Scheme for UG Syllabus
(Effective from 2018-19)

Under

CHOICE BASED CREDIT SYSTEM (CBCS)

In

Bachelor of Science Physical Science
(Physics, Computer Science and Mathematics)

Department of Computer Science
Himachal Pradesh University
Shimla-5

CHOICE BASED CREDIT SYSTEM (CBCS):

The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in India. This will benefit the students to move across institutions within India to begin with and across countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the UGC has formulated the guidelines to be followed.

Outline of Choice Based Credit System:

1. **Core Course:** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. Elective Course: Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

2.1 **Discipline Specific Elective (DSE) Course**: Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).

2.2 **Dissertation/Project:** An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

3. Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course: The Ability Enhancement (AE) Courses may be of two kinds: AE Compulsory Course (AECC) and AE Elective Course (AEEC). "AECC" courses are the courses based upon the content that leads to Knowledge enhancement. They ((i) Environmental Science, (ii) English/MIL (Modern Indian Language) Communication are mandatory for all disciplines. AEEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

3.1 **AE Compulsory Course (AECC)**: Environmental Science, English Communication/MIL Communication.

3.2 **AE Elective Course (AEEC):** These courses may be chosen from a pool of courses

designed to provide value-based and/or skill-based instruction.

Project work/Dissertation is considered as a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A Project/Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.

Scheme for Choice Based Credit System (CBCS) in
Bachelor of Science Physical Science (Physics, Computer Science and Mathematics)
Effective From 2018-19 onwards
Annual Pattern

Year	Core Course (12)	Ability Enhancement Compulsory Course AECC (2)	Skill Enhancement Courses SEC (4)	Elective Course Discipline Specific Elective DSE (6)	Total Credits
I	DSC-1A = 6 Credit DSC-1B = 6 Credit DSC-2A = 6 Credit DSC-2B = 6 Credit DSC-3A = 6 Credit DSC-3B = 6 Credit **Credits = 36**	Environmental Science = 4 Credit Hindi/Eng./Skt = 4 Credit (One out of three) **Credits = 08**	NIL	NIL	44
II	DSC-1C = 6 Credit DSC-1D = 6 Credit DSC-2C = 6 Credit DSC-2D = 6 Credit DSC-3C = 6 Credit DSC-3D = 6 Credit **Credits = 36**	NIL	SEC-1 = 4 Credit SEC-2 = 4 Credit **Credits = 08**	NIL	44
III	NIL	NIL	SEC-3 = 4 Credit SEC-4 = 4 Credit **Credits = 08**	DSE-1A = 6 Credit DSE-1B = 6 Credit DSE-2A = 6 Credit DSE-2B = 6 Credit DSE-3A = 6 Credit DSE-3B = 6 Credit **Credits = 36**	44
Total Credits in Bachelor of Science Physical Science (Physics, Computer Science and Mathematics)= 44 × 3					132

Credits Split:
Theory = 04   **Theory = 06**
Practical = 02

Annual Examination (A.E.) and Internal Assessment (I.A.) Scheme of Three years Degree of

B.Sc. PHYSICAL SCIENCE (PHYSICS, COMPUTER SCIENCE AND MATHEMATICS)

Scheme for Examination for each course

- The medium of instructions and Examinations shall be English only.

- AE & Practical Examinations shall be conducted at the end of each year as per the Academic Calendar notified by H.P. University, Shimla-5, time to time.

