



**GOVERNMENT COLLEGE FOR WOMEN,
PARADE GROUND, JAMMU
(An Autonomous College)**

**SYLLABUS
FOR
BACHELOR OF COMPUTER APPLICATION
(BCA)**

**SEMESTER I-IV
UNDER
CHOICE BASED CREDIT SYSTEM (CBCS)**

GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
(An Autonomous College)

BACHELOR OF COMPUTER APPLICATION
(Choice Based Credit System)
(Effective for the session 2017)

1. BCA Programme

The Bachelor of Computer Application (B.C.A.) is an undergraduate programme of three years duration based on Semester System and consist of **six** semester. Each semester will be approximately 5 months duration (minimum 90 working days in a semester). A candidate admitted to the BCA programme will be required to pass the course within the prescribed academic years from the year of admission to the first semester.

PASSING CRITERION

The minimum Grade /Grade Point required to pass each paper in a semester examination under CBCS shall be **Grade D / Grade Point 4** in each theory paper/ Practical/Project (wherever applicable) in External Examination and Internal Assessment separately.

DETERMINATION OF GRADES (Grading System and Computation of SGPA, CGPA)

Grading System:

Absolute grading would be used where the marks obtained are converted to grades based on pre-determined class intervals. To implement the following grading system, the colleges /campuses shall use the following UGC recommended 10-point grading system:

Table 1: Letter Grades and Grade Points

Marks (%)	Letter Grades	Grade Points(G)
90-100	O(Outstanding)	10
80 to < 90	A+(Excellent)	9
70 to < 80	A(Very Good)	8
60 to < 70	B+(Good)	7
50 to < 60	B(Above Average)	6
40 to < 50	C(Average)	5
36 to < 40	D(Pass)	4
0 to < 36	F(Fail)	0
	AB(Absent)	0

- (i) A student obtaining Grade F shall be considered failed and will be required to reappear in the examination as per existing rules of the university under Semester System for Under Graduate Courses.
- (ii) Grade(D) or percentage of marks (36%) is required to pass in a course, SGPA of 4 to qualify a semester and a minimum CGPA of 4 to qualify for a UG degree.

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Computation of SGPA and CGPA

The following procedure shall be used to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

- (i) The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e. **SGPA** (S_i) = $\Sigma (C_i \times G_i) / \Sigma C_i$, where C_i is the number of credits of the i th course and G_i is the grade point scored by the student in the i th course.
- (ii) The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e. **CGPA** = $\Sigma (C_i \times S_i) / \Sigma C_i$ where S_i is the SGPA of the i th semester and C_i is the total number of credits in that semester.
- (iii) The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

2. Eligibility:

Admission to Semester-I of BCA course, under CBCS, shall be open to those candidates who have passed Higher Secondary Part-II examination (under 10+2 pattern) of the J&K State Board of School Education or an examination recognized by the University as equivalent thereto with Mathematics as one of the elective subjects and has obtained not less than 50% of the aggregate marks in the qualifying examination in case of General Category and 45% marks in case of SC/ST candidates.

Provided that the admission in the Govt. Colleges/Non-Government Colleges affiliated to University of Jammu shall be made directly by the Admission Committee of the College concerned on the basis of marks obtained by the candidate/s in the qualifying examination.

Provided that Non-Government Colleges shall follow the same admission schedule and procedure/statutes as are applicable for Govt. Colleges.

Provided further also that the admission to Non-Local Candidates in Non-Govt. Colleges shall be granted under the second preference category.

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3. Course Structure

(Semester-wise Course Distribution)

SEMESTER-I						
	Course code	Course Title	Credits	Marks		
				Internal	External	Total
Core Course	UMTTC-101*	Differential Calculus	06	30	120	150
	UBCATC-101	Problem solving using C-language	04	20	80	100
	UBCATC 102	Computer Fundamentals	04	20	80	100
	UBCAPC 150	Practicals--Based on UBCATC 101 & 102	04	50	50	100
Ability Enhancement Compulsory Courses (AECC)		EVS-1	02	10	40	50
		Communication English-1	02	10	40	50
Total			22			550

SEMESTER-II						
	Course code	Course Title	Credits	Marks		
				Internal	External	Total
Core Course	UMTTC 201*	Differential Equations	06	30	120	150
	UBCATC-201	Data Structures using C-language	04	20	80	100
	UBCATC-202	Fundamentals of Digital Electronics	04	20	80	100
	UBCAPC -250	Practicals-Based on UBCATC 201	04	50	50	100
Ability Enhancement Compulsory Courses (AECC)		EVS-2	02	10	40	50
		Communication English-2	02	10	40	50
Total			22			550

*Syllabus for this course shall be the same as applicable for B.A/B.Sc. "Mathematics"

