (6 Hour, 6 Marks)

Characteristics of an Ideal and Practical Operational Amplifier (IC741), Open and closed loop configuration, Frequency Response, CMRR, Slew Rate.

Unit 2: Applications of Op-Amps (10 Hour, 10 Marks)

Inverting and non-inverting amplifiers, concept of Virtual Ground, Summing and Difference Amplifier, Differentiator, Integrator, Comparator and Zero-crossing detector, and Active low pass and high pass Butterworth filter (1st order only), Problems based on applications.

Unit 3: Clock and Timer (IC555) (6 Hour, 6 Marks)

Introduction, Block diagram of IC 555, Astable, Monostable and Bistable multivibrator circuits. Period and frequency of multivibrators, Problems, duty cycle & derivation.

Unit 4: D-A and A-D Conversion (8 Hour, 8 Marks)

4-Bit binary weighted and R-2R DAC, circuit and working, Accuracy and Resolution, A-D conversion characteristics, Types of ADC (list only), Successive approximation ADC, Problems on DAC.

Reference Books:

1. OP - Amps and Linear Integrated Circuit, R.A.Gaikwad, 4th edition (2000), Prentice Hall
2. Operational Amplifiers and Linear ICs, David A. Bell, 3rd Edition, (2011), Oxford University Press.

ELE-MJ-252: Microprocessor 8086 and Interfacing (30 clock hour)

Unit 1: Introduction to 8086 (6H, 6M)

Register organization of 8086, Architecture, Pin diagram and its functions, Signal Descriptions of 8086, Physical memory organization, General bus operation,

Unit 2: 8086 Instructions Set (6H, 6M)

Machine language instruction formats, Addressing mode of 8086,Instruction Set of 8086:- Data Copy/Transfer Instructions, Arithmetic and Logical Instructions, Branch Instructions, Loop Instructions, Machine control Instructions, Flag Manipulation Instructions, Shift and Rotate Instructions, String Instructions.

Unit 3: Special Architectural Features and Related Programming (6H, 12M)

Interrupts and interrupt service routines, interrupt cycle of 8086,NMI and maskable interrupt, interrupt Programming, Macros. Programming using Dos Interrupt: INT 21H (Function 01H, 02H, 09H, 4CH, 10H). Assembly language program, Loop program and String processing program.

Unit 4: I/O Interfacing Devices and Techniques (8HP,14M)

Serial Communication interface, Asynchronous and synchronous communication, Parallel communication interface, Programmable communication interface 8251, PPI (Programmable Peripheral interface) 8255, ADC -0808 interfacing and DAC interfacing.

Reference Books:

1. "Advanced microprocessor and peripherals (Architecture Programming and Interfacing)", A. K. Ray, K. M. Bhurchandi, TMH Publication.
2. "Microprocessor system:8086/8088 family (Architecture Programming and design)", Yu Cheng Liu and G.A.Gibson, PHI Publication.
3. "Microprocessor and Interfacing",D. V. Hall1995,TMH Publication.

S.Y.B.Sc. (Electronics) Sem-IV (Credit: 02)

ELECTRONICS LAB-DSC1B

ELE-MJP-253 Linear Integrated Circuits Practical Paper-V

Section-A: Op-Amp. Circuits (Any 8)

1. To design an inverting amplifier using Op-amp(741/351) for dc voltage of given gain.
2. (a) To study inverting amplifier using Op-amp (741/351) and study its frequency response

   (b) To design non-inverting amplifier using Op-amp (741/351) & study frequency response.
3. Study of Op-Amp as adder using op amp in inverting and non-inverting mode
4. To design a precision Differential amplifier using Op-amp.
5. Study of Op-amp as an Integrator.
6. Study of Op-amp as a Differentiator.
7. To study Op-amp as Unity follower.
8. To study Op-amp as Subtractor.
9. To study Op-amp as zero crossing detector.
10. Design a digital to analog converter (DAC) of given specifications.
11. To design an Astable Multivibrator of given specification using IC 555.
12. To design a Monostable Multivibrator of given specification using IC 555.