- Each course of 4/6 credits (theory + Practicals) will carry 100 marks and will have following components:

(FOR COURSES WITHOUT PRACTICALS)

I.	Theory	marks
	Annual Examination (AE)	70 marks
II.	Internal Assessment (IA)	30 marks
	a) Assignment/Class Test/Quiz/Seminar/Model	10 marks
	a) Mid-Term Examination (One Test)	15 marks
	b) Attendance	05

(FOR COURSES WITH PRACTICALS)

III.	Theory	marks
	Annual Examination (AE)	50 marks
IV.	Internal Assessment (IA)	30 marks
	a) Assignment/Class Test/Quiz/Seminar/Model	10 marks
	c) Mid-Term Examination (One Test)	15 marks
	d) Attendance	05
V.	Practical	20 marks

Practical examination will have following components:

a)	Performing the two practical exercises assigned by the Examiner in terms of requirement of chemicals/Practical's/ Theory/reaction (if any) involved, procedure/scheme/ Observations/calculations and results.	7.5 + 7.5 marks
b)	Viva-voce examinations	5 marks
c)	Practical note book	5 marks

        d) Regularity during practical classes   5 marks

- **Minimum Pass Percentage in each component (AE, IA & Practical) shall be 40%, separately**

- **Criterion for Class-room attendance (05**

  marks) 75% Attendance is minimum

  eligibility condition.

i)   **Attendance ≥75% but < 80% 1 mark**
ii)   **Attendance ≥ 80% but < 85% 2 marks**
iii) **Attendance ≥ 85% but < 90% 3 marks**
iv) **Attendance ≥ 90% but < 95% 4 marks**
v)   **Attendance ≥ 95%   5 marks**

HIMACHAL PRADESH UNIVERSITY
SYLLABUS AND SCHEME OF EXAMINATION FOR B.Sc. PHYSICAL SCIENCE (PHYSICS, COMPUTER SCIENCE AND MATHEMATICS)
(Effective from 2018-19 onwards)

COURSE OPTED	COURSE NAME	COURSE CODE	CR-EDI-TS	ESE (THEORY)	CCA (IA)	TOTAL MARKS
1st YEAR						
Core course-I	**Mechanics Theory**	PHYS101TH PHYS101IA	4	50	30	80
	Mechanics Lab	PHYS101PR	2	20	-	20
Core Course-II	**Problem Solving Using Computer**	COMP101TH	4	50	30	80
	Software Lab Using Python	COMP101PR	2	20	-	20
Core course-III	**Differential Calculus**	MATH101TH MATH101IA	6	70	30	100
Ability Enhancement Compulsory Course-I	**Environmental Science**		4	70	30	100
Core course-IV	**Electricity, Magnetism and EMT Theory**	PHYS102TH PHYS102IA	4	50	30	80
	Electricity, Magnetism and EMT Lab	PHYS102PR	2	20	-	20
Core Course-V	**Office Automation Tools**	COMP102TH	4	50	30	80
	Office Automation Tools Lab	COMP102PR	2	20	-	20
Core course-VI	**Differential Equations**	MATH102TH MATH102IA	6	70	30	100
Ability Enhancement Compulsory Course-II	**English /MIL Communication**		4	70	30	100

2nd YEAR							
Core course-VII	**Thermal Physics and Statistical Mechanics Theory**	PHYS201TH PHYS201IA	4	50	30	80
	Thermal Physics and Statistical Mechanics Lab	PHYS201PR	2	20	-	20
Core Course-VIII	**Computer System Architecture**	COMP201TH	6	70	30	100
Core course-IX	**Real Analysis**	MATH201TH MATH201IA	6	70	30	100
Core course-X	**Waves and Optics Theory**	PHYS202TH PHYS202IA	4	50	30	80
	Waves and Optics Lab	PHYS202PR	2	20	-	20
Core course-XI	**Database Management System**	COMP202TH	4	50	30	80
	Database Management System Lab	COMP202PR	2	20	-	20
Core course-XII	**Algebra**	MATH202TH MATH202IA	6	70	30	100
SEC -1 (CHOOSE ANY ONE FROM GIVEN)	**Physics Workshop Skills Theory**	PHYS203TH PHYS203IA	4	70	30	100
	Physics Workshop Skills Skill Exam	PHYS203SE				
	Computational Physics Theory	PHYS204TH PHYS204IA				
	Computational Physics Skill Exam	PHYS204SE				
	Electrical Circuits And Network Skills Theory	PHYS205TH PHYS205IA				
	Electrical Circuits And Network Skills Skill Exam	PHYS205SE				
SEC -2	**PHP Programming**	COMP203TH	4	70	30	100

