SU/BOS/Sci & Tech/ 458   Date: 12/08/2024

To,

The Principal,
All Concerned Affiliated College/ Institutions,
Shivaji University, Kolhapur.

Subject: Regarding Minor Change syllabus of B.Sc. Part –I (Sem. I & II) as per NEP –
2020 (2.0) degree programme under the Faculty of Science and Technology.

Ref : 1. SU/BOS/Science/877 date : 26/12/2023
2. SU/BOS/Science/349 date : 24/06/2024

Sir/Madam,

With reference to the subject mentioned above, I am directed to inform you that the university authorities have accepted and granted approval to the Minor Change syllabi, Nature of Question paper and equivalence of B.Sc. Part-I (SemI&II) as per NEP 2020 (2.0) degree programme under the Faculty of Science and Technology.

B.Sc. Part-I (SemI&II) as per NEP 2020 (2.0)			
1.	Animation Science (Entire)	2	Computer Science (Entire)
3	Information Technology (Entire)		

This Syllabus, nature of question and equivalence shall be implemented from the academic year **2024-25** onwards. A soft copy containing the syllabus is attached herewith and it is available on university website **www.unishivaji.ac.in. (Student Online Syllabus).**

The question papers on the pre-revised syllabi of above-mentioned course will be set for the examinations to be held in October/ November 2024 & March / April 2025. These chances are available for repeater students, if any

You are, therefore, requested to bring this to the notice of all students and teachers concerned.

Thanking you,

Yours faithfully,

(Dr. S. M. Kubal)
Dy. Registrar

Copy to:

1	The I/c Dean, Faculty of Science & Technology	6	Appointment Section A & B
2	The Chairpersan, Respective Board of Studies	7	Affiliation Section (T.1) (T.2)
3	B.Sc. Exam	8	P.G.Admission Section
4	Eligibility Section	9	P.G Seminar Section
5	Computer Centre / IT Cell	10	IQAC

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SHIVAJI UNIVERSITY, KOLHAPUR - 416004, MAHARASHTRA

PHONE:EPABX-2609000, www.unishivaji.ac.in, bos@unishivaji.ac.in

शिवाजी विद्यापीठ, कोल्हापूर -४१६००४,महाराष्ट्र

दूरध्वनी-ईपीएबीएक्स -२६०९०००, अभ्यासमंडळे विभाग दूरध्वनी ०२३१—२६०९०९४
०२३१—२६०९४८७

Estd. 1962
"A++" Accredited by
NAAC (2021)
With CGPA 3.52

SU/BOS/Science/349

Date: 24/06/2024

To,

> The Principal,
> All Concerned Affiliated Colleges/Institutions
> Shivaji University, Kolhapur

Subject: Regarding Minor Change syllabi of B.Sc. Part-I (Sem.I & II) as per NEP-2020 (2.0) degree programme under the Faculty of Science and Technology.

Ref: SU/BOS/Science/877/ Date: 26/12/2023 Letter.

Sir/Madam,

 With reference to the subject mentioned above, I am directed to inform you that the university authorities have accepted and granted approval to the Minor Change syllabi, nature of question paper B.Sc. Part-I (Sem. I & II) as per NEP-2020 (2.0) degree programme under the Faculty of Science and Technology.

	B.Sc.Part-I (Sem. I & II) as per NEP-2020 (2.0)		
1.	Food Science and Technology (Entire)	6.	Biochemistry
2.	Food Science	7.	Biotechnology (Optional/Vocational)
3.	Food Science and Quality Control	8.	Biotechnology (Entire)
4.	Food Technology & Management (Entire)	9.	Pollution
5.	Computer Science (Opt)	10.	Environmental Science (Entire)

 This syllabus, nature of question and equivalence shall be implemented from the academic year 2024-2025 onwards. A soft copy containing the syllabus is attached herewith and it is also available on university website www.unishivaji.ac.in NEP-2020@suk(Online Syllabus)

 The question papers on the pre-revised syllabi of above-mentioned course will be set for the examinations to be held in October /November 2024 & March/April 2025. These chances are available for repeater students, if any.

 You are, therefore, requested to bring this to the notice of all students and teachers concerned.
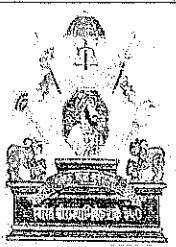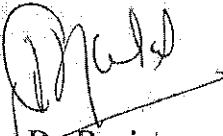
 Thanking you,

Dy Registrar
Dr. S. M. Kubal

Copy to:

1	The Dean, Faculty of Science & Technology	4	B.Sc. Exam/ Appointment Section
2	Director, Board of Examinations and Evaluation	5	Computer Centre/ Eligibility Section
3	The Chairman, Respective Board of Studies	6	Affiliation Section (U.G.) (P.G.)

SU/BOS/Science/877   Date: 26/12/2023

To,

The Principal,
All Concerned Affiliated Colleges/Institutions
Shivaji University, Kolhapur

Subject: Regarding syllabi of B.Sc. Part-I (Sem. I & II) as per NEP-2020 (2.0) degree programme under the Faculty of Science and Technology.