ELE-MJP-254 Microprocessor 8086 & Interfacing Practical Paper-VI

Section-B: Microprocessor Practical (perform any 8 Practical)

1. Write a program to display A to Z with one space and ten characters in one line.
2. Write a program to display A to Z in one line and 0 to 9 in next line.
3. Write a program to enter and display a string.
4. Write a program to change upper case to lowercase/lower case to uppercase.
5. Write a program to find the sum of given numbers.
6. Write a program to find the factorial of a given number.
7. Write a program to reverse the input string of characters.
8. Write a program to find the largest/smallest number of a set of entered numbers.
9. Write a program to arrange given numbers in ascending/descending order.
10. Write a program to display a complete character set with 25 characters in one line.
11. Write a program to find prime no. of given number.
12. Write a program to concatenate two strings.

ELE-MN-261 Introduction to Microprocessors

Course objective

- To learn the architecture of 8086.
- To learn the assembly language programming of 16 bit microprocessor.
- To understand the architecture of advanced microprocessor 80836.
- To understand the feature of Pentium.

Learning Outcomes

After successful completion of this course, student will be able to:

- Student will be able to Aware about the microprocessor and its architecture consideration & Capable to analyze the operation modes.
- Understand the assembly language programming.
- Student will be able to understand the advanced microprocessor 80836 and operation of paging mechanism.
- To gain the Knowledge about the Pentium series processor.

Unit 1: The Processor 8086 (8 Hour, 8 Marks)

Register organization of 8086, Architecture, Pin diagram and its functions, Signal Descriptions of 8086, Physical memory organization, General bus operation, I/O addressing Capability.

Unit 2: 8086 Instructions Set (10 Hour, 10 Marks)

Machine language instruction formats, Addressing mode of 8086:- Data Copy/ Transfer Instruction, Arithmetic and Logical Instructions, Branch Instructions, Loop Instructions, Machine control Instructions, Flag Manipulation Instruction, Shift and Rotate Instructions, String Instructions.

Unit 3: Assembler Directives and Operators (6 Hour, 6Marks)

Data Definition and Storage Allocation, Structures, Records, Assigning Names to Expressions, segment definition, Program termination, Alignment Directives, Value-Returning attribute operators, and assembly language programs.

Unit 4: Intel Microprocessors (6 Hour, 6 Marks)

Introduction & Key features of Intel 80186, 80286, 80386, 80486, Pentium processors, Pentium Pro, Pentium-II, Pentium-III, Pentium-IV & future Processors.

Reference Books:

1. "Advanced microprocessor and peripherals (Architecture Programming and Interfacing)", A. k. Ray, K. M. Bhurchandi, TMH Publication.
2. "Microprocessor system: 8086/8088 family Architecture Programming and design)", Yu Cheng Liu and G.A. Gibson, PHI Publication.
3. "Microprocessor and Interfacing", D. Hall 1995, TMH Publication.
4. "The 8088 and 8086 microprocessor (Programming, Interfacing, Software, Hardware and applications)", Walter A. Triebel, Autarsingh.
5. "The Intel Microprocessors", Barry B. Brey, Prentice Hall of India, New Delhii, Seventh edition

ELE-MNP-262 Introduction To Microprocessors Practical Paper-II

Attempt any 8.

1. Write a program to display A to Z with one space and ten characters in one line.
2. Write a program to display A to Z in one line and 0 to 9 in next line.
3. Write a program to display string.
4. Write a program to change upper case to lower case/lower case to upper case.
5. Write a program to find sum of given numbers.
6. Write a program to find the average of given numbers.
7. Write a program to find factorial of a given numbers.
8. Write a program to reverse the input string of characters.
9. Write a program to find the largest/smallest number of a set of entered numbers.
10. Write a program to arrange given numbers in ascending/descending order.
11. Write a program to display a complete character set with 25 characters in one line.
12. Write a program to find prime no. of given number.