3rd YEAR

DSE-1A (CHOOSE ANY ONE FROM GIVEN)	Elements Of Modern Physics Theory	PHYS301TH PHYS301IA	6	70	30	100
	Elements Of Modern Physics Lab	PHYS301PR				
	Solid State Physics And Electronics Theory	PHYS302TH PHYS302IA				
	Solid State Physics And Electronics Lab	PHYS302PR				
	Astronomy And Astrophysics Theory	PHYS303TH PHYS303IA				
	Astronomy And Astrophysics Tutorials	PHYS303TU				
DSE-2A	Operating System	COMP301TH	6	70	30	100
DSE:3A (CHOOSE ANY ONE FROM GIVEN)	Matrices	MATH301TH MATH301IA	6	70	30	100
	Mechanics	MATH302TH MATH302IA				
	Linear Algebra	MATH303TH MATH303IA				
DSE:1B (CHOOSE ANY ONE FROM GIVEN)	Nuclear And Particle Physics Theory	PHYS304TH PHYS304IA	6	70	30	100
	Nuclear And Particle Physics Tutorials	PHYS304TU				
	Quantum Mechanics Theory	PHYS305TH PHYS305IA				
	Quantum Mechanics Lab	PHYS305PR				
	Physics Of Devices And Instruments Theory	PHYS306TH PHYS306IA				
	Physics Of Devices And	PHYS306PR				

	Instruments Lab					
DSE:2B	**Data Structure and File Processing**	COMP302TH	4	50	30	80
	Data Structure and File Processing Lab	COMP302PR	2	20	-	20
DSE-3B (CHOOSE ANY ONE FROM GIVEN)	**Numerical Method**	MATH304TH MATH304IA	6	70	30	100
	Complex Analysis	MATH305TH MATH305IA				
	Linear Programming	MATH306TH MATH306IA				

SEC 3 (CHOOSE ANY ONE FROM GIVEN)	**Logic And Sets**	MATH307TH MATH307IA	4	70	30	100
	Analytic Geometry	MATH308TH MATH308IA				
	Integral Calculus	MATH309TH MATH309IA				
	Vector Calculus	MATH310TH MATH310IA				
	Theory Of Equations	MATH311TH MATH311IA				
	Number Theory	MATH312TH MATH312IA				
	Probability And Statistics	MATH313TH MATH313IA				
	Mathematical Finance	MATH314TH MATH314IA				
	Mathematical Modeling	MATH315TH MATH315IA				
	Boolean Algebra	MATH316TH MATH316IA				
	Transportation And Game Theory	MATH317TH MATH317IA				
	Graph Theory	MATH318TH MATH318IA				
SEC 4		Anyone from either math/physics/ computer	4	70	30	100
	Total Credits		132			

*TH = Theory, IA = Internal Assessment, PR = Practical, TU = Tutorials and SE = Skill Exam

SEC 4 Anyone from either math/physics/computer	Computer Science
	COMP303TH Software Engineering

COMP101TH: Problem Solving using Computer

Unit-I
Computer Fundamentals: Introduction to Computers: Characteristics of Computers, Uses of Computers, Types and generations of Computers.
Basic Computer Organization: Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices.

Unit-II
Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.
Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.

Unit-III
Overview of Programming: Structure of a Python Program, Elements of Python
Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).
Creating Python Programs: Input and Output Statements, Control statements (Looping- while Loop, for Loop , Loop Control, Conditional Statement- if...else, Difference between break, continue
and pass).

Unit-IV
Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.
Introduction to Advanced Python: Objects and Classes, Inheritance, Regular Expressions, Event Driven Programming, GUI Programming.

