Faculty of Engineering

Savitribai Phule Pune University

Syllabus

of

Second Engineering

(Electronics & Computer Engineering)

(2019 Course)

(with effect from June 2021)

Savitribai Phule Pune University

Second Year of Electronics & Computer Engineering (2020 Course)

210242: Engineering Mathematics -III

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 hrs. / week **TUTORIAL: 01hr. / week**	**03**	**In-Sem (Theory): 30 Marks** **End Sem (Theory): 70 Marks** **Term Work: 25 Marks**

Course Outcomes: On completion of the course, learner will be able to –

CO1: Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.

CO2: Solve problems related to Fourier transform, Z-transform and applications to Communication systems and Signal processing.

CO3: Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.

CO4: Perform vector differentiation and integration, analyze the vector fields and apply to Electro-Magnetic fields.

CO5: Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.

Savitribai Phule Pune University

Second Year of Electronics & Computer Engineering (2020 Course)

210243: Electronic Circuits

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 hrs. / week	03	In-Sem (Theory): 30 Marks End Sem (Theory): 70 Marks

Course Outcomes: On completion of the course, learner will be able to –

CO1: Assimilate the physics, characteristics and parameters of MOSFET towards its application as amplifier.

CO2: Design MOSFET amplifiers, with and without feedback, & MOSFET oscillators, for given specifications.

CO3: Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies.

CO4: Explore and deploy basic configurations of Op-amp with negative feedback, with focus on relevant parameters.

CO5: Design, Build and test Op-amp based analog signal processing and conditioning circuits towards various real time applications.

CO6: Understand and compare the principles of various data conversion techniques and PLL with their applications.

Savitribai Phule Pune University Second Year of Electronics & Computer Engineering (2020 Course) 210244: Digital Circuits		
Teaching Scheme:	**Credit**	**Examination Scheme:**
TH: 03 hrs. / week	**03**	**In-Sem (Theory): 30 Marks** **End Sem (Theory): 70 Marks**

Course Outcomes: On completion of the course, learner will be able to –

CO1: Identify and prevent various hazards and timing problems in a digital design.

CO2: Use the basic logic gates and various reduction techniques of digital logic circuit.

CO3: Analyze, design and implement combinational logic circuits.

CO4: Analyze, design and implement sequential circuits

CO5: Differentiate between Mealy and Moore machines.

CO6: Analyze digital system design using PLD

Savitribai Phule Pune University

Second Year of Electronics & Computer Engineering (2020 Course)

210245: Data Structure and Algorithm

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 hrs. / week	03	In-Sem (Theory): 30 Marks End Sem (Theory): 70 Marks

Course Outcomes: On completion of the course, learner will be able to –

CO1: Develop programs using C programming language.

CO2: Implement sorting and searching algorithms and calculates it complexity. CO3:

Develop applications of stacks and queues using array.

CO4: Demonstrate applicability of linear data structure linked list.

CO5: Demonstrate applicability of Non linear data structure binary tree with real time

application.

CO6: Apply the knowledge of graph for solving the problems of spanning tree and shortest path algorithm.

Savitribai Phule Pune University

Second Year of Electronics & Computer Engineering (2020 Course)

210246: Computer Organization

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 hrs. / week	03	In-Sem (Theory): 30 Marks End Sem (Theory): 70 Marks

Course Outcomes: On completion of the course, learner will be able to –

CO1: Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.

CO2: Analyze the principles of computer architecture using examples drawn from commercially available computers.

CO3: Evaluate various design alternatives in processor organization.

CO4: Explain and Use fixed point multiplication (Booth's) and division (Restoring and non-restoring) algorithms.

C05: Explain the concept of Instruction pipeline, RISC, CISC.

CO6: Develop control unit and Explain the concept of various I/O operations.

Savitribai Phule Pune University Second Year of Electronics & Computer Engineering (2020 Course) 210342: Signals & Systems		
Teaching Scheme:	**Credit**	**Examination Scheme:**
TH: 03 hrs. / week **TUTORIAL: 01hr. / week**	**03**	**In-Sem (Theory): 30 Marks** **End Sem (Theory): 70 Marks**

Course Outcomes: On completion of the course, learner will be able to –

CO1: Identify, classify basic signals and perform operations on signals.