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SEMESTER-III						
	Course code	Course Title	Credits	Marks		
				Internal	External	Total
Core Course	UMTTC 301*	Real Analysis	06	30	120	150
	UBCATC-301	Fundamentals of Operating Systems	04	20	80	100
	UBCATC-302	Database Management Systems	04	20	80	100
	UBCAPC-350	Practicals-Based on UBCATC-302 & 301	04	20	80	150
Skill Enhancement Elective Course-II (SEC-II) (any one)	UBCAPC-351	PC Assembly & Installation	04	20	80	100
	UBCAPC-352	Java Programming				
Total			22			550

SEMESTER-IV						
	Course code	Course Title	Credits	Marks		
				Internal	External	Total
Core Course	UMTTC 401*	Algebra	06	30	120	150
	UBCATC-401	Computer Networks and Internet	04	20	80	100
	UBCATC-402	Object Oriented Programming using C++	04	20	80	100
	UBCAPC-450	Practicals-Based on UBCATC-401& UBCATC-402	04	20	80	150
Skill Enhancement Elective Course-II (SEC-II) (any one)	UBCAPC-451	Internet and Web Technology	04	20	80	100
	UBCAPC-452	Information Security				
Total			22			550

*Syllabus for this course shall be the same as applicable for B.A/B.Sc. "Mathematics"

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SEMESTER-V						
	Course code	Course Title	Credits	Marks		
				Internal	External	Total
Core Course	UMTTC 501*	Mathematics (Under Process)	06	30	120	150
	UBCATC-501	VB .Net	04	20	80	100
	UBCAPC-550	Practicals- Based on UBCAPC-501	04	20	80	100
Skill Enhancement Elective Course-III (SEC-III) (any one)	UBCAPC-551	Android Programming	04	20	80	100
	UBCAPC-552	Python Programming				
Discipline Elective Course-I (DEC-I) (any one)	UBCATC-502	Artificial Intelligence	04	20	80	100
	UBCATC-503	Advance DBMS				
Total			22			550

SEMESTER-VI						
	Course code	Course Title	Credits	Marks		
				Internal	External	Total
Core Courses	UMTTC 601*	Mathematics (Under Process)	06	30	120	150
	UBCAPC – 650	Project	12	300	300	300
	UBCAPC-651	Android Programming	04	20	80	100
UBCAPC-652	PHP/MYSQL					
Total			22			550

*Syllabus for this course shall be the same as applicable for B.A/B.Sc. “Mathematics”

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Total Credits =22+22+22+22+22+22=132

Note: The distribution of marks in each course shall be made in the manner shown in the table below:

Sno.	No. of Credits in a Course	Marks in the Semester Examination	Marks for Internal Assessment	Total Marks
1	6	120	30	150
2	4	80	20	100
3	2	40	10	50

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4. SCHEME OF EXAMINATION/ASSESSMENT

The evaluation of each course shall contain two parts: Internal or In Semester Assessment(IA) and External or End-Semester Assessment (EA). The internal grade awarded to the students in each course in a semester shall be published on the notice board at least one week before the commencement of end semester examination. The responsibility of evaluating the internal assessment is vested on the teacher(s) who teaches the course. There will be University Examinations at the end of each semester for both theory and Practical. 20% of the marks allotted to each theory paper and 50% of the marks allotted to each practical paper including field work, wherever prescribed, shall be reserved for internal assessment. The evaluation of a candidate shall be awarded and record thereof maintained in accordance with the Regulations prescribed for the purpose under the CBCS as per the following:

THEORY	Syllabus to be covered in the examination	Time allotted	% Weightage (Marks)
Internal Assesment Test (Pattern: One long answer type question of 10 marks and Five short answer type questions of 2 marks each)	Upto 50% (after 45 days)	1 hour	20
External End Semester University Exam (Pattern: As proposed by the concerned BOS and approved by Academic Council) or (*)	Upto 100% (after 90 days)	3 hours	80
Total			100

PRACTICAL

Daily evaluation of practical records/Viva voce/attendance etc.		50(including 20% for attendance,20% for Viva-voce and <u>60% for day to day performance</u>)
Final Practical Performance + viva voce (External Examination)	100% Syllabus	50 (40(paper)+10(viva-voce))
Total		100

In case of failure/re-appear category, the Internal Assessment earned by the candidate as a regular student shall be carried forward to the subsequent examination.

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DETAILED SYLLABUS

BCA--SEMESTER-1ST

(For the Examinations to be Held in the year 2016, 2017 & 2018)

Course No.: UBCATC-101

TITLE : COMPUTER FUNDAMENTALS

Duration of the Examination: 3:00 hrs

No. of Credits = 4

Semester Exam. = 80

Int. Assessment = 20 Total Marks

= 100

Unit I

History of Computer, Generations and Types (Analog Digital and Hybrid), Characteristics, applications, Benefits and limitations.

Computer: Introduction, Components: CPU, Memory: Primary (RAM, ROM, PROM, EPROM, EEPROM), Secondary (Hard Disk, Optical disk, blue ray disk, pen drives), Input Devices, Output Devices.

10 HRS

Unit II

Operating system and its functions. Types of Operating System (single user, multi user, time sharing, multitasking, multiprocessing and distributed)

Software and its types, Computer languages and its types, Compiler, Interpreter, Assembler, Linker Loader.