Reference Books:

1.   P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 2007.
2.   Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.
3.   T. Budd, Exploring Python, TMH, 1st Ed, 2011
4.   Python Tutorial/Documentation www.python.or 2010
5.   Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.2012

6.   http://docs.python.org/3/tutorial/index.html
7.   http://interactivepython.org/courselib/static/pythonds

COMP101PR: Software Lab using Python

Section: A (Simple programs)
1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria :
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80
   Grade C: Percentage>=60 and <70
   Grade D: Percentage>=40 and <60
   Grade E: Percentage<40
3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. WAP to display the first n terms of Fibonacci series.
5. WAP to find factorial of the given number.
6. WAP to find sum of the following series for n terms: 1 – 2/2! + 3/3! - - - - - n/n!
7. WAP to calculate the sum and product of two compatible matrices.

Section: B (Visual Python):
All the programs should be written using user defined functions, wherever possible.

1. Write a menu-driven program to create mathematical
   3D objects I. Curve
   II. Sphere
   III. Cone IV. Arrow V. Ring
   VI. Cylinder

2. WAP to read n integers and display them as a histogram.
3. WAP to display sine, cosine, polynomial and exponential curves.
4. WAP to plot a graph of people with pulse rate p vs. height h. The values of p and h are to be entered by the user.
5. WAP to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula m=60/(t+2), where t is the time in hours. Sketch a graph for t vs. m, where t>=0.
6. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:
   P(t) = (15000(1+t))/(15+ *e)*where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.

COMP102TH: Office Automation Tools

Unit-I
Introduction to open office/MS office/Libre office

Unit-II
Word Processing: Formatting Text, Pages, Lists, Tables

Unit-III
Spreadsheets: Worksheets, Formatting data, creating charts and graphs, using formulas and functions, macros, Pivot Table)

Unit-IV

Presentation Tools: Adding and formatting text, pictures, graphic objects, including charts, objects, formatting slides, notes, hand-outs, slide shows, using transitions, animations

Books Recommended:

1. Sushila Madan , Introduction to Essential tools,JBA,2009.
2. Anita Goel, Computer Fundamentals, Pearson, 2012

COMP102PR: Office Automation Tools Lab

Word Processing

1. Prepare a grocery list having four columns (Serial number, The name of the product, quantity and price) for the month of April, 06.
- Font specifications for Title (Grocery List): 14-point Arial font in bold and italics.
- The headings of the columns should be in 12-point and bold.
- The rest of the document should be in 10-point Times New Roman.
- Leave a gap of 12-points after the title.

2. Create a telephone directory.
- The heading should be 16-point Arial Font in bold
- The rest of the document should use 10-point font size
- Other headings should use 10-point Courier New Font.
- The footer should show the page number as well as the date last updated.

3. Design a time-table form for your college.
- The first line should mention the name of the college in 16-point Arial Font and should be bold.
- The second line should give the course name/teacher's name and the department in 14-point Arial.
- Leave a gap of 12-points.
- The rest of the document should use 10-point Times New Roman font.
- The footer should contain your specifications as the designer and date of creation.

4. BPB Publications plans to release a new book designed as per your syllabus. Design the first page of the book as per the given specifications.
- The title of the book should appear in bold using 20-point Arial font.
- The name of the author and his qualifications should be in the center of the page in 16-point
Arial font.
- At the bottom of the document should be the name of the publisher and address in 16-point Times New Roman.
- The details of the offices of the publisher (only location) should appear in the footer.

5. Create the following one page documents.
- a. Compose a note inviting friends to a get-together at your house, Including a list of things to bring with them.
- b. Design a certificate in landscape orientation with a border around the document.
- c. Design a Garage Sale sign.
- d. Make a sign outlining your rules for your bedroom at home, using a numbered list.

6. Create the following documents:
- (a) A newsletter with a headline and 2 columns in portrait orientation, including at least one image surrounded by text.
- (b) Use a newsletter format to promote upcoming projects or events in your classroom or college.

