Course No.	Course name	L-T-P-Credits	Year Of Introduction
AE202	COMPUTER PROGRAMMING	2-2-0-4	2016

Course objectives

This course provides students with an entry level foundation in computer programming in C and Python . Also enables students to apply these programming skills in their field of study.

Syllabus: Basics of c programming, control statements, arrays and strings, functions, user defined data types: structure, union, enumerated data type, pointers and files.
Introduction to Python, comparisons of Python constructs with C.

Expected outcome

To write program in c for various engineering, science and technology related problems.
To familiarise python language by comparison with C language.
Enable students to write simple programs in python and also enable them to ponder more into python language.

Text Books

1. Kelley, Al & Pohl, Ira. A Book on Computer Programming in C, 4th Ed,, Pearson Education
2. Lambert K. A., Fundamentals of Python - First Programs, Cengage Learning India, 2015

Reference

1. Balagurusamy E., Programming in ANSI C, Tata McGraw Hill
2. Samarjit Ghosh, All of C, PHI Learning
3.Barry, P., Head First Python, , O' Reilly Publishers
4. Guzdial, M. J., Introduction to Computing and Programming in Python, Pearson India
5 Pradip Dey and Manas Ghosh, Computer Fundamentals and Programming in C, Oxford.
6. Ashok N Kamthane ; Programming in C
7.Downey, A. et al., How to think like a Computer Scientist: Learning with Python, John Wiley, 2015
8. www.python .org
9. www.tutorialpoints.com

Course Plan

Module	Contents	Hours	Semester Exam Marks
I	Programming basics: Flowcharts and Algorithms. Compiler– Interpreter-Linker-Loader. **Structured programming** Introduction to C: Character set, Identifiers, Keywords, Constants –Data Types- Variables – Operators and Expressions – Operator precedence and associativity – Expression Evaluation (Simple Examples) – Simple computational problems involving the above constructs .	9	15%
II	Control Statements: Selection, Iteration (for, while, do-while), Branching (switch, break, continue, goto), Nesting of control statements- simple programs using control statements.	8	15%
FIRST INTERNAL EXAMINATION			

III	Arrays and Strings: 1D and 2D arrays –Searching (Linear and binary) - Sorting (Bubble, Selection) – Matrix manipulation programs – Strings and basic operations on strings – String functions – Basic Programs on string manipulation. Functions: Definition – Calling – Declaration – Parameter Passing (by value and by reference) – Recursion – Library functions –Basic Programs based on functions.	11	20%
IV	User defined data types: Structure – Union - Enumerated data type - Programs involving structure and union. Pointers: Declaration, Initialization – Pointers and arrays – Pointers and structures – Pointers and functions – Command line arguments – Dynamic memory allocation – Operations on pointers – Basic Programs involving the above concepts Files: file operations	10	20%
SECOND INTERNAL EXAMINATION			
V	**<u>Object oriented programming</u>** Introduction to Python : Comparison of following Python constructs with C- keywords, variables, operators, expression and statements, control statements- programming examples	9	15%
VI	Comparison of constructs of python with C - Functions, calling functions, user defined functions, strings and lists-programming examples Basics of Tuples, Dictionary and Exception handling in python.	9	15%
END SEMESTER EXAMINATION			

QUESTION PAPER PATTERN:

Maximum marks : 100 Time : 3 hours

Part A

Answer any two out of three questions uniformly covering Modules 1 and 2. Each question carries 15 marks and may have not more than four sub divisions. (15 x 2 = 30 marks)

Part B

Answer any two out of three questions uniformly covering Modules 3 and 4. Each question carries 15 marks and may have not more than four (15 x 2 = 30 marks)

Part C

Answer any two out of three questions uniformly covering Modules 5 and 6. Each question carries 20 marks and may have not more than four sub divisions. (20 x 2 = 40 marks)