REGULATION – 2016
B.TECH INFORMATION TECHNOLOGY
I TO VIII SEMESTER CURRICULUM ANDSYLLABI
SEMESTERI

S.No.	Course Code	Course Title	L	T	P	C	CIA	ESE	TOTAL
THEORY									
1	16MA1101	Engineering Mathematics-I	3	2	0	4	25	75	100
2	16PH1101	Engineering Physics	3	0	0	3	25	75	100
3	16CY1101	Engineering Chemistry	3	0	0	3	25	75	100
4	HE1101R	Essential English for Engineers -I	3	2	0	4	50	50	100
5	16GE1103	Problem Solving and Python Programming	3	0	0	3	25	75	100
6	16EC1202	Basics of Electronics Engineering	3	2	0	4	25	75	100
PRACTICAL									
7	16PS1001	Physical Sciences Laboratory - I	0	0	2	1	50	50	100
8	16GE1004	Problem Solving and Python Programming Lab	0	0	4	2	50	50	100
9	16GE1002	Engineering Practices Laboratory	0	0	4	2	50	50	100
10	16GE1003	Value Added Course : Language Competency Enhancement Course-I	0	0	0	1	0	100	100
		Total Credits:	**18**	**6**	**10**	**27**			**1000**

SEMESTERII

S.No.	Course Code	Course Title	L	T	P	C	CIA	ESE	TOTAL
THEORY									
1	16MA2102	Engineering Mathematics-II	3	2	0	4	25	75	100
2	16PH2102	Physics of Materials	3	0	0	3	25	75	100
3	16CY2102	Environmental Sciences	3	0	0	3	25	75	100
4	16HE2102R	Essential English for Engineers - II	3	2	0	4	50	50	100
5	16GE2102	Engineering Graphics	2	0	4	4	25	75	100
6	16IT2202	Programming in C and C++	3	0	0	3	25	75	100
PRACTICAL									
7	16PS2001	Physical Sciences Laboratory - II	0	0	2	1	50	50	100
8	16IT2002	Programming in C and C++ Laboratory	0	0	4	2	50	50	100
9	16GE2001	Value Added Course : Language Competency Enhancement Course-II	0	0	0	1	0	100	100
		Total Credits:	**17**	**4**	**10**	**25**			**900**

PROFESSIONAL ELECTIVE - VI									
1	16IT8307	Multimedia Mining	3	0	0	3	25	75	100
2	16IT8308	Speech Processing	3	0	0	3	25	75	100
3	16IT8309	Information Storage and Retrieval	3	0	0	3	25	75	100
4	16IT8310	Pervasive Computing	3	0	0	3	25	75	100
5	16IT8311	Grid Computing	3	0	0	3	25	75	100
6	16IT8312	E-Commerce	3	0	0	3	25	75	100

S.No.	Course Code	Course Title	L	T	P	C	CIA	ESE	TOTAL
OPEN ELECTIVE									
1	16IT6401	Cyber Security and Forensics	3	0	0	3	25	75	100
2	16IT7402	Web Development Essentials	3	0	0	3	25	75	100

CREDIT DISTRIBUTION

Semester	I	II	III	IV	V	VI	VII	VIII	Total
Credits	**27**	**25**	**23**	**25**	**21**	**26**	**24**	**16**	**187**

PROGRAMME	COURSE CODE	NAME OF THE COURSE	L	T	P	C
B.E/ B.Tech	16GE1103	PROBLEM SOLVING AND PYTHON PROGRAMMING (COMMON TO ALL BRANCHES)	3	0	0	3

Course Objective

1. To know the basics of algorithmic problem solving
2. To read and write simple Python programs.
3. To develop Python programs with conditionals and loops.
4. To define Python functions and call them.
5. To use Python data structures – lists, tuples, dictionaries.
6. To do input/output with files in Python.

UNIT	DESCRIPTION	TOTAL INSTRUCTIONAL HOURS
I	**ALGORITHMIC PROBLEM SOLVING** Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion). Illustrative problems: To find the greatest among three numbers, prime numbers, find minimum in a list.	9
II	**DATA, EXPRESSIONS, STATEMENTS** Python interpreter and interactive mode; values and types: int, float, boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments; Simple algorithms and programs: exchange the values of two variables, compute Simple interest for a given amount, Factorial of a given number.	9
III	**CONTROL FLOW, FUNCTIONS** Conditionals: Boolean values and operators, conditional (if), alternative (if -else), chained conditional (if –elif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays. Illustrative programs: square root, gcd, sum an array of numbers, linear search.	9
IV	**LISTS, TUPLES, DICTIONARIES** Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing -list comprehension; Illustrative programs: selection sort, insertion sort.	9
V	**FILES, MODULES, PACKAGES** Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages.	9
	TOTAL INSTRCTIONAL HOURS	**45**

Course Outcome

Upon completion of the course, students will be able to
CO1:Develop algorithmic solutions to simple computational problems
CO2:Structure simple Python programs for solving problems.
CO3:Decompose a Python program into functions.
CO4:Represent compound data using Python lists, tuples, dictionaries.
CO5:Read and write data from/to files in Python Programs.