Sir/Madam,

With reference to the subject mentioned above, I am directed to inform you that the university authorities have accepted and granted approval to the revised syllabi, nature of question paper and equivalence of B.Sc. Part-I (Sem.I & II) as per NEP-2020 (2.0) degree programme under the Faculty of Science and Technology.

	B.Sc.-I (Sem. I & II) as per NEP-2020 (2.0)		
1.	Computer Science (Opt)	7.	Food Science and Quality Control (Entire)
2.	Computer Science (Entire)	8.	Food Technology & Management (Entire)
3.	Animation (Entire)	9.	Biochemistry (Optional/Vocational)
4.	Information Technology (Entire)	10.	Biotechnology (Entire)
5.	Food Science and Technology (Entire)	11.	Biotechnology (Optional/Vocational)
6.	Food Science (Entire)	12.	Environmental Science (Entire)

This syllabus, nature of question and equivalence shall be implemented from the academic year 2024-2025 onwards. A soft copy containing the syllabus is attached herewith and it is also available on university website www.unishivaji.ac.in)

The question papers on the pre-revised syllabi of above-mentioned course will be set for the examinations to be held in October /November 2024 & March/April 2025. These chances are available for repeater students, if any.

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Dy Registrar
Dr. S. M. Kubal

Copy to:

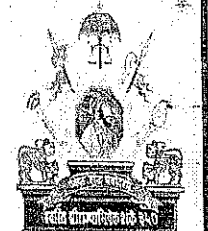| 1	The Dean, Faculty of Science & Technology	8	P.G. Admission/Seminar Section
2	Director, Board of Examinations and Evaluation	9	Computer Centre/ Eligibility Section
3	The Chairman, Respective Board of Studies	10	Affiliation Section (U.G.) (P.G.)
4	B.Sc. Exam/ Appointment Section	11	Centre for Distance Education

SHIVAJI UNIVERSITY, KOLHAPUR

Accredited By NAAC "A++" Grade

Multiple Entry and Multiple Exit Option (NEP-2020)

Syllabus for

B. Sc. Information Technology(Entire) - I

(Under Faculty of Science and Technology)

PART- I SEMESTER- I & II

(Syllabus to be implemented from Academic Year 2024-25)

Shivaji University, Kolhapur
B.Sc. Information Technology(Entire)
(Under Faculty of Science and Technology)

Program Outcomes (PO):

Upon successful completion of the B.Sc. Information Technology(Entire), the student should have met the following Outcomes:

Understand the basic concepts of programming, databases, and networking.

PO1 Acquire problem solving skills and design, and analyze algorithms.

PO2 Ability to work in teams as well as individual to build software systems and to use a range of programming

languages and tools to develop computer programs to solve problems effectively.

PO3 Ability to communicate effectively in both verbal and written form in industry.

PO4 Ability to select appropriate techniques to tackle and solve problems in the discipline of information

security management.

Program Specific Outcomes (PSO):

PSO1 To groom the graduates towards excellence through building communication skills, handling leadership challenges and negotiating career path ways.

PSO-2 To heighten the conscious of the graduates on socio-economic concern and to inculcate moral and ethical values to chisel them as better human being.

PSO-3 To train the student on the state-of-the-art tools and techniques and facilitate them to comprehend, analyze, design and create feasible solutions/innovative products for real life problems.

PSO4 To pursue higher studies with good knowledge in core areas of Information Technology,

1. **Introduction**

a) The name of the program shall be B.Sc. Information Technology (Entire).

b) After completion students will be able to apply standard software engineering practices and strategies in software project development using an open-source programming environment to deliver a quality product for business success.

c) Job Opportunities: The program addresses the job requirements in many domains such as web development, mobile development, Testing and one involving an assortment of hardware and software.

d) Many graduates begin their careers as junior programmers and, after some experience, are promoted as system analysts. Others seek a n entrepreneurial role in the Information Technology world as independent business owners, software authors, consultants, or suppliers of systems and equipment.

e) Career opportunities exist in such areas as software development and hardware integration, technical writing, training others on a computer, software design, software testing and technical support.

f) The present curricula focus on the learning aspect from three dimensions viz. Conceptual Learning, Skills Learning and Practical / Hands-on.

2. **Medium of Instruction:**

The medium of instruction will be English only

3. **Admission Procedure**

To be eligible for admission to the B. Sc. Information Technology[Entire] a candidate must have passed

- HSC (10+2) from science stream

OR

- Three Year Diploma Course (after SSC i.e. 10th Standard), of Board of Technical Education conducted by Government of Maharashtra or its equivalent

4. **Course Structure:**

Lectures and Practical should be conducted as per the scheme of lectures and practicals indicated in the course structure.

5. **Teaching and Practical Scheme**

a) Contact session for teaching 60 minutes each.

b) One Practical Batch should be of 20 students.

c) Practical evaluation should be conducted after the commencement of university examination.