Introduction to Computer Codes: ASCII, EBCDIC, UNICODE, BCD, GRAY CODE, EXCESS-3

10 HRS

Unit III

Number System: Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number system. 1's Compliment and 2's Compliment. Conversion from one number system to another. Binary Arithmetic: Addition, subtraction, multiplication and division.

Unit IV

Word processing and its features, spell check, Grammar Check, Thesaurus, Auto complete, text formatting, borders & shading, inserting header, Footer and page numbers, Drop Cap, Bookmark, adding pictures, smart art, charts, Tables, find & replace feature, Page set up, printing, short cuts, Templates and Wizards, Mail Merge, Macros, exporting word documents

10 HRS

Unit V

Spreadsheet and its features, Entering information in worksheet, Editing cell entry, Moving and Copying data, deleting and insertion cells, rows , columns, custom numeric formats. Working with Formulas and Cell Referencing, Absolute and relative addressing. Functions, Creating Charts, Filters: Auto and Advanced, Creating and using Macros, import & export data

Presentation software and its uses, Steps to create power point presentation, Power point views, Inserting pictures/images, Inserting Audio/ video clips, Animating slides etc.

10 HRS

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Suggested Readings:

1. P.K Sinha & Priti Sinha, Computer Fundamentals, BPB Publications.
2. Alexix Leon, Mathewes Leon, Fundamentals of Information Technology,
3. Suresh K. Basandra, Computer Systems Today, Galgotia Publications.
4. V. Rajaraman, Fundamentals of Computers,EEE.
5. Peter Norton, Introduction to Computers, Tata Mcgraw Hill
6. Joyce Coax , Joan Preppernau, Steve Lambert and Curtis Frye,2007 Microsoft Office System step by step, Microsoft Press
7. R.K. Taxali, PC Software for Windows

Instructions for paper setter

The question paper will be divided into the following three sections. No question will be repeated in the question paper.

Section A

Total of 5 short answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 80 words. Each question shall be of 3 marks.

(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

Note:-The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCATC-102 TITLE: PROBLEM SOLVING USING C-LANGUAGE

Duration of the Examination: 3:00 hrs No. of Credits = 4
Semester Exam.= 80 Int. Assessment = 20 Total Marks = 100

UNIT-I

Problem solving, Algorithm, flow chart, coding, compilation and debugging
History of C language, Structure of C program, compiling, and running a C program, Errors: syntax, linker and logical errors.

Character set of C language, identifiers, keywords, data types, variables, constants, expressions.
Operators: Mathematical, Unary, Binary, Relational and Logical operators, Operator precedence and associativity.

10 HRS

UNIT-II

Conditional Control statements: if statement, if else statement, nested if statement, if else if ladder and Ternary operator, Switch case statement, GOTO statement.

Looping control Statements: While loop, Do while Loop, For loop, Nested loops etc.

10 HRS

UNIT-III

Functions: Definition, Prototypes, Types of Function, Scope, Call by Value.

Storage classes in C, Preprocessor Directives, Macros.

UNIT-IV

Arrays (Single and double dimensional): Definition, Declaration, Accessing, Bound Checking, Passing to function.

Strings: Definition, Declaration, Accessing, Passing to function, Standard Library functions.

10 HRS

UNIT-V

Arrays and Pointers: Accessing single dimensional array using Pointers, Accessing 2D array using Pointers, Passing arrays to functions with pointers.

Structures & Unions: Declaring, Initializing and Accessing structures, Passing structures to functions, Array of Structures, Nested Structures, Unions initialization and accessing the members of a union.

10 HRS

Suggested Readings:

1. Gottfried. B, Theory and problems of Programming with C Language, Tata Mc Graw Hill.
2. Kenneth. A, C Problem Solving and Programming, PHI.
3. Dan Gookin, C Programming, Wiley Dreamtech.
4. Y. P. Kanetkar, Understanding Pointers In C, BPB Publications.
5. Shubhnandan S. Jamwal; Programming in C; Pearson Publications; 1e, 2014
6. H.M. Deitel and P.J. Deitel, C How to Program, PHI.

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(5 x 7 = 35 marks)

Section C

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(2 X 15 = 30 marks)

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Course No.: UBCAPC-150

TITLE: Practicals--Based on C-language, Office Automation Tools

Duration of the Examination: 3:00 hrs/shift (External exam. be conducted in shifts pf 20-25 students)

No. of Credit = 4

Total Marks = 100

External Examination = 50

Internal Assessment = 50

In this course the students shall be exposed to various practical problems based on courses topics mentioned above. The Teacher-in-Charge shall design 30-40 problems based on these courses. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least three internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of each practical in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

Breakup for Internal Assessment:

- Regular Tests = 20 marks (Two tests of 10 marks each)
- Viva-voce Examination = 10 marks
- Practical File = 10 marks
- Attendance = 10 marks

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BCA--SEMESTER-2nd

(For the Examinations to be Held in the year 2016, 2017 & 2018)