CO2: Identify, Classify the systems based on their properties in terms of input output relation and in terms of impulse response and will be able to determine the convolution between to signals.

CO3: Analyze and resolve the signals in frequency domain using Fourier series and Fourier Transform.

CO4: Resolve the signals in complex frequency domain using Laplace Transform, and will be able to apply and analyze the LTI systems using Laplace Transforms.

CO5: Define and Describe the probability, random variables and random signals. Compute the probability of a given event, model, compute the CDF and PDF.

CO6: Compute the mean, mean square, variance and standard deviation for given random variables using PDF.

Savitribai Phule Pune University

Second Year of Electronics & Computer Engineering (2020 Course)

210343: Principles of Programming Language

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 hrs. / week	03	In-Sem (Theory): 30 Marks End Sem (Theory): 70 Marks

Course Outcomes: On completion of the course, learner will be able to –

CO1: To analyze the strengths and weaknesses of programming languages for effective and efficient program development.

CO2: To inculcate the principles underlying the programming languages enabling to learn new programming languages.

CO3: To grasp different programming paradigms

CO4: To use the programming paradigms effectively in application development.

CO5: Understand Programming Structure in the form classes and methods, Inheritances, Packages and Interfacing in JAVA Programming.

C06: Learn and apply the knowledge of exceptional JAVA programming through managing I/O and Applet.

Savitribai Phule Pune University Second Year of Electronics & Computer Engineering (2020 Course) 210345: Object Oriented Programming		
Teaching Scheme:	**Credit**	**Examination Scheme:**
TH: 03 hrs. / week	**03**	**In-Sem (Theory): 30 Marks** **End Sem (Theory): 70 Marks**

Course Outcomes: On completion of the course, learner will be able to –

CO1: Describe the principles of object oriented programming.

CO2: Apply the concepts of data encapsulation, inheritance in C++.

CO3: Understand Operator overloading and friend functions in C++.

CO4: Apply the concepts of classes, methods inheritance and polymorphism to write programs C++.

CO5: Apply Templates, Namespaces and Exception Handling concepts to write programs in C++.

CO6: Describe and use of File handling in C++.

Savitribai Phule Pune University

Second Year of Electronics & Computer Engineering (2020 Course)

210344: Principles of Communication Systems

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 hrs. / week	03	In-Sem (Theory): 30 Marks End Sem (Theory): 70 Marks

Course Outcomes: On completion of the course, learner will be able to –

CO1: To compute & compare the bandwidth and transmission power requirements by analyzing time and frequency domain spectra of signal required for modulation schemes under study.

CO2: Describe and analyze the techniques of generation, transmission and reception of Amplitude Modulation Systems.

CO3: Explain generation and detection of FM systems and compare with AM systems.

CO4: Exhibit the importance of Sampling Theorem and correlate with Pulse Modulation technique (PAM, PWM, and PPM).

CO5: Characterize the quantization process and elaborate digital representation techniques (PCM, DPCM, DM and ADM).

CO6: Illustrate waveform coding, multiplexing and synchronization techniques and articulate their importance in baseband digital transmission.

Savitribai Phule Pune University

Second Year of Electronics & Computer Engineering (2020 Course)

210346: System Programming & Operating Systems

Teaching Scheme:	Credit	Examination Scheme:
TH: 03 hrs. / week	03	In-Sem (Theory): 30 Marks End Sem (Theory): 70 Marks

Course Outcomes: On completion of the course, learner will be able to –

CO1: Demonstrate the knowledge of Systems Programming and Operating Systems.

CO2: Identify the functionality of different language processing components.

CO3: Formulate the Problem and develop the solution for same.

CO4: Compare and analyze the different implementation approach of system programming operating system abstractions.

CO5: Analyse the various memory management techniques for timesharing & distributed systems.

CO6: Interpret various OS functions used in Linux / Ubuntu