6. **Assessment**

1. The final practical examination will be conducted by the university appointed examiners internal as well as external at the end of semester for each lab course and marks will be submitted to the university by the panel.

2. The practical examination will be conducted semester wise in order to maintain the relevance of the respective theory course with laboratory course.

3. The final examinations shall be conducted at the end of the semester.

4. Nature of question paper: Nature of question paper is as follows for University end semester examination.

❖ Theory Examination:

Que. No.	Question	Marks
Q.1.	08 Multiple Choice Questions (One Mark each)	**08 Marks**
Q.2.	Attempt any TWO out of THREE (08 marks each)	**16 Marks**
	a)	
	b)	
	c)	
Q.3.	Attempt any FOUR (4 marks each)	**16 Marks**
	a)	
	b)	
	c)	
	d)	
	e)	
	f)	
	Total Marks	**40 Marks**

- **Internal Evaluation examination of 10 marks should be in the form of assignments**.

❖ Practical Examination:

1. Each paper carries 50 Marks.
2. Duration of Practical Examination: 3 Hrs.
3. Nature of Question paper: There will be four questions of 20 marks each. Students will be attempted any two out of four questions.
4. Certified Journal carries 5 Marks and Viva voce carries 5 Marks
5. *No paper work is required for the Practical exam of DSC*

7. Standard of Passing:

1. Minimum 16 marks in each subject. There shall be separate passing for theory (semester end exam and Internal) and practical also.
2. Admission to B.Sc. Information Technology (Entire) Part II is allowed even if the student fails in all the subjects of part I
3. Admission to B.Sc. Information Technology (Entire) Part III is allowed only if student is passed on all the subjects of B.Sc. Information Technology(Entire) Part I

8. Board of Paper Setters /Examiners:

For each Semester end examination there will be a board of Paper setters and examiners for everycourse. While appointing paper setter /examiners, care should be taken to see that there is at least one person specialized in each unit of the course.

9. Credit system implementation:

As per the University norms

10. Clarification of Syllabus:

The syllabus committee should meet at least once in a year to study and clarify any difficultiesfrom the Institutes.

11. Eligibility of Faculty:

MCA (from any faculty) or M.Sc. (Computer Science) or M.Sc. (Information Technology) with at least B+ or equivalent

12. Revision of Syllabus:

As the computer technology experience rapid rate of obsolescence of knowledge, revision of the syllabus should be considered every two/three year.

13. Fees Structure: As approved by the Shivaji University fee fixation committee.

14. Intake Capacity: 80

15. Award of Class:

Grading: Shivaji University has introduced a Seven-point grading system as follows:

B.Sc. Information Technology (Entire) Part I Semester I & II
Multiple Entry and Multiple Exit Option

(NEP-2020)
Syllabus to be implemented from Academic Year 2024-25

Sr. No.	Marks Obtained out of 100	Marks Obtained out of 50	Grade Point	CGPA	Letter grade
1.	91 – 100	46 – 50	10	9.0 to 10.0	O: Outstanding
2.	81 – 90	41 – 45	9	8.0 to 8.99	A+
3.	71 – 80	36 – 40	8	7.0 to 7.99	A
4.	61 – 70	31 – 35	7	6.0 to 6.99	B+
5.	51 – 60	26 - 30	6	5.0 to 5.99	B
6.	40 – 50	20 – 25	5	4.0 to 4.99	C:
7.	< 40	< 20	0 to 4	0.0 to 3.99	Fail
8.	Absent	Absent	0		-

1. Title: B.Sc. Information Technology (Entire) Part I

2. Year of implementation: Syllabus will be implemented from June 2024 onwards

3. Duration: B.Sc. Information Technology (Entire) Part I. The duration of course shall be one year (Two semesters).

4. Pattern: Pattern of examination will be semester

5. Medium of Instruction: English

6. Structure Of Course:

Multiple Entry and Multiple Exit Option (NEP-2020)
B.Sc. Information Technology (Entire) Program Structure
B.Sc. Information Technology (Entire) Part - I (Level-4.5)

Semester	Subject Type	Course Code	Course Title
SEM – I	**Course-I**	DSC-I	Programming Using C
		DSC -II	Fundamentals of Computer
		Practical I	Programming Using C Lab
	Course-II	DSC -I	Web Development Using HTML
		DSC -II	Digital Electronics
		Practical-I	Web Development Using HTML Lab
	Course-III	DSC-I	Office Automation
		DSC-II	Operating System
		Practical I	Office Automation Lab
	OE	OE	Intellectual Property Rights
	IKS	IKS	Vedic Mathematics
SEM – II	**Course I**	DSC III	Advanced C Programming
		DSC IV	Microprocessor Architecture
		Practical II	Advanced C Programming Lab
	Course II	DSC III	Database Management System
		DSC IV	Advanced Electronics
		Practical II	Database Management System Lab
	Course III	DSC III	Cascaded Style Sheets
		DSCIV	Advanced Operating System
		Practical II	Cascaded Style Sheet Lab
	OE	OE	District Mathematics
	VEC	**VEC**	Democracy, Election and Constitution