Course No.: UBCATC-201	<u>TITLE:</u> DATA STRUCTURES USING C-LANGUAGE
Duration of the Examination: 3:00 hrs	No. of Credits = 4
Semester Exam. = 80	Int. Assessment = 20
	Total Marks = 100

UNIT – I

Introduction and Classifications of Data Structures. Data Structure operations. Time and space complexity of algorithms. Asymptotic Notations: Big, Omega, Theta
Introduction to Arrays: array structure, Memory Representation, Operations, merging two arrays
Searching Algorithms: Linear Search & Binary Search
Sorting Algorithms: Bubble Sort, Insertion Sort, Selection Sort, Quick Sort,
Time and space complexity of sorting & search algorithms 10 HRS

UNIT - II

Heap: Introduction, Types of Heap, Insertion, Deletion
Linked list, Type of Lists: Single, Double, Circular, Operations on Lists: Traversal, Insertion, Deletion 10 HRS

UNIT - III

Stack: Introduction, Operations, Applications
Queue: Introduction, Types, Operations, Applications 10 HRS

UNIT – IV

Trees: Binary Tree: Properties, Binary Tree Traversal,
Binary Search Trees: Introduction, Insertion, Deletion, Complete Binary Trees
Graph Basics, Terminologies, Memory Representation 10 HRS

UNIT-V

File Structures:
Concepts of fields, records and files. Files: File Organization, Sequential Files, Structure, Operations, Disadvantages, Areas of use, Direct File Organization, Indexed Sequential File Organization and text files, Hashing techniques for direct files. 10 HRS

Suggested Readings:

- 1) Data Structures - Seymour Lipschutz (Schaum's Outlines)
- 2) Data Structure and File Using C - Abhay Abhyankar.
- 3) Fundamental of Data Structure in C - Sahani.
- 4) Data Structure Using C - Radhakrishanan and Shrivastav.
- 5) Data Structure Using C- R.S.Salaria
- 6) Simplified Approach to Data Structures- Vishal Goyal, Lalit Goyal, et.al

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Section A

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(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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Course No.: UBCATC-202 **TITLE:** FUNDAMENTALS OF DIGITAL ELECTRONICS
Duration of the Examination: 3:00 hrs **No. of Credits** = 4
Semester Exam. = 80 **Int. Assessment** = 20 **Total Marks** = 100

UNIT - I

Overview of computers, Integer & floating point representation, Rules of Floating point Arithmetic, parity, Error detection and correction methods using Hamming technique, ASCII code representation, Number systems & their inter - conversion rules, Rules of addition/subtraction for r's, (r - 1)'s complements.

10 HRS

UNIT - II

Logic gates, And, OR, NOT, NAND, XOR, NOR, XNOR Gates & their design.
Boolean Algebra: Binary arithmetic, Boolean Expressions, Laws of Boolean Algebra, De–Morgan laws, K - map, simplification of Boolean Expressions using SOP, POS, K - map techniques.

10 HRS

UNIT - III

Combinational circuits: Half & Full adders & subtractors, parallel adders and subtractors.
Encoder, decoder, Multiplexer, De - Multiplexer, code converters.
Sequential circuits: Flip-flop and its types, registers and their types, & bi – directional register.

10 HRS

UNIT - IV

Memory organization: Memory Hierarchy, Memory, its types (RAM/ROM), characteristics of memory, memory address map to CPU, cache memory.

10 HRS

UNIT - V

I/O devices FD/HD disks, VDU;I/O organization: Modes of I/O transfer like DMA, programmed control, interrupts technique.

Interrupt & instruction: Interrupt, its types & its life cycle, instruction life cycle.

10 HRS

Suggested Readings:

1. Gear, C.W., Computer Organization and Programming McGraw – Hill, 1975.
2. Tannenbaum, A.S., Structured Computer Organization Prentice - Hall of India.
3. Mano, M.M., Computer System Architecture, Prentice – Hall, of India, 1983.
4. Langholz, G., Grancioni, J. and Kandel, A.: Elements of Computer Organization, Prentice - Hall International, 1988.
5. Assembler Manual for the chosen machine.
6. Hayes, Computer Architecture and Organization, McGraw – Hill International Edition.
7. Sloan, M.E., Computer Hardware and Organization, 2nd Edn, Galgotia publ., Pvt. Ltd.
8. Floyd: Digital Fundamentals, 3rd edn, Universal bookstall, and pvt.ltd

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(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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Course No.: UBCAPC-250

TITLE: Practicals-Based on Data structure Using C

Duration of the Examination: 3 hrs/shift
(External exam. be conducted in shifts of 20-25 students)

No. of Credits = 4

Total Marks = 100
External Examination = 50
Internal Assessment = 50

In this course the students shall be exposed to various practical problems based on topics mentioned above. The Teacher-in-Charge shall design 30-40 problems based on these courses. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least three internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of each practical in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

Breakup for Internal Assessment:

- Regular Tests = 20 marks (Two tests of 10 marks each)
- Viva-voce Examination = 10 marks
- Practical File = 10 marks
- Attendance = 10 marks