ELE-OE-271 Hardware and Networking

Course Objectives:

- To provide students with the knowledge of computer systems and associated peripherals.
- To introduce students with the concept of Networking.
- To introduce students with Network Architecture.

Course Outcome:

Co No.	CO	Cognitive Level
CO 1	Students will understand the e basics of computer systems along with peripherals	2
CO 2	Students will be able to articulate fundamental networking concepts.	3
CO 3	Students will be aware about the concepts of Network Architecture.	4
CO 4	Students will be able to understand working of Internet	2
CO 5	Recognize the significance of operating systems (e.g., Windows and Linux), and the importance of antivirus software in the context of computer systems and networks.	4

Unit 1 Introduction to Computer Hardware (16 Hour, 16 Marks)

Components of a computer system: Hardware vs. software, Central Processing Unit (CPU): CPU architecture, CPU types and performance, Popular CPU Chips and their Characteristics, Memory: RAM and ROM, Storage devices: HDDs, SSDs, Input and Output Devices: Keyboards, mouse, monitors, printers.

Unit 2 Introduction to Computer Software (12 Hour, 12 Marks)

Introduction to Software, Concept of Booting. Concepts of High Level, Low Level, Languages, Compiler and Interpreter, Types of Software: System software, Application Software, Operating System: Introduction, Need and Types, Windows and Linux OS. Need of antivirus.

Unit 3 Networking Fundamentals (20 Hour, 20 Marks)

Introduction to Networking: Importance of networking, Network types.

Network Topologies: Physical Network Topologies - STAR, BUS, RING topologies. Logical Network Topologies - Local Area Networks (LANs). Ethernet and LAN technologies, Wide Area Networks (WANs). Introduction to Repeater, Hub, Switch, Router.

Unit 4 Internet (12 Hour, 12 Marks)

Concept of Internet, Applications of Internet. World Wide Web (WWW), Web Browsing Software. Search Engines. Understanding URL.

Reference Books:

- Fundamentals of Computers, V. Rajaraman, PHI Publication
- Computer Fundamentals, P. K. Sinha, BPB Publication
- Computer Networks, Tannenbaum, A.S.,
- Computer Hardware: Installation, Interfacing Troubleshooting and maintenance, James K L PHI Learning Press (Eastern Economy Edition, 2013)

ELE-CEP- 255 E-Waste Management

1. Learning objectives:

- To understand scenario of E-waste
- Discuss key elements of E-waste management
- Understand key terms associated with E- waste

2. Course Outcomes (COs): On completion of this course, students will be able to-

- Learn about the various aspects of E-waste
- Understand the role of various stakeholders-producers, manufactures etc.

Unit-I: Introduction to E-waste (6 Hour, 6 Marks)

What is E-Waste, Indian and global scenario of e-Waste, Growth of Electrical and Electronics industry in India, E-waste generation in India, Composition of e-waste,

Unit-II: Indian Regulations on E-waste (10 Hour, 10 Marks)

Regulatory regime for e-waste in India, The hazardous waste (Management and Handling) rules 2003, E- Waste management rules 2015, Regulatory compliance including roles and responsibility of different Stakeholders – producer, manufacturer, consumer etc., proposed reduction in the use of hazardous substances (RoHS), Extended producer responsibility (EPR).

Unit-III: Recycling (6Hour, 6Marks)

Historic methods of waste disposal – dumping, burning, landfill; Recycling and recovery technologies –Sorting, crushing, separation; Life cycle assessment of a product – introduction: Case study – optimal Planning for computer waste.

Unit-IV: Management technologies (8 Hour, 8 Marks)

Emerging recycling and recovery technology, Guidelines for environmentally sound management of E-Waste, Environmentally sound treatment technology for e-waste, Guidelines for establishment of integrated e-Waste recycling and treatment faculty, Case studies and unique initiatives from around the world.

Reference Books:

- Johri R., "E-waste: implications, regulations, and management in India and current global best practices",TERI Press, New Delhi.