SEMESTER-I (Duration- Six Month)									
Sr. No.	Course Code	Teaching Scheme			Examination Scheme					
		Theory and Practical			University Assessment (UA)			Internal Assessment (IA)		
		Lectures (Per week)	Hours (Per week)	Credit	Maximum Marks	Minimum Marks	Exam. Hours	Maximum Marks	Minimum Marks	Exam. Hours
1	DSC I	2	2	2	40	16	2	10	04	2
2	DSC II	2	2	2	40	16	2	10	04	2
3	Practical I	4*	4*	2	50	20	3	-	-	-
4	DSC I	2	2	2	40	16	2	10	04	2
5	DSC II	2	2	2	40	16	2	10	04	2
6	Practical I	4*	4*	2	50	20	3	-	-	-
7	DSC I	2	2	2	40	16	2	10	04	2
8	DSC II	2	2	2	40	16	2	10	04	2
9	Practical I	4*	4*	2	20	20	3	-	-	-
10	OE	2	2	2	40	16	2	10	04	2
11	IKS-1	2	2	2	40	16	2	10	04	2
	Total (A)	30	30	**22**	**480**			**70**	**480 + 70 = 550**	
	* Lectures per week per batch									

SEMESTER-II (Duration- Six Month)									
Sr. No.	Course Code	Teaching Scheme			Examination Scheme					
		Theory and Practical			University Assessment (UA)			Internal Assessment (IA)		
		Lectures (Per week)	Hours (Per week)	Credit	Maximum Marks	Minimum Marks	Exam. Hours	Maximum Marks	Minimum Marks	Exam. Hours
1	DS III	2	2	2	40	16	2	10	04	2
2	DSC IV	2	2	2	40	16	2	10	04	2
3	Practical II	4*	4*	2	50	20	3	-	-	-
4	DSC III	2	2	2	40	16	2	10	04	2
5	DSC IV	2	2	2	40	16	2	10	04	2
6	Practical II	4*	4*	2	50	20	3	-	-	-
7	DSC III	2	2	2	40	16	2	10	04	2
8	DSCIV	2	2	2	40	16	2	10	04	2
9	Practical II	4*	4*	2	50	20	3	-	-	-
10	OE	2	2	2	40	16	2	10	04	2
11	VEC-1: Democracy	2	2	2	40	16	2	10	04	2
	Total (B)	30	30	**22**	**480**			**70**	**480 + 70 = 550**	
	* Lectures per week per batch									
	Total (A+B)		**22+22 = 44**		**960**			**140**	**960 + 140 = 1100**	

• Student contact hours per week: **30** Hours (Min.)	• Total Marks for B.Sc. Information Technology (Entire)-I: **1100**
• Theory and Practical Lectures: **60** Minutes Each	• Total Credits for B.Sc. Information Technology (Entire)-I (Semester I & II): **44**
• **Requirement for Entry at Level 4.5: Completed all requirements of the 10+2**	
• DSC: Department Specific Core • OE: Open Elective	• IKS: Indian Knowledge System • VEC: Value Education Course
• **Exit Option at Level 4.5:** Students can exit after Level 4.5 with under **certificate course in Computer Programming** if he/she completes the courses equivalent to minimum of **44** credits and an **additional 4 credits** core NSQF course/Internship.	

B.Sc. Part -I Information Technology (Entire) (Semester-I)

Course I: DSC I

Title: Programming Using 'C'
Total Contact Hours: 30hrs (30lectures of 60 min)

Credits: 02 Teaching Scheme: Theory – 02 Lect. / Week   Total Marks: 50

Course Outcomes:

1. Illustrate the flowchart and design an algorithm for given problem

2. Acquire the information about data types.
3. Students will be able to develop logics which will help to

createprograms and applications.

4. Will help to switch for any programming language fordevelopment.

Sr.No	Description	Hours
Uint I	**Basics of Programming and Introduction to 'C'** Intorduction about problem. Steps in problem solving- Problem definition, Problem Analysis, Algorithm, Flowchart, Coding, Testing. Types of errors: Logical, Syntatical, Runtime. Character set, Keywords ,Constants, Variables , Datatypes in C. Formattedand unformatted Input-output functions in C. Structure of C Program. Operators: Arithmatic, Logical, Relational,Bitwise,increment, decrement, conditional operator.	**15**
Unit II	**Control statements and Array. Branching** Statements: Introduction, if statement, if-else statement, Nested if-else statement, else if ladder, switch case statement. Looping statements: Introduction to loop, while loop, do- while loop, for loop, nested for loop,difference between while and do- while loop.Jumping statements: break, continue, goto. Array: Defintition, declaration,initialization, Memory representation of array. Types ofarray: One ,Two, Multidimensional. String: Stringhandling functions: strcpy(), strcat(),strlen(), strcmp(),strrev(),strupr(),strlwr()	**15**

Reference Books:

1. Programming in C - Schuam Outline Series

2. Let Us C- Yashwant Kanetkar

3. Programmig in ANSI C- E. Balagurusamy. 4. The

completereference 'C' - Herbert Schildt

5. C Programming - Venugopal

6. The C Programming Language- Ritchie and Kernighan.

Course I: DSC II

Course Title: Fundamentals of Computer

Total Contact Hours: 30hrs (30lectures of 60 min)

Credits: 02 Teaching Scheme: Theory – 02 Lect./ Week   Total Marks: 50

Course Outcomes:

The course will enable students to;

1. Understand Fundamental concepts of Computer

2. Basic knowledge of peripheral devices

3. Understand concept of Hardware & Software

4. Understand concept of Internet

Sr.No	Description	Hours
Unit I	**Introduction to Computer and Basic Organization** Definition of computer, characteristics, limitations, concepts of h/w and s/w, Evolutions, generations, classification based on size and Purpose, applications of computers in various fields, computer languages – high level, low level, assembly level, compiler, interpreter. Block diagram of computer system, Input-output devices, Primary Memory – RAM, ROM, EPROM,PROM, Cache, EEPROM. Secondary Storage devices: - Magnetic disk, Magnetic tape, Optical disk -CD ROM, proprietary software and open source technology, Types and working of Hardware Parts – Motherboard, Ports & SMPS, Basic Input and Output Settings (BIOS).	**15**
Unit II	**Internet And Web Browsers** Concept of Internet, Uses and benefits, Internet Service Providers, DNS Servers, Connection Types, Modems, Definition of Web-Addressing- URL-Different types of Internet Connections; Dial up connection, Broad band(ISDN, DSL, Cable), Wireless (Wi-Fi, WiMax, Satellite, Mobile) naming convention, browsers and its types, internet browsing, searching - Search Engines - Portals - Social Networking sites- Blogs - viewing a webpage, downloading and uploading the website; Creating an email-ID, Internet Security , Virus, Antivirus.	**15**

Reference Books:

1. Computer Today- S. Basndara

2. Computer Fundamentals- P. K. Sinha

3. Computer Fundamentals- V. Rajaraman

4. Introduction to Computer and Data Processing-Pawar, Lad,Shinde, Patil (Dreamtech)

B.Sc. Part -I Information Technology (Entire) (Semester- I)

Course I: Practical I

Title: Programming Using C Lab

Total Contact Hours: 30hrs (30lectures of 60 min)

Credits: 02 Teaching Scheme: Practical – 04Lect. / Week   Total Marks: 50

Course Outcomes:

Learners will be able to,

1. Develop applications.

2. Understand working of matrix.

3. Debug the program

4. Understand the differences between syntax errors, runtime errors, and logic errors.

1. Program to display "Welcome to FY B.Sc. IT" message.
2. Program to enter a number and display it.
3. Program to enter a character and display it.
4. Program to perform bitwise operations on given input.
5. Program to check given number is even or odd.
6. Program to check given number is positive or negative.
7. Program to display grade wise result of student.
8. Program to perform arithmetic operations on choice.
9. Program to display numbers in given range using while loop.
10. Program to reverse a number using while loop.
11. Program to display sum of first 10 numbers using do-while loop.
12. Program to display the multiplication table using for loop.
13. Program to display various pyramid formats E.g.

                    1
                2   2
            3   3   3
        4   4   4   4
14. Program to check given number is Armstrong or not.
15. Program to read and display array.
16. Program to search number in array.
17. Program to display transpose of matrix.
18. Program to perform addition of matrices.
19. Program to perform various operation on string.
20. Program to check given string is palindrome or not.

B. Sc. Part- I Information Technology (Entire) (Semester I)

Course II:-DSC -I

Course Title: Web Development Using HTML

Total Contact Hours: 30 hrs. (30lectures of 60 min)

Credits: 02 Teaching Scheme: Theory – 02 Lect. / Week   Total Marks: 50

Course Outcome-

Students who complete this course should be able to:

1. Understand basic concept of HTML.

2. Learn how to use HTML tags.

3. Understand how to design Webpages using HTML .

4. Understand use of frames to design.

Sr.No	Description	Hours
Uint I	**Web Design Principles** Basic principles involved in developing a web site , Planning process, Five Golden rules of web designing , Brief History of Internet ,What is World Wide Web, Why create a web site , Web Standards, What is HTML , HTML Documents , Basic structure of an HTML document , Creating an HTML document	15
Unit II	**Introduction to elements of HTML** Mark up Tags , Heading-Paragraphs , Line Breaks , HTML Tags. Working with Text , Working with Lists, Tables and Frames Working with Hyperlinks, Images and Multimedia Working with Forms and controls.	15

Reference Books:

Complete HTML- Thomas Powel HTML Black Book- Steven Holzner

Teach Yourself Web Technologies – Ivan Bayross

HTML and CSS 3- Seventh edition – Castro Elizabeth and Bruce Hyslop.

