



**JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J.T.LALVANI COLLEGE OF COMMERCE
(AUTONOMOUS)**

"A" Road, Churchgate, Mumbai - 400 020, India.

**Affiliated to
University of Mumbai**

Program : TYBSc Semester VI

Proposed Course :PHYSICS (APPLIED COMPONENT)

**Credit Based Semester and Grading System (CBCS) with
effect from the academic year 2019-20**

T.Y.B.S.c Physics (Applied Component) Syllabus

Academic year 2019-2020

Semester VI			
Course Code	Course Title	Credits	Lectures /Week
SPHY6AC	Digital Electronics, microprocessor and its applications , programming in C++	2.5	4
SPHY6ACPR	Practical	2.5	4

Semester VI Applied Component – Theory

Course Code: SPHY6AC	Course Title -: (Applied Component) Digital Electronics, Microprocessor and its application, Programming in C++. (Credits: 2.5, Lectures/Week: 04)	
	<p>Objectives The course introduces to microprocessor and C++ programming techniques and application.</p> <p>Outcomes:</p> <p align="center">To understand use of some ICs used in Electronic Instrumentation. To understand microprocessor programming and application. To understand C++ programming and application.</p>	
Unit – I	Digital Electronics Tristate Devices, Buffers, Decoders, Encoders, Latch. Multiplexers, their use in Combinational Logic design, multiplexers tree, Demultiplexers, their use in Combinational Logic design, Demultiplexers tree. Memory Classification, Charge Couple Device memory.	15L
Unit – II	Advanced 8085 programming and 8255(PPI) Introduction to advanced instructions and applications Stack and Subroutines: Stack, Subroutine. The 8255 Programmable peripheral Interface: Block Diagram of the 8255, Mode 0 – simple input/ output mode, BSR (Bit Set/Reset Mode)	15L
Unit – III	C++ programming I A look at the Procedure-Oriented Programming, Object-Oriented Programming Paradigm; Data types and Operators. Control Statements: if statement, if-else-if statement, switch statement, Loop Statements : for loop, while loop, do-while loop, Breaking Control statements : break statement, continue statement, goto statement. Functions:The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Function, Default Arguments, Constant Argument, Function Overloading, Math Library Functions.	15L

Unit – IV	C++ programming II Arrays : Array notation, Array declaration, Array initialization, Processing with array, Functions and Arrays, Multidimensional array. Pointers : Pointer operator, Address operator, Pointer declaration, Pointer arithmetic, Pointer and functions, Pointer and arrays. Introduction to structures, classes and objects: Structure declaration, Structure initialization, Declaration of classes, Member functions, Defining object of a class.	15L
ICA (Internal Continuous Assessment)	-NA-	
References: R.P.Jain(3rd Ed.), <i>Modern Digital Electronic</i> , Tata McGraw Hill. Ramesh Gaonkar(5th Ed.) <i>Microprocessor Architecture, programming & Application with the 8085</i> , Prentice Hall of India. D.Ravichandran, <i>Programming with C++</i> , Tata McGraw-Hill Publishing Company Limited. Tony Gaddis (3 rd Ed.) <i>Starting out with C++</i> Addison Wesley Publishing Company. E Balagurusamy(3 rd Ed.) <i>Object Oriented Programming with C++</i> , Tata McGraw-Hill Publishing Company Limited.		



Course Code SPHY6ACPR	SEMESTER-VI EI PRACTICALS (Credits: 2.5, Lectures/Week: 04)
	<ol style="list-style-type: none"> 1. Study of 3:8 Decoder (74LS138) & study of 8:3 Priority Encoder (74LS148) & their applications. 2. Study of Latch (74LS373) & its applications. 3. Study of 8:1 Multiplexer (74LS151) & its applications. 4. Study of 1:4 De-multiplexer (74LS155) & its applications. 5. Write Assembly Language Program to divide two, 8-bit nos. Display Quotient & Remainder. 6. Write Assembly Language Program to accept 4-bit/ 8-bits numbers from Keyboard, add/subtract & display/store Result, Carry/Borrow) 7. Write Assembly Language Program to arrange, 8-bit nos. in ascending/descending order. 8. Write a program to blink Port C bit n (n = 0 to 7 any one) of the 8255 PPI available on your 8085 kit. Use Bit Set/Reset mode. 9. C++ program based on Input, Output Statements. 10. C++ program based on Control Statements. 11. C++ program to study function declaration, function calling & function prototype. 12. C++ program based on Arrays 13. C++ program based on Pointers. 14. C++ program based on Classes and Objects.
ICA (Internal Continuous Assessment)	NA
References:	<p>R.P.Jain(3rd Ed.), <i>Modern Digital Electronic</i>, Tata McGraw Hill.</p> <p>Ramesh Gaonkar(5th Ed.)<i>Microprocessor Architecture, programming & Application with the 8085</i> , Prentice Hall of India.</p> <p>D.Ravichandran,<i>Programming with C++</i> , Tata McGraw-Hill Publishing Company Limited.</p> <p>Tony Gaddis (3rd Ed.) <i>Starting out with C++</i> Addison Wesley Publishing Company.</p> <p>E Balagurusamy(3rd Ed.) <i>Object Oriented Programming with C++</i> , Tata McGraw-Hill Publishing Company Limited.</p>

Students will come for 1 turn of 3 hours per week for the laboratory session (Performing practicals).

ii) Regular EI Experiments: A minimum of **08** experiments from each group of the practical course are to be performed and reported in the journal.

The certified journal must contain a minimum of **08** regular experiments.

- **Semester End Examination (SEE)- 100 Marks**

[B] Evaluation scheme for Practical courses

Expt I	Journal	Viva	Continuous assessment of rough journal	Total
80	10	10	NA	100

Practical examination will be of 3 hours. Students will perform one experiment of 3 hours .