TEXT BOOKS:

T1 –Ashok Namdev Kamthane ,Amit Ashok Kamthane ," Programming and Problem solving with Python" McGrawHill Education,2006

T2-Sheetal Taneja, "Python Programming A Modular Approach With Graphics,Database,Mobile and Web Applications, PEARSON,2017

REFERENCE BOOKS: R1 - Reema Thareja " Python Programming Using Problem Solvimg Approach " OXFORD,2017.

R2-E.Balagurusamy, "Problem solving and Python Programming" McGrawHill Education, 2017.

PROGRAMME	COURSE CODE	NAME OF THE COURSE	L	T	P	C
B.E/B.Tech	16GE1004	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY (COMMON TO ALL BRANCHES)	0	0	4	2

Course Objective

1. To write, test, and debug simple Python programs.
2. To implement Python programs with conditionals and loops.
3. Use functions for structuring Python programs.
4. Represent compound data using Python lists, tuples, dictionaries.
5. Read and write data from/to files in Python.

Ex.No	DESCRIPTION	TOTAL INSTRUCTIONAL HOURS
1	Compute the GCD of two numbers.	3
2	Find the square root of a number.	3
3	Exponentiation (power of a number)	3
4	Find the factorial of a given number	3
5	Print prime numbers from 1 to n numbers	3
6	Find the maximum of a list of numbers	3
7	Linear search, Binary search	3
8	Selection sort, Insertion sort	3
9	First n prime numbers	3
10	Multiply matrices	3
11	Programs that take command line arguments(word count)	3
12	Find the most frequent words in a text read from a file	3
13	Simulate bouncing ball using Pygame	3
	TOTAL INSTRCTIONAL HOURS	**45**

Course Outcome

CO1: Write, test, and debug simple Python programs.
CO2: Implement Python programs with conditionals and loops.
CO3:Develop Python programs step-wise by defining functions and calling them.
CO4:Use Python lists, tuples, dictionaries for representing compound data.
CO5:Read and write data from/to files in Python.

PLATFORM NEEDED: Python 3 interpreter for Windows/Linux

Programme	Course Code	Name of the Course	L	T	P	C
B.E. / B.Tech	16IT2202	PROGRAMMING IN C AND C++ (COMMON TO CSE & IT)	3	0	0	4

Course Objective

1. Learn the basic of C programming.
2. Gain knowledge in functions and pointers.
3. Be familiar with the C++ concepts of abstraction, encapsulation, constructor.
4. To understand the concepts of polymorphism, overloading and Inheritance
5. To learn the concept of file and exception handling and use built classes from STL.

Unit	Description	Instructional Hours
I	**BASICS OF 'C' PROGRAMMING** Fundamentals of 'C' programming–Structure of a 'C' program–Constants- Variables – Data Types – Expressions using operators in 'C' – Managing Input and Output operations- Branching and Looping-Arrays–One dimensional and Two dimensional arrays-String-String Manipulations.	9
II	**FUNCTIONS AND POINTERS** Function – definition – Declaration – Types of Function definition – Call by value-Call by reference- Recursion – Introduction to Pointers - Pointers arithmetic – Pointers and Array, Structure- Union – Storage classes, Pre-processor directives	9
III	**BASICS OF 'C++' PROGRAMMING** Object oriented programming concepts – Objects – Classes – Abstraction - Encapsulation- Inheritance - Abstract Class - Polymorphism. Introduction to C++- Type Conversions- Constructors - Default, Copy, Parameterized, Dynamic constructors, Default argument -Destructor	8
IV	**POLYMORPHISM AND INHERITANCE** Function overloading- Friend functions - Operator overloading-Unary, Binary - Inheritance – Public, Private and Protected derivations- Runtime Polymorphism-Pure Virtual functions- Virtual Base class -RTTI	10
V	**TEMPLATES, EXCEPTION AND FILE HANDLING** Function Templates – Class Templates- Exception handling -Standard Template Library -Streams and formatted I/O – I/O manipulators - File handling – Namespaces	9
Total Instructional Hours		**45**

Course Outcome

CO1: Use data representation for the fundamental data types, read, understand and trace the execution of programs written in C language.
CO2: Explain the use of pointers, Structures and union.
CO3: Design problem solutions using Object Oriented Techniques and apply the concepts of data abstraction, encapsulation and constructors & destructors for problem solutions.
CO4: Apply concepts of operator overloading, inheritance for real world problems.
CO5: Apply exception handling and use built -in classes from STL.

TEXT BOOKS

T1: Balagurusamy, "Programming in ANSI C", 6th Edition ,Tata McGraw-Hill,2010
T2: Rohit Khurana, "Object Oriented Programming with C++",Vikas Publishing, 2edition,2016.

