



College of Arts,
Science &
Commerce

RISE WITH EDUCATION

NAAC REACCREDITED "A" GRADE, CGPA [3.51/4.00](#)

BEST COLLEGE AWARD - UNIVERSITY OF MUMBAI

**SIES College of Arts, Science and Commerce
(Autonomous)
Affiliated to Mumbai University**

Syllabus under Autonomy - July 2018

Program: S.Y.B.A.

Course: COMPUTER PROGRAMMING I & II (APPLIED COMPONENT)

**Credit Based Semester and Grading System (CBSGS)
with effect from the academic year 2018-19**

Broad Objective

This course has been introduced for the students from Arts faculty to expose them to advanced computer skills to meet the basic corporate requirements and enhance their employability prospects.

SEMESTER III

Learning Objectives and Outcomes:

On completion of this course successfully, students should be able to:

1. Name and identify different parts of a computer system.
2. Understand how computers evolved and how they work.
3. Understand how softwares evolved and how they work
4. Develop logic which will help them to create programs.
5. Switch over to any other programming language in future.
6. Name and identify names and functions of the Excel interface components.
7. Enter, edit and format data in Excel.
8. Construct formulae, including the use of built-in functions, and relative and absolute references in Excel.
9. Create and modify charts in Excel.
10. Preview and print worksheets in Excel.

SEMESTER III				
Course Code	UNIT	TOPICS	Credits	L or P/Week
SIUACPG31	I	Introduction to Computer Systems	3	3L
	II	Spread Sheet Package (Microsoft Excel)		+1P(=3L
	III	C Language Basics		per batch)

SEMESTER III	
Course code	Course Title
SIUACPG31	Computer Programming - I

Unit I Introduction to Computer Systems (15 lectures)

- (a) **Computer Fundamentals:** History and basic structure of a computer. Types of Computers: Super, mainframe, mini and micro computers. Types of micro computers: Desktop, laptop, tablet PC, PDA (Personal Digital Assistant). Units of measurement of computer memory: BITS, BYTES, KB, MB, GB, TB, etc. Terms: Hardware and Software.
- (b) **Hardware Devices:** Components of motherboard: I.C.s, bus lines, clock, micro processor chip, memory chips, ports, power supply. Types of Input and Output Devices. Types of Primary memory and Secondary memory storage devices.
- (c) **Software:** System and Application software, Types of System and Application software. FOSS. Types of Operating System, examples like DOS, UNIX, LINUX, Windows, Different versions of Windows. Features of Windows, Compilers and Interpreters, Higher and Lower Level languages, Compiler and Interpreter based languages.

Unit II Spread Sheet Package (Microsoft Excel) (15 lectures)

- (a) Concept of Workbook, Worksheet, Cell
- (b) Types of data, Entering, Editing, Deleting data, Fill command, Series command, Custom list
- (c) Selecting, Inserting, Deleting cells, Rows, Columns, Ranges, Cell formatting
- (d) References: Mixed, Relative, Absolute.
- (e) Formulas, Operators, Precedence of operators, Circular reference
- (f) Library Functions:-
 - (i) Financial Functions:- FV(), PMT(), PV()
 - (ii) Statistical Functions:- ABS(), AVERAGE(), MEDIAN(), MODE(), STDEV(), VAR()
 - (iii) String Functions:- LEN(), RIGHT(), LEFT(), MID (), PROPER (), UPPER(), LOWER()
 - (iv) Logical Functions:- AND (), OR(), NOT(), IF()
- (g) Hiding/ un hiding Rows, Columns; Background of sheet.
- (h) Data Validation, Conditional formatting, sorting, filter with customized condition, subtotal.

- (i) Chart Wizard: Bar, Pie, Line, Scatter plot.

Unit III C Language Basics (15 lectures)

- (a) **Elements of C:** Character set, identifiers, keywords, constants, escape sequences
- (b) **Data types:** int, float, char (signed and unsigned)
- (c) **Simple input-output operations-** printf(), scanf(), getchar(), getch()
- (d) **Operators:** Assignment, compound assignment, arithmetic, relational, logical.
- (e) Program Structure, Header and body, use of *comments*, construction of simple programs
- (f) **Loops and Controls:** Control statements for decision making (simple if else), looping (for loop).