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BCA--SEMESTER-3rd

(For the Examinations to be Held in the year 2016, 2017 & 2018)

Course No.: UBCATC-301	TITLE: FUNDAMENTALS OF OPERATING SYSTEMS
Duration of the Examination: 3 Hrs	No. of Credits = 4
Semester Exam. = 80	Int. Assessment = 20
	Total Marks = 100

UNIT – I

Introduction to Operating System, Definition, Types of operating systems, Functions of Operating System, Process Management: Process, process states, Swapping, Scheduling Criteria, Scheduling: Preemptive and Non-Preemptive, Scheduling Algorithms: FIFO, LIFO, Round Robin, Shortest Job First, Shortest Remaining Time, Priority Scheduling, Gantt Charts, Scheduling Algorithm Performance: processor utilization, Throughput, Waiting time, response time 10 HOURS

UNIT - II

Inter-Process communication(IPC): Introduction to IPC, Resource Sharing, Process Synchronization & concepts : race condition, Critical Section problem: its solution, Semaphore concept, types and limitations

Deadlocks: Criteria, Deadlock avoidance, Detection and recovery

10 HOURS

UNIT-III

Memory Management: Memory Allocation: contiguous and Non contiguous, Fixed and variable partitions, compaction, checkerboarding, Partition Selection Algorithms,

Virtual Memory Concepts: Simple Paging & Simple Segmentation

Virtual memory, demand memory, page replacement algorithms 10 HOURS

UNIT - IV

.File System Management: Files, directories, file types and operations, File Allocation Methods: Continuous allocation, Chained allocation and indexed allocation.

Disk Scheduling Algorithms: FCFS, SSTF, SCAN, C-SCAN, LOOK

10 HOURS

UNIT - V

DOS commands: (internal (DIR, DATE, TIME, CLS, CD, RD, MD, PATH, TYPE, DEL, ECHO, COPY, REN, PROMPT, VOL, VER), external (ATTRIB, CHKDSK, DISKCOPY, DISKCOMP, XCOPY, TREE, DELTREE, DOSKEY, FORMAT, FIND, SORT, FDISK, MORE, SYS)), Concept of files & directories, Wild card characters, Redirection operators 10 HOURS

Suggested Readings:

1. Operating system Principles by A. Silberschartz, P. Galvin and G. Gagne- WSE wiley.
2. Modern operating systems by Andrew. S. Tanenbaum, Pearson Prentice Hall
3. An Introduction to operating system by H. M. Deitel- Addison-Wesley publications
4. Operating Systems by William Stallings-Pearson Education
5. Operating System-A design oriented approach by C. Crowley-Pearson Education

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(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

Note:-The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
(An Autonomous College)

Course No.: UBCATC-302

TITLE: DATABASE MANAGEMENT SYSTEM

Duration of the Examination: 3 Hrs

No. of Credits = 4

Semester Exam. = 80

Int. Assessment = 20

Total Marks = 100

UNIT - I

Overview of DBMS: Data & information, Entity & attributes, Records, files & their types, Database, views, relationships among entities, DBMS: its evolution, components advantages and disadvantages. Architecture of DBMS.

10 HRS

UNIT - II

Relational DBMS: definition, concept of table, keys [primary, unique, candidate, foreign, conjugate] role of database administrator. Data models [traditional, semantic, hierarchical, network, relational] E-R diagram.

10 HRS

UNIT - III

Normalization: Anomalies and data redundancies in Database, Dependencies [functional, fully functional and minimal/irreducible set], Normal forms [1st, 2nd, 3rd, BCNF,]

10 HRS

UNIT - IV

Overview of SQL, Data types in SQL, Table creation, insertion, deletion, alteration and retrieval of data from table, Table deletion, simple & nested queries using DDL, DML and DCL commands, SQL queries using conditions like where, where-like, order by, greater than, less than, if-then, if-then-else, if-then else if, data integrity constraints, views, joins.

10 HRS

UNIT - V

Security issues: Data security issues, risks, data tampering, data theft, unauthorized access, password related threats, data security requirements [confidentiality, integrity, availability] granting and revoking of privileges and roles, definition of Encryption and Decryption.

10 HRS

Suggested Readings:

1. Bipin C.Desai: An Introduction to Database Systems, West-publishing company.
2. Elmasri, Navathe, Somayajulu, Gupta: Fundamentals of Database Systems, Pearson Education.
3. Date, C.J.: An Introduction to Database Systems Addison Wesley Pearson Education.
4. Narayan S Umanath, Richard W Scamell : Data Modelling and Database Design, Thomson Course Technology India Edition.
5. R.A. Parida, Vinod Sharma: The power of Oracle 9i, Firewall Media Publications.
6. Bayross Ivan: SQL, PL/SQL the programming language of Oracle, BPB publications.

GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Instructions for paper setter

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Section A

Total of 5 short answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 80 words. Each question shall be of 3 marks.