REFERENCE BOOKS

R1: Yashavant P. Kanetkar. " Let Us C", BPB Publications, 2011.
R2: E. Balagurusamy , "Object Oriented Programming with C++", 6th Edition, Tata Mc Graw Hill Publication,2013.
R3: B. Trivedi, "Programming with ANSI C++", Oxford University Press, 2007.
R4: Robert Lafore, "Object-Oriented Programming in C++", Sams Publishing; 4th Edition, 2002.

Programme	Course Code	Name of the Course	L	T	P	C
B.E/B.TECH	16IT2002	PROGRAMMING IN C AND C++ LAB (COMMON TO CSE & IT)	0	0	4	2

Course Objective

1. Be familiar with the concept of Array and functions.
2. Be exposed to Pointers and Structures.
3. Understand the concepts of constructors and Inheritance.
4. Gain knowledge in polymorphism and templates.
5. Learn the concepts of STL and File Stream classes.

Expt. No.	Description of the Experiments
	C Programming
1.	Write a program in C using Array and String.
2.	Write a program in C using Functions and Pointers.
3.	Write a program in C using Structures.
	C++ Programming
4.	Write a C++ program using Constructors.
5.	Write a C++ program using the concept of Inheritance.
6.	Write a C++ program to implement the concept of Compile time and Runtime polymorphism.
7.	Write a C++ program using Class templates & function templates.
8.	Write a C++ program to illustrate Exception Handling Mechanism.
9.	Write a C++ program using Standard Template Library concept.
10.	Write a C++ program to illustrate File Stream classes, manipulations of file and execution time.
	Total Practical Hours 45

Course Outcome

CO1: Apply the concepts of arrays and functions.
CO2: Explore the concepts of Pointers and Structures.
CO3: Implement the concepts of Constructors and Inheritance.
CO4: Explore the concepts of polymorphism and templates.
CO5: Exploit the concepts of STL and File Stream classes.

Programme	Course Code	Name of the Course	L	T	P	C

Programme	Course Code	Name of the Course	L	T	P	C
B.TECH	16IT7402	**WEB DEVELOPMENT ESSENTIALS**	3	0	0	3

Course Objective

1. Familiarize the markup language and style sheets
2. Learn about XML and client side programming.
3. Know about PHP and web data representations
4. Learn Python Programming language
6. Familiarize server side programming

Unit	Description	Instructional Hours
I	**WEB ESSENTIALS** Clients, Servers and Communication. The Internet-Basic Internet Protocols -The World Wide Web-HTTP request message-response message-Web Clients Web Servers-Case Study. HTML: Designing Web Pages with HTML-Use of Tags, Hyperlinks, URLs, List, Tables, Text Formatting, Graphics & Multimedia, Image map, Frames and Forms in Web Pages. CSS: Use of Cascading Style Sheet in Web Pages.	9
II	**XML AND JAVA SCRIPT** XML: Extensible Markup Language (XML): Introduction-Using User-Defined Tags in Web Pages, Displaying XML Contents, XML DTDs - XML schema -DOM -SAX –XSL-Java script basics -form validation -java script objects and functions - Angular JavaScript -AJAX –JSON	9
III	**PHP AND MYSQL** PHP: Introduction–Programming in web environment–variables–constants – data types–operators–Statements –Functions –Arrays–OOP–String Manipulation and regular expression–File handling and data storage–PHP and MYSQL database– PHP and LDAP	9
IV	**PYTHON PROGRAMMING BASED WEB DEVELOPEMNT** Strings -Operators -Decisions-Functions -Classes and Objects -Files and Directories -Modules -Text processing -Accessing Databases -Simple web application using Python	9
V	**SERVER SIDE TECHNOLOGIES** Servlet Overview – Life cycle of a Servlet – Handling HTTP request and response – Using Cookies – Session tracking – Java Server Pages – Anatomy of JSP – Implicit JSP Objects – JDBC	9
	Total Instructional Hours	**45**

Course Outcome

Upon completion of this course, the students will be able to

CO1: Identify problems that are amenable to solution by AI methods.

CO2: Identify appropriate AI methods to solve a given problem.

CO3: Formalize a given problem in the language/framework of different AI methods.

CO4: Implement basic AI algorithms.

CO5: Design and carry out an empirical evaluation of different algorithms on a problem formalization, and state the conclusions that the evaluation supports.

TEXT BOOKS:

T1-Kevin Night and Elaine Rich, Nair B., “Artificial Intelligence (SIE)”, McGraw Hill- 2008.(Units-,II,VI&V)

T2-Dan W. Patterson, “Introduction to AI and ES”, Pearson Education, 2007.(Unit-III).

REFERENCE BOOKS :

R1-Deepak Khemani “Artificial Intelligence”, Tata McGraw Hill Education 2013.

R2-Peter Jackson, “Introduction to Expert Systems”, 3rd Edition, Pearson Education, 2007.