Spread Sheet

1. Given the following worksheet

	A	B	C	D
1	Roll No.	Name	Marks	Grade
2	1001	Sachin	99	
3	1002	Sehwag	65	

4	1003	Rahul	41
5	1004	Sourav	89
6	1005	Har Bhajan	56

Calculate the grade of these students on the basis of following guidelines:

If Marks	Then Grade
>= 80	A+
>= 60 < 8	A
>= 50 < 60	B
< 50	F

2. Given the following worksheet

	A	B	C	D	E	F	G
1	**Salesman**		**Sales in (Rs.)**				
2	No.	Qtr1	Qtr2	Qtr3	Qtr4	Total	Commission
3	S001	5000	8500	12000	9000		
4	S002	7000	4000	7500	11000		
5	S003	4000	9000	6500	8200		
6	S004	5500	6900	4500	10500		
7	S005	7400	8500	9200	8300		
8	S006	5300	7600	9800	6100		

Calculate the commission earned by the salesmen on the basis of following Candidates:

If Total Sales	Commission
< 20000	0% of sales
> 20000 and < 25000	4% of sales
> 25000 and < 30000	5.5% of sales
> 30000 and < 35000	8% of sales
>= 35000	11% of sales

The total sale is sum of sales of all the four quarters.

1. A company XYZ Ltd. pays a monthly salary to its employees which consists of basic salary, allowances & deductions. The details of allowances and deductions are as follows:

Allowances

← HRA Dependent on Basic
    30% of Basic if Basic <=1000
    25% of Basic if Basic>1000 & Basic<=3000
    20% of Basic if Basic >3000

← DA Fixed for all employees, 30% of Basic

← Conveyance Allowance   Rs. 50/- if Basic is <=1000
    Rs. 75/- if Basic >1000 & Basic<=2000
    Rs. 100 if Basic >2000

← Entertainment Allowance NIL if Basic is <=1000
    Rs. 100/- if Basic > 1000

Deductions

← Provident Fund   6% of Basic

←   Group Insurance Premium   Rs. 40/- if Basic is <=1500
                 Rs. 60/- if Basic > 1500 & Basic<=3000
                 Rs. 80/- if Basic >3000

Calculate the following:

Gross Salary   = Basic + HRA + DA + Conveyance + Entertainment

Total deduction   = Provident Fund + Group Insurance Premium

Net Salary   = Gross Salary – Total Deduction

Presentation Tool

1. Apply the Banded Design theme to all slides.
2. On Slide 1, add your name in the subtitle text box; change the subtitle text font size to 36 pts.
3. Center align the title and subtitle on Slide 1; change the title text to Californian FB font, 54 pts., Italic.
4. Format the title text on Slide 2 to bold, text shadow effect, font size 48 pts.
5. On the Banded Slide Master, insert the picture "Logo" in the Computer Technology>PowerPoint folder on the student drive.
6. Resize the image to exactly 1 inch in width and position the image in the lower left corner of the slide so the border of the image rest on the bottom and lower left edges of the slide.
7. On the Title and Text Layout slide master, center align the text in the title placeholder. Close Slide Master view.
8. Change the slide layout of Slide 2 to Two Content. In the right placeholder, insert an appropriate online picture using the keyword computer.
9. Resize the image on Slide 2 to be 2.5 inches in height.

COMP201TH: Computer System Architecture

Unit-I
Introduction: Logic gates, Boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units.

Data Representation and basic Computer Arithmetic: Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.

Unit-II
Basic Computer Organization and Design: Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt.

Central Processing Unit: Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.

Unit-III
Programming the Basic Computer: Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming.

Unit-IV
Input-output Organization: Peripheral devices, I/O interface, Modes of data transfer, direct memory access.

Books Recommended:

1. M. Mano, Computer System Architecture, Pearson Education 1992.
2. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2004
3. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2009
4. Digital Design, M.M. Mano, Pearson Education Asia, 1979

COMP202TH: Database Management System

Unit-I
Introduction to Database Management Systems: Characteristics of database approach, data models, DBMS architecture and data independence.