(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCAPC-351
Duration of the Examination: 3Hrs
Semester Exam. = 80

TITLE: PC ASSEMBLY AND INSTALLATION
No. of Credits = 4
Int. Assessment = 20 Total Marks = 100

UNIT- I

Introduction to Computer System, Difference Between Hardware and Software, Different input and output devices, Computer ports. Types of Memories- Static RAM and Dynamic RAM, ROM, PROM, EPROM, EEPROM, CPU (Central Processing Unit)- ALU and control unit, Optical Storage: CD, DVD, BLUE RAY DISC.

SMPS, UPS (Online/Offline), controller cards, AGP card, display cards: CGA VGA SVGA, sound card, FAX/Modem Cards, TV Tuner Cards, LAN Cards, Ethernet cards. 10 HRS

UNIT - II

Assembling and Disassembling of the system. Study of different types of Motherboards, Motherboard Configuration, Types of Processor- Intel Pentium IV, Dual core, Core 2 Duo, Quad processor etc., Booting concept of computer in DOS and Windows environment,

BIOS Configuration: Study of BIOS Set-up- Advance set-up, Boot configuration, Boot Menu, CD/ Pen Drive booting 10 HRS

UNIT – III

Formatting/Partitioning of Hard Disk, Installation of Operating System, Troubleshooting with PC: POST (Power on Self Test), BIOS Errors , Replacement of components etc. Maintenance: Windows file repairing, Use of system tools like Disk defragmentation, Disk clean up, Scan disk etc. Use of open source data recovery tools. 10 HRS

UNIT - IV

Different types of Application Software, Application Software Installation, Use of CD ROM and DVD Drivers, Different types of Motherboard drivers, LAN, Audio, and Video. Antivirus Software Installation. Installation of Drivers for Printers, Scanners, Web Camera, Working with different control panel option of windows. 10 HRS

UNIT- V

Networking Fundamentals: Basic LAN concepts , Network Topology, Different types of modems, Types of cable, Twisted cable, UTP,STP, Fibre optics, Coaxial cable, Connectores : RJ 45, BNC, T-Connector, Hub, Switch, Router, Bridges, Gateways, Repeater, Modem. Networking in Windows 7: wireless networks, Ethernet, Cable modem, Set up wireless router and broadband (DSL or cable) connection. 10 HRS

Suggested Readings:

1. P.K Sinha&PritiSinha, Computer Fundamentals, BPB Publications.
2. R.K. Taxali, PC Software for Windows
3. –Singh & Singh, Computer Hardware Course, Computech Publications Limited.
4. Wikibooks contributors, How to Assemble A Desktop PC, Platypus Global Media
5. Jacob Beckerman, How to build a computer, A step by step guide, JIBB Publishing.
6. Mark L. Chambers, Build your own PC Do-It-yourself for dummies.
7. N.S. Reddy, PC Hardware - Theory and Practical, In Depth step by step, Neo publishing house
8. Diagram Books of different types of Mother Boards.

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(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCAPC-352

TITLE: JAVA PROGRAMMING

Duration of the Examination: 3 Hrs

No. of Credits = 4

Semester Exam. = 80

Int. Assessment = 20

Total Marks = 100

UNIT - I

Introduction to Java, Object Oriented concepts, Application of object oriented programming, Features of java programming, Java Virtual Machine, Primitive Data Type and Variables, Java Keywords, Java Operators, Expressions, Control Statements and Arrays.

10 HRS

UNIT - II

Class and Objects, Constructors, Method Overloading, Static methods, Inheritance, Access Control, Method Overriding, Garbage Collection, Abstract Classes, Polymorphism Packages, Interfaces

10 HRS

UNIT- III

Exceptions Handling, Types of Exceptions, try-throw construct, catch, finally keyword, Writing Exception Subclasses, Multithreading, Synchronization in Java.

10 HRS

UNIT - IV

I/O in Java, Byte Stream Classes, Character Stream Classes, Reading and Writing to Console, Reading and Writing Files, The Transient and Volatile Modifiers, The String and String Buffer Class, Configuring Applets, The Applet Class, Graphics and User Interfaces

10 HRS

UNIT-V

Basics of AWT, Building User Interface with AWT, Layouts, Layout Manager, Event Handling, Action listener interface, panels, ,checkbox, Dialog and Frames, using menus, adapter classes, Graphics.

10 HRS

Suggested Readings:

1. Herbert Scheldt – “Java2 The Complete Reference”, Tata McGraw Hill.
2. E. Balagurusamy - “ Programming with JAVA”, Tata McGraw Hill
3. Steven Holzner – “Java2 Black Book”, Dreamtech Press.
4. Dietel & Dietel – “Java How to Program”, Pearson Education.
5. Grant Palmer – “Java Programmer’s Reference”, Wrox.

GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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(5 x 3 = 15 marks)

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(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCAPC-350

TITLE: Practicals-Based on DBMS/ Java.