B. Sc. Part- I Information Technology (Entire) (Semester I)

Course II:-DSC –II

Title: Digital Electronics
Total Contact Hours: 30hrs (30lectures of 60 min)

Credits: 02 Teaching Scheme: Theory – 02 Lect. / Week   Total Marks: 50

COURSE OUTCOMES

After Completing this course student will be able to:

CO 1 Understand the concepts and techniques used in digital electronics.

CO 2 To acquire basic knowledge for the conversion of different type of codes and number systems, which are used in digital communication and computer system.

CO 3 Analyse different types of digital electronic circuit using various mapping and logical tools.

CO 4 Enable students to develop skill to build digital circuits using Simulators

Sr. No.	Description	Hours
Uint I	**Arithmetic and Data processing circuits** **Number System and Codes:** Decimal, Binary, Octal and Hexadecimal number systems, base conversions. Representation of signed and unsigned numbers, BCD, ASCII, EBCDIC codes. Binaryand Hexadecimal arithmetic; Addition, subtraction by 2's complement method. **Logic Gates and Boolean algebra:** Truth Tables of OR, AND, NOT, NOR, NAND, XOR, XNOR, Universal Gates, Active high and active low signals, Basic postulates and fundamentaltheorems of Boolean algebra. De-Morgan's Theorems. **Combinational Logic Analysis and Design:** Standard representation of logic functions (SOP and POS), Minimization Techniques (Karnaugh map minimization up to 4 variables for SOP). **Arithmetic Circuits:** Binary Addition. Half and Full Adder. Half and Full Subtractor, 4-bit binary Adder/Subtractor ALU. **Data processing circuits:** Multiplexers, De-multiplexers, Decoders, Encoders.	**15**
Unit II	**Sequential and Combinational Circuits I** **Sequential Circuits:** SR, D, and JK Flip-Flops. Clocked (Level and Edge Triggered) Flip-Flops.Preset and Clear operations. Race around conditions in JK Flip-Flop. Master-slave JK Flip-Flop. **Shift registers:** Serial-in-Serial-out, Serial-in-Parallel-out, Parallel in-Serial-out and Parallel-in-Parallel-out Shift Registers (only up to 4 bits). **Counters (4 bits):** Ring Counter. Asynchronous counters, Decade Counter. Synchronous Counter.UP/DOWN Counter. **Data Conversion:** DAC: performance characteristics,4 bit binary weighted and R-2R circuitandworking. Accuracy and Resolution. ADC: performance characteristics, successive approximation ADC, Dual slope ADC (Mentionof relevant ICs for all.	**15**

Reference Books:

- Digital Principles and Applications, A.P. Malvino, D.P.Leach and Saha, 7th Ed., 2011, Tata McGraw
- Fundamentals of Digital Circuits, Anand Kumar, 2nd Edn, 2009, PHI Learning Pvt. Ltd.
- Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
- Digital Systems: Principles & Applications, R.J.Tocci, N.S.Widmer, 2001, PHI
- Thomas L. Flyod, Digital Fundamentals, Pearson Education Asia (1994)
- R. L. Tokheim, Digital Principles, Schaum's Outline Series, Tata McGraw- Hill (1994)

B. Sc. Part- I Information Technology (Entire) (Semester I)

Course II: Practical I

Course Title: Web Development Using HTML Lab

Total Contact Hours: 30 hrs. (30 lectures of 60 min)

Credits: 02   Teaching Scheme: Practical – 04 Lect. / Week   Total Marks: 50

Course Outcomes:

Learners will be able to,

1. Design static web pages using Hyper Text Markup Language (HTML).

2. Enhance the look of web pages by implementing CSS.

3. Collect information from the user with HTML Forms.

4. Design website using HTML & FRAME .

1. Design simple webpage using basic tags in HTML
2. Design simple webpage using text formatting tags
3. Design simple webpage using list tags
4. Design simple webpage using table tag
5. Design simple webpage using image tag
6. Design simple webpage using anchor tag
7. Design simple webpage using frame tag and its attributes
8. Design a web page to list a table content and navigate within the pagesusing hyperlink
9. Design simple webpage to display time table
10. Design simple webpage to display Mark sheet
11. Design simple webpage using frame tag
12. Design College admission form using form tag and their attributes
13. Create a Static Website for your College using HTML .

B.Sc. Part -I Information Technology (Entire) (Semester- I)

Course III:-DSC I

Course Title: Office Automation

Total Contact Hours: 30 hrs. (30lectures of 60 min)

Credits: 02 Teaching Scheme: Theory – 02 Lect. / Week Total Marks: 50

Course Outcomes

CO1: Understand and apply the basic concepts of a word processing package.

CO2: Understand and apply the basic concepts of electronic spreadsheet software.

CO4: Understand and apply the basic concepts of office writer.