Course code

SIUACPG31

Topics for Practical

1. Creating an excel sheet to demonstrate bar graph, pie chart, etc
2. Demonstrating financial and statistical functions in a spreadsheet
3. Demonstrating string and logical functions in a spreadsheet
4. Demonstrating data analysis, sorting, filter with customized condition, subtotal
5. Simple programs to illustrate the use of C operators and various data types
6. User interactive programs to illustrate the use of input-output functions
7. Simple programs to illustrate the use of 'if' and 'if-else' conditions
8. Simple programs to illustrate the use of 'for' loops

References:

1. Yashwant Kanetkar. (2016). *Let us C*, BPB Publications.
2. P.K. Sinha. (2004). *Computer Fundamentals*, BPB Publications.
3. Ram B. (2000). *Computer Fundamental*, New Age International Publication.
4. June Jamrich Parsons . (2005). *Computer Concepts*, Thomson Learning.
5. Rajiv Khanna. (2007). *Basic Electronics and Computer Applications*, New Age International Publishers.
6. Deepak Bharihoke. (2010). *Fundamentals of Information Technology*, Excel Books 3rd edition.
7. Peter Nortan. (2005). *Introduction to Computers*, Tata McGraw Hill.
8. Mrs. P M Saraph, Dr. S M Diwanji, *Textbook on Computer Systems and Applications (TYBComSem V)*, Manan Prakashan.
9. Rajaraman. (2004). *Fundamentals of Computers*, PHI.
10. E Balaguruswamy. (2016). *Programming in ANSI C*, Tata McGraw Hill .
11. Rekha W P, Anjali A D. (2016). *Text book on Computer Programming and System Analysis (TYBSc AC Sem V)*, Vipul Prakashan

SEMESTER IV

Learning objectives and outcomes:

On completion of this course successfully, students should be able to:

1. Name and identify different parts of a computer network.
2. Understand how data is transferred and how internet works.
3. Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
4. Be aware of the important topics and principles of software development.
5. Write an object oriented computer program to solve specified problems.
6. Use the Java SDK environment to create, debug and run simple Java programs.
7. Understand the basics of Relational Databases.
8. Write SQL code based on ANSI/ISO standards to build and maintain database structures.
9. Retrieve data from single or multiple tables.
10. Process data with row and aggregate functions.

SEMESTER IV				
Course Code	UNIT	TOPICS	Credits	L or P/Week
SIUACPG41	I	Computer Communication Systems	3	3L
	II	Introduction to SQL		+1P(=3L
	III	Introduction to Java Programming		per batch)

SEMESTER IV	
Course code	Course Title
SIUACPG41	Computer Programming -II
Unit I	<p>Computer Communication Systems (15 lectures)</p> <p>(a) Internet Concepts: Definition, Types of connection, Access Providers. Services on net – www, IP Address, URL, Domain name, Email, Instant messaging, logs, Social networking, Search engines, Metasearch engines. Security: Antivirus, spam guard, firewalls.</p> <p>(b) Communication Networks: Definitions, Types (LAN, MAN, WAN). Advantages. Network Structures: Server based, Client server, Peer to peer. Topologies – Star, Bus, Ring, Mesh. Network media – Wired, Wireless. Network Hardware – Hubs, bridges, switches, routers. Network Protocols – TCP/IP, OSI Model.</p> <p>(c) Communication and Information Systems: E-mail, online services, video-conferencing, digital telephone facilities. Cloud storage. e-commerce(online banking, credit card purchases), wireless technology, broadband versus dial-up modems.</p>
Unit II	<p>Introduction to SQL (15 lectures)</p> <p>(a)Introduction: Database, DBMS and its types, SQL and its uses, versions</p> <p>(b)Handling data:Selecting data using SELECT statement. FROM clause, WHERE clause, HAVING clause,ORDER BY, GROUP BY, DISTINCT and ALL predicates. Adding data with INSERT statement. Changing data with UPDATE statement. Removing data with DELETE statement.</p> <p>(c)Joining Tables:Inner joins, outer joins, cross joins, union.</p> <p>(d)Functions:Aggregate functions-AVG, SUM, MIN, MAX and COUNT. Date functions - DATEADD(),DATEDIFF(), GETDATE(), DATENAME(), YEAR, MONTH, WEEK, DAY. String functions- LOWER(), UPPER(), TRIM(), RTRIM(), PATINDEX(), REPLICATE(), REVERSE(),RIGHT(), SPACE().</p> <p>(e)Creating and Altering tables:CREATE statement, ALTER statement, DROP statement.</p> <p>(f)Views:Simple views, complex views, creating and editing views.</p> <p>(g)Constraints:Types of constraints, KEY constraints, CHECK constraints, DEFAULT constraints, disablingconstraints.</p>
Unit III	<p>Introduction to Java Programming (15 lectures)</p> <p>(a) Introduction: History of Java, Java features, Differentiate Java with C. Java Virtual Machine.</p> <p>(b) Java Basics: Variables and data types, declaring variables, literals: numeric, Boolean, character and string literals, keywords, type conversion and casting. Java Operators, Loops and Controls.</p>