Duration of the Examination: 3 hrs/shift
(External exam. be conducted in shifts of 20-25 students)

No. of Credits = 4

Total Marks = 100
External Examination = 50
Internal Assessment = 50

In this course the students shall be exposed to various practical problems based on topics mentioned above. The Teacher-in-Charge shall design 30-40 problems based on these courses. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least three internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of each practical in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

Breakup for Internal Assessment:

- Regular Tests = 20 marks (Two tests of 10 marks each)
- Viva-voce Examination = 10 marks
- Practical File = 10 marks
- Attendance = 10 marks

GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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BCA--SEMESTER-4th

(For the Examinations to be Held in the year 2016, 2017 & 2018)

Course No.: UBCATC-401	<u>TITLE:</u> COMPUTER NETWORKS AND INTERNET
Duration of the Examination: 3 Hrs	No. of Credits = 4
Semester Exam. = 80	Int. Assessment = 20 Total Marks = 100

Unit - I

Computer Networks: Concept of Network, Types of Network: LAN, WAN, MAN, Network Topologies Applications of Computer Network.

Concept of Internet, Intranet and Extranet, Web server, WWW, Search Engines, Internet Service Providers
10 HOURS

Unit – II

Data and Signals: Analog & Digital Data, Analog & Digital Signals, Composite Signals, Band Width, Bit rate, Baud rate, Transmission of Digital Signals: Baseband Transmission, Broadband, Transmission Impairment, Data rate Limits: Nyquist BitRate, Shannon Capacity, Performance of the Network: Bandwidth,, Throughput, Latency, Bandwidth Delay, Jitter, Transmission Modes (simplex half duplex and full duplex)
10 HOURS

Unit – III

Digital Transmission: Digital to Digital Transmission: Line Coding Schemes, Block Coding, Srambling,

Analog to Digital Transmission: PCM, Delta Modulation,
DataTransmission Modes : Parallel, Serial,

Analog Transmission: Digital to Analog: ASK, FSK, PSK, QAM,

Analog to Analog Conversion: Amplitude Modulation, Frequency Modulation & Phase Modulation, Asynchronous and Synchronous Communication, Multiplexing: Definition, TDM, FDM

Transmission media (guided and unguided), Hardware Components (Hub, Repeater, Bridge, Router and Gateway).
10 HOURS

Unit – IV

OSI Reference model, TCP/IP Model, Protocols: TCP/IT, HTTPS, FTP, ARP, RARP, BOOTP, DHCP, OSPF, UDP, SMTP, SCTP, IP addresses, Classes of IP addresses, Domain Name system, IPv4, Introduction to IPv6
10 HOURS

Unit-V

Introduction to html, format of HTML Program, Formatting tags, Image tags, linking of documents, List Tags, Tables Tags, Frames, Forms, Basic Concept of Style Sheets, CSS, Linking and Embedding of CSS in HTML document, Properties of CSS, inline style Sheets, Dynamic Style Sheets.
10 HOURS

Suggested Readings:

1. Computer Networks- Andrew.S. Tannenbaum
2. Data and Computer Communication- Williams Stallings
3. Data Communication and Networking- Forouzan
4. The Internet- Doulas and E. Comer
5. Beginning Web Programming with HTML, CSS and JavaScript- John Ducett

GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Instructions for paper setter

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(5 x 3 = 15 marks)

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Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCATC-402 **TITLE:** OBJECT ORIENTED PROGRAMMING USING C++
Duration of the Examination: 3 Hrs **No. of Credits = 4**
Semester Exam. = 80 **Int. Assessment = 20** **Total Marks = 100**

UNIT - I

Paradigms of Programming Languages, Procedural programming, Need of OOP, Evolution of OO Methodology and C++, Basic Concepts of OO Approach, Comparison of Object Oriented and Procedure Oriented Approaches, Benefits of OOPs, Applications of OOPs, Objects, classes, encapsulation, abstraction, inheritance, reusability, polymorphism and overloading.

10 HRS

UNIT - II

Basic program construction, Data types, reference variables, Input output statements, comments, escape sequence, manipulators, type conversion, arithmetic logical and relational operators, For loop, while loop & do loop and if, if...else, switch & other control statements, arrays and Strings, new and delete operator.

10 HRS

UNIT - III

Functions: passing arguments to functions, returning values from functions, reference arguments, static functions, inline functions, default arguments, variables and storage class and returning by reference, Class and visibility modes, C++ objects, this pointer, object as function argument, function overloading, Operator overloading, Overloading unary and binary operators.

10 HRS

UNIT - IV

Constructors and its types, overloaded constructors, copy constructors, destructor, Memory management, passing and returning Objects from functions, Structures and classes, static class members, Inheritance: derived class and base class, derived class constructors, types of inheritance: single level, multiple, multilevel, hierarchical, hybrid inheritance, function overriding,

10 HRS

UNIT - V

Exception handling, file handling, Streams stream classes, stream errors, disk file I/O with streams, file pointers and their manipulations, file handling in text and binary modes.