CO5: Understand and create a presentation using PowerPoint tool**.**

Sr. No.	Description	Hours
Unit I	**INTRODUCTION TO MS WORD AND OPEN OFFICE WRITER** **MS Word - Working with Documents** -Opening & Saving files, Editing text documents, Inserting, Deleting, Cut, Copy, Paste, Undo, Redo, Find, Search, Replace, Formatting page & setting Margins. **Setting Page style -** Formatting Page, Page tab, Margins, Layout settings, Paper tray, Border & Shading, Columns, Header & footer, Setting Footnotes & end notes – Shortcut Keys. **Creating Tables**- Table settings, Borders, Alignments, Insertion, deletion, Merging, Splitting, Sorting, and Formula, **Drawing -** Inserting ClipArts, Pictures/Files etc., **Tools –** Word Completion, Spell Checks, Mail merge, Templates, Creating contents for books, Creating Letter/Faxes, Creating Web pages, Using Wizards, Tracking Changes, Security, Digital Signature. OPEN OFFICE - WRITER: **Introduction to Open Office Suite -** Selecting the application package, Working with Documents- Formatting Documents - Setting Page style- Creating Tables - Drawing**-** Tools - Printing Documents - Operating with MS Word documents.	**15**
Unit II	**INTRODUCTION TO MS EXCEL AND MS ACCESS** **MS Excel:** Spread Sheet & its Applications, Opening Spreadsheet, Menus - main menu, Formula Editing, Formatting, Toolbars, Using Icons, Using help, Shortcuts, Spreadsheet types. **Entering & Deleting Data-** Entering data, Cut, Copy, Paste, Undo, Redo, Filling Continuous rows, columns, Highlighting values, Find, Search & replace. **Setting Formula -** finding total in a column or row, Mathematical operations, Using other Formulae. **Formatting Spreadsheets-** Labelling columns & rows, **Working with sheets** – Sorting, Filtering, Validation, Consolidation, and Subtotal**. Creating Charts -** Drawing. **Printing. Using Tools –** Error checking, Spell Checks, Formula Auditing, Creating & Using Templates, Pivot Tables, Tracking Changes, Security, Customization. **MS Access:** Introduction, Planning a Database, Starting Access, Access Screen,Creating a New Database, Creating Tables, Working with Forms, Creating queries, Finding Information in Databases. **MS Power point:** Introduction to presentation – Opening new presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts. **Creating a presentation** - Setting Presentation style, Adding text to the Presentation	**15**

Reference Books:

1. Microsoft Office 2007 Bible – John

2. Walkenbach, HerbTyson,FaitheWempen,caryN.Prague,Michael R.groh, PeterG. Aitken, and Lisa a. Bucki -Wiley India pvt. ltd.

3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.

4. A Conceptual Guide to Open Office

5. Computer & Internet Basics Step-by-Step - Etc-end the Clutter - Infinity Publishing

    Open Office Basic: An Introduction

B.**Sc. Part -I Information Technology (Entire) (Semester- I)**

Course III: DSC II

Course Title: Operating System

Total Contact Hours: 30 hrs. (30 lectures of 60 min)

Credits: 02   Teaching Scheme: Practical 04 Lect. / Week   Total Marks: 50

Course Outcomes:

After completion of this course students will be able to-

1. Possess knowledge of Operating Systems and their types.
2. Processes, process synchronization
3. Implement CPU scheduling algorithms
4. Understand various memory management techniques and file system.

Sr. No	Description	Hours
Unit I	**Introduction of Operating System:** Definition of Operating System, Operating System's role, Operating-System Operations, Functions of Operating System. Operating-System Structures: Operating-System Services, User and Operating-System Interface, System Calls, Types of operating-System. **File System-** Files & File system, File structure, File types, File access, File attributes, Basic file operations .Directories-Single-level & Hierarchical directory systems, Path names & Directory operations.	15
Unit II	**Memory Management-**Memory Management- Introduction to memory management, Requirements (Relocation, Protection, Sharing Logical organization, Physical organization).Physical address space, MMU, Swapping. **Process Management:** Process Management-Introduction to Processes, Process Model, Interposes Communication, Process creation, Process termination ,Process hierarchy, Process states. Process Synchronization: General structure of a typical process, race condition, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization.	15

Reference Books:
1. Modern Operating Systems, AndrewS Tanenbaum,
   3rd Edi-tion,PHI,2010.
2. OperatingSystems,AchyutSGodbole,2ndEdition,McGraw Hill Publications.
3. Operating Systems, Internals & Design Principles,
4. WilliamStalling,6thEdition,.PearsonPublicati,
5. Operating System, Abraham Silberschatz, PeterBar Galvin,andGreg-Gagne,2008

B.Sc. Part -I Information Technology (Entire) (Semester- I)

Course III: Practical I

Course Title: Office Automation Lab

Total Contact Hours: 30 hrs. (30 lectures of 60 min)

Credits: 02   **Teaching Scheme: Practical 04 Lect. / Week**   **Total Marks: 50**