Unit-II
Entity Relationship and Enhanced ER Modeling: Entity types, relationships, SQL-99:Schema Definition , constraints, and object modeling.

Unit-III
Relational Data Model : Basic concepts, relational constraints, relational algebra, SQL queries.

Unit-IV
Database design: ER and EER to relational mapping functional dependencies, normal forms up to third normal form.

Books Recommended:

1. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems 6th Edition, Pearson Education, 2010.

2. R. Ramakrishanan, J. Gehrke, Database Management Systems 3rd Edition, McGraw-Hill, 2002.

3. A. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6th Edition, McGraw Hill, 2010.

4. R. Elmasri, S.B. Navathe Database Systems Models, Languages, Design and application Programming, 6th Edition, Pearson Education, 2013.

COMP202PR: Database Management System Lab

Note: My Access/MySQL may be used.

The following concepts must be introduced to the students:
DDL Commands
- Create table, alter table, drop table

DML Commands
- Select , update, delete, insert statements
- Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=)
- Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max)
- Multiple table queries (join on different and same tables)
- Nested select statements
- Set manipulation using (any, in, contains, all, not in, not contains, exists, not exists, union, intersect, minus, etc.)
- Categorization using group by……..having

Arranging using order by

COMP203TH: PHP Programming

Unit-I
Introduction to PHP: PHP introduction, inventions and versions, important tools and software requirements (like Web Server, Database, Editors etc.), PHP with other technologies, scope of PHP, Basic Syntax, PHP variables and constants, Types of data in PHP , Expressions, scopes of a variable (local, global), PHP Operators : Arithmetic, Assignment, Relational , Logical operators, Bitwise , ternary and MOD operator, PHP operator Precedence and associativity.

Unit-II
Handling HTML form with PHP: Capturing Form Data, GET and POST form methods, Dealing with multi value fields, Redirecting a form after submission

PHP conditional events and Loops: PHP IF Else conditional statements (Nested IF and Else), Switch case, while ,For and Do While Loop, Goto , Break ,Continue and exit

Unit-III
PHP Functions: Function, Need of Function, declaration and calling of a function, PHP Function with arguments, Default Arguments in Function, Function argument with call by value, call by reference, Scope of Function Global and Local

Array: Anatomy of an Array ,Creating index based and Associative array ,Accessing array, Looping with Index based array, with associative array using each() and foreach(), Some useful Library function.

Unit-IV
String Manipulation and Regular Expression: Creating and accessing String , Searching & Replacing String, Formatting, joining and splitting String , String Related Library functions, Use and advantage of regular expression over inbuilt function, Use of preg_match(), preg_replace(), preg_split() functions in regular expression

Books Recommended:

1. Steven Holzner, "PHP: The Complete Reference Paperback", McGraw Hill Education (India), 2007.

2. Timothy Boronczyk, Martin E. Psinas, "PHP and MYSQL (Create-Modify-Reuse)", Wiley India Private Limited, 2008.

COMP301TH: Operating System

Unit-I
Introduction: System Software, Resource Abstraction, OS strategies.
Types of operating systems - Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.

Unit-II

Operating System Organization: Factors in operating system design, basic OS functions, implementation consideration; process modes, methods of requesting system services – system calls and system programs.

Process Management : System view of the process and resources, initiating the OS, process address space, process abstraction, resource abstraction, process hierarchy, Thread model
Scheduling: Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.

Unit-III
Memory Management: Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory

Unit-IV

Shell introduction and Shell Scripting: shell and various type of shell, Various editors present in Linux, Different modes of operation in vi editor, What is shell script, Writing and executing the shell script, Shell variable (user defined and system variables), System calls, Using system calls

Text Book:
1. Silberschatz, Galvin "Operating System Concepts", Addison Wesley Publishing Company, 1989.
Reference Books:
1. William Stallings, "Operating Systems", Macmillan Publishing Company.
2. Deitel H.M., "An Introduction To Operating System", Addison Wesley Publishing Company, 1984.
3. Tanenbaum, A.S., "Modern Operating System", Prentice Hall of India Pvt. Ltd. 1995.

COMP302TH: Data Structure and File Processing

Unit-I
Basic Data Structures: Abstract data structures- stacks, queues, linked lists and binary trees. Binary trees, balanced trees**.**

Unit-II
Searching: Internal and external searching, Memory Management: Garbage collection algorithms for equal sized blocks, storage allocation for objects with mixed size**.**

Unit-III
Physical Devices: Characteristics of storage devices such as disks and tapes, I/O buffering. Basic File System Operations: Create, open, close, extend, delete, read-block, write-block, protection mechanisms.

Unit-IV
File Organizations: Sequential, indexed sequential, direct, inverted, multi-list, directory systems, Indexing using B-tree, B+ tree.

Books Recommended:

1. M.T. Goodrich, R. Tamassia and D. Mount, "*Data Structures and Algorithms in C++*", John Wiley and Sons, Inc., 2004.

2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, "*Introduction to Algorithms*," 2nd Ed., Prentice-Hall of India, 2006.

3. Robert L. Kruse and A.J. Ryba, "*Data Structures and Program Design in C++*", Prentice Hall, Inc., NJ, 1998.

4. B. Stroupstrup, "*The C++ Programming Language*", Addison Wesley, 2004.

5. D.E. Knuth, "*Fundamental Algorithms* (Vol. I)", Addison Wesley, 1997.

COMP302PR: Data Structure and File Processing Lab

1. Write a program to implement PUSH and POP operations of stack using arrays.

2. Implement Singly Link List programs - for Insertion, Deletion, searching and traversing.

3. Write a program to implement PUSH and POP operations of stack using Link list.

4. Write a program to implement Binary Tree using Link List.

5. Write a program to count the number of nodes in a link list.

6. Implement Queue programs – for insertion and deletion using arrays.

7. Implement Queue programs – for insertion and deletion using Link List.

8. Write a program to delete duplicate elements from an array of 20 integers.

9. Write a program to implement linear search.

10. Write a program to implement binary search.

COMP303TH: Software Engineering

Unit-I
Software Process: Introduction ,S/W Engineering Paradigm , life cycle models (water fall, incremental, spiral, evolutionary, prototyping, object oriented) , System engineering, computer based system, verification, validation, life cycle process, development process, system engineering hierarchy.
Software requirements: Functional and non-functional , user, system, requirement engineering process, feasibility studies, requirements, elicitation, validation and management, software prototyping, prototyping in the software process, rapid prototyping techniques, user interface prototyping, S/W document. Analysis and modeling, data, functional and behavioral models, structured analysis and data dictionary.

Unit-II
Design Concepts and Principles: Design process and concepts, modular design, design heuristic, design model and document, Architectural design, software architecture, data design, architectural design, transform and transaction mapping, user interface design, user interface design principles. Real time systems, Real time software design, system design, real time executives, data acquisition system, monitoring and control system.

Unit-III
Software Configuration Management: The SCM process, Version control, Change control, Configuration audit, SCM standards.
Software Project Management: Measures and measurements, S/W complexity and science measure, size measure, data and logic structure measure, information flow measure. Estimations for Software Projects, Empirical Estimation Models, Project Scheduling.

Unit-IV
Testing: Taxonomy of software testing, levels, test activities, types of s/w test, black box testing testing boundary conditions, structural testing, test coverage criteria based on data flow, mechanisms, regression testing, testing in the large. S/W testing strategies, strategic approach and issues, unit testing, integration testing, validation testing, system testing and debugging.
Trends in Software Engineering: Reverse Engineering and Re-engineering – wrappers – Case Study of CASE tools.

Books Recommended:
1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill
2. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
3. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
4. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
5. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxfor University Press, New Delhi, 1996.