(c) Classes: Defining a class, creating instance and class members, creating object of a class, accessing instance variables of a class, creating method, naming method of a class, accessing method of a class, overloading method, 'this' keyword, constructor: Basic Constructor, parameterized constructor.

(d) Arrays: one dimensional array, declaring array variables, creating array objects, accessing array elements.

Course code
SIUACPG41

Topics for Practical

1. Single table queries using operators with select columns and restricting rows of output
2. Multi-table queries using join operators
3. Queries using aggregate functions, string functions, date functions.
4. Creating, updating, altering and deleting tables and views
5. Single class programs to illustrate various java statements like loops and controls
6. Programs to illustrate (a) arrays, (b) instance variables and methods
7. Programs to illustrate (a) constructors without parameters, (b) constructors with parameters
8. Programs to illustrate overloading

References:

- (a) B A Forouzan. (2017). *Data Communication & Networking*, Tata McGraw-Hill Education
- (b) Andrew Tanenbaum. (2002). *Computer Networks*, PHI
- (c) Rob Vieira. (2000). *Professional SQL Server 2000 Programming*, Wrox Press Ltd, Shroff Publishers & Distributors Pvt Ltd
- (d) Patrick Dalton. (2001). Paul Whitehead, *SQL Server 2000 Black Book*, Dreamtech Press.
- (e) E. Balagurusamy. (2009). *Programming with Java, A Primer 4th Edition*, Tata McGraw Hill.
- (f) Herbert Schildt. (2011). *Java The Complete Reference*, Tata McGraw Hill
- (g) Rekha W P, Anjali A D, *Text book on Computer Programming and System Analysis (TYBSc AC Sem VI)*, Vipul Prakashan

Scheme of Evaluation for Semesters III & IV

The performance of the learners shall be evaluated in two ways:

- (a) Continuous Internal Assessment of 40 marks in each semester.
- (b) Semester End Examinations of 60 marks at the end of each semester.

(a) Internal Assessment in each semester

Sr No	Evaluation type	Marks
1.	One practical examination based on units II & III of two hours [on screen(20) + viva(05) + journal(05)]	30
2.	Project/Presentation/Assignment	10
Total		40

(b) Semester end examination

Time: 02 hours		
Quest no	Unit	Marks
Q1	Based on unit I	15
Q2	Based on unit II	15
Q3	Based on unit III	15
Q4	Based on all units	15
Total		60

Guidelines for conduct of practical in semesters III and IV

1. One program/exercise of 10 marks each from units II and III to be executed on the system during the semester end practical examination.
2. The questions to be asked in the semester end practical examination shall be from the list of practicals mentioned in the practical topics(based on units I & II). A few simple modifications may be expected during the examination.
3. The semester end practical examination on the system will be of TWO hours.
4. Only those students with a certified journal containing minimum 06 practicals (mentioned in the practical topics) are eligible to appear for practical examination.
5. Number of students per batch for the regular practical session should not exceed 20. Not more than two students should be allowed on one computer at a time.

Workload

Theory : 3 lectures per week.

Practicals: 1 practical of 3 lecture periods per week per batch. Three lecture periods of the practicals shall be conducted in succession together on a single day.