Course Outcome –

1. Understand mail merge function.

2. Understand to work using internet facility.

3. Able to create & join online meeting.

4. Understand working of different excel functions

1.	Create file, folder, compressed file and folder, find file type, size, Search .jpg/.png,/.pdf/.doc/.xls file from any drive of your computer,
2.	List out file according to date, size. Group files according to types.
3.	Convert any document file to pdf, pdf to word, PPT to pdf
4.	List out configuration of your computer- HDD Capacity, RAM,Processor, Generation etc.
5.	List out software installed on your computer and categorized intoapplication, system and utility programs/software's
6.	List out steps of software installation (Ms-Office, Tally Any other)
7.	Searching for a web site / application / text documents viewing anddownloading
8.	Create an E-mail account, Retrieving messages from inbox, replying,attaching files filtering and forwarding
9.	Create Account to any online job portal (e.gNokari.Com,Monster.com,Shine.com)
10.	Create meeting using Video Conferencing app-Zoom, Google Meet,WebX. Compare its features ,requirements, benefits and limitation
11.	Prepare a letter Covering formatting commands - font size and styles - bold, underline, upper case, lower case, superscript, subscript, indenting paragraphs, spacing between lines and characters, tab settings etc.
12	Prepare a newsletter with borders, two columns text, header and footer and inserting a graphic image and page layout.
13	Create a style and apply that style in a document to create a template for the styles.
14	Create a table using table menu using cell editing operationslike inserting, joining, deleting, splitting and merging cells
15	Create a numbered and bulleted list with different formats.
16	Demonstrate use of mail merge facility. Prepare a Spreadsheet representing Student information. Apply Entering And Editing Data- Copy, cut, paste, undo, redo, find, search, replace, filling continuous rows and columns, inserting data cells, columns, rows and sheet
17	Prepare a Employee spreadsheet with fields Id, Name, Designation Basic Salary, TA, DA, HRA, Gross Salary. Set formula to find total gross salary in rows.
18	Prepare a Chart using Selecting, formatting, labeling, scaling

Course Code:- OE

Title: Intellectual Property Right

Total Contact Hours: 30 Hrs. (30 lectures of 60 min)

Credits: 2 Teaching Scheme Theory- 02 Lect./ week   Total Marks: 50

After completion this course students will be enable to:

1. The students once they complete their academic projects, they get awareness of acquiring the Patent.
2. They also learn to have copyright for their innovative works.
3. They also get the knowledge of plagiarism in their innovations which can be questioned legally.

Sr. No	Description	Hours
Unit I	**INTRODUCTION TO IPR:** Introduction and the need for intellectual property right (IPR) - Kinds of Intellectual Property Rights: Patent, Copyright, Trade Mark, Design, Geographical Indication, Plant Varieties and Layout Design – Genetic Resources and Traditional Knowledge – Trade Secret - IPR in India : Genesis and development – IPR in abroad - Major International Instruments concerning Intellectual Property Rights: Paris Convention, 1883, the Berne Convention, 1886, the Universal Copyright Convention, 1952, the WIPO Convention, **PATENT RIGHTS AND COPY RIGHTS**— Origin, Meaning of Patent, Types, Inventions which are not patentable, Registration Procedure, Rights and Duties of Patentee, Assignment and licence , Restoration of lapsed Patents, Surrender and Revocation of Patents, Infringement, Remedies & Penalties. **COPY RIGHT**—Origin, Definition &Types of Copy Right, Registration procedure, Assignment & licence, Terms of Copy Right, Piracy, Infringement, Remedies, Copy rights with special reference to software.	15
Unit II	**TRADE MARKS**— Origin, Meaning & Nature of Trade Marks, Types, Registration of Trade Marks, Infringement & Remedies, Offences relating to Trade Marks, Passing Off, Penalties. Domain Names on cyber space. **DESIGN**- Meaning, Definition, Object, Registration of Design, Cancellation of Registration, International convention on design, functions of Design. Semiconductor Integrated circuits and layout design Act-2000. **BASIC TENENTS OF INFORMATION TECHNOLOGY ACT-2000** – IT Act - Introduction E-Commerce and legal provisions E- Governance and legal provisions Digital signature and Electronic Signature. Cybercrimes.	15

Reference Books:

1. Intellectual Property Rights and the Law, Gogia Law Agency, by Dr. G.B. Reddy
2. Law relating to Intellectual Property, Universal Law Publishing Co, by Dr. B.L.Wadehra
3. IPR by P. Narayanan
4. Law of Intellectual Property, Asian Law House, Dr.S.R. Myneni.

B.Sc. Part -I Information Technology (Entire) (Semester- II)

Course I:- DSC III

Title: Advanced C Programming

Total Contact Hours: 30 Hrs. (30 lectures of 60 min)

Credits: 2 Teaching Scheme Theory- 02 Lect./ week   Total Marks: 50

Course Outcomes:

1. Understand a functional hierarchical code organization.

2. Ability to work with different storage class.

3. To impart knowledge in creating and using pointer

4. Understand to work with file handling concept.

Sr.No	Description	Hours
Unit I	**Functions and Pointer** ▪ Definition, Types of function, function proto-typeLocal and global variables. ▪ Recursive functions ▪ Storage classes- auto, external, static and register. ▪ Pointer: Defintion, declaration, initialization,pointer arithmatic,pointer of pointer, Array of pointers. ▪ Funcion call by value and call by reference. Dynamic memmory allocation and dealloca-tion.	**15**