10 HRS

Suggested Readings:

1. Herbert Schildt, C++ The Complete Reference, McGraw Hill.
2. Robert Lafore, Object Oriented Programming In C++, Galgotia publ.
3. H.M. Deitel and P.J. Deitel, C++: How to Program, Prentice Hall.
4. Bjarne Stroustrup, The C++ Programming Language, (3rd edition), Addison Wesley.
5. Object Oriented Programming and C++, Balaguruswamy, TMH

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(5 x 3 = 15 marks)

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(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCAPC-451

TITLE: INTERNET AND WEB TECHNOLOGY

Duration of the Examination: 3 Hrs

No. of Credits = 4

Semester Exam. = 80

Int. Assessment = 20

Total Marks = 100

UNIT – I

Introduction to Internet: Introduction, Objectives, Evolution, Applications (Email, Social Networking, E-Commerce etc.), World Wide Web (WWW), Search Engine, ISP.

Basic of Computer Networks: (LAN, MAN, WAN), Network Topologies, Intranet, Extranet.

10 Hrs

UNIT – II

Internet Terms: Web page, website, web portal, browsers, Web server, Proxy Server, URL, ISP, download and upload, online and offline, Hosting and Domain Name, Hypertext, TCP/IP, UDP, HTTP, HTTPS, FTP, IP Address and its classes.

10 Hrs

Unit – III

Introduction to HTML, Format of HTML Program, Formatting Tags, Image Tags, Linking of Documents, List Tag, Tables Tag, Frames, Forms.

10 Hrs

Unit – IV

Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties), CSS Color.

10 Hrs

Unit – V

Introduction to JavaScript, Variables, Conditional and Loops Control Statement, Functions, Strings and Built-in Functions, Events and Event Handling.

10 Hrs

Suggested Reading

1. HTML 5 and CSS 3 Made Simple by Ivan Bayros.
2. Computer Networks- Andrew.S. Tannenbaum, Pearson.
3. CSS: The Definitive Guide, 3rd Edition by Eric Meyer, O'Reilly Media.
4. The Internet- Douglas E. Comer, Pearson.
5. Web Programming – Chris bates – Wiley Dreamtech India
6. Internet and Worldwide Web, H.M. Deitel, P.J. Dietel and A.B. Goldberg, 3e, Pearson Education
7. Mastering Javascript and Jscript, James Jaworski, 2e, BPB
8. HTML, DHTML, JavaScript, Perl CGI by Ivan Bayross, BPB Publications

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(5 x 7 = 35 marks)

Section C

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(2 X 15 = 30 marks)

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GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCAPC-452

TITLE: INFORMATION SECURITY

Duration of the Examination: 3 Hrs

No. of Credits = 4

Semester Exam. = 80

Int. Assessment = 20

Total Marks = 100

UNIT - I

Information Security Concepts: Information Security Overview, Goals for Security. Need and impact of computer security, computer threats and computer vulnerabilities, Types of Attacks
Overview of wired and Wireless Networks, Internetworking, Internet, extranet 10 HRS

UNIT - II

Security Threats and vulnerabilities: Overview of Security threats, Malicious softwares- virus, Trojans, worms, Password Cracking-Brute force, shoulder surfing etc.
Threats using Programming Bugs,
Introduction to Cybercrimes and Cyber terrorism. 10 HRS

UNIT - III

Cryptography: Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication and Hash functions, Digital Signatures, Public Key infrastructure, Applications of Cryptography 10 HRS

UNIT - IV

Security Management: Overview of Security Management, Risk Management, Security Procedures and Guidelines, Disaster Recovery.
Network Security: Overview of Identification and Authorization, User Management, DNS Routing, Overview of Firewalls, Types of Firewalls. 10 HRS

UNIT - V

System and Application Security: Designing Secure Operating Systems, Controls to enforce security services, Information flow model and Biba model. Desktop Security, email security, Web Security, OS Security Vulnerabilities, updates and patches, Anti-virus software, Configuring the OS for security. 10 HRS

Suggested Readings:

1. Malcolm Harkins, Managing Risk and Information Security: Protect to Enable, Apress.
2. Michael E Whitman and Herbert J Mattord, "Principles of Information Security", Vikas Publishing House, New Delhi, 2003
3. Micki Krause, Harold F. Tipton, "Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
4. Matt Bishop, "Computer Security Art and Science", Pearson/PHI, 2002.
5. Bruce Schneier, Applied Cryptography Second Edition, John Wiley & Sons, Inc.
6. Sunit Belapure, Nina Godbole, Cyber Security, Wiley.

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GOVERNMENT COLLEGE FOR WOMEN, PARADE GROUND, JAMMU
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Course No.: UBCAPC-450

TITLE: Practicals-Based on C++, Web Technologies

Duration of the Examination: 3:00 hrs/shift
(External exam. be conducted in shifts of 20-25 students)

No. of Credits = 4

Total Marks = 100
External Examination = 50
Internal Assessment = 50

In this course the students shall be exposed to various practical problems based on topics mentioned above. The Teacher-in-Charge shall design 30-40 problems based on these courses. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least three internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of each practical in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

Breakup for Internal Assessment:

- Regular Tests = 20 marks (Two tests of 10 marks each)
- Viva-voce Examination = 10 marks
- Practical File = 10 marks
- Attendance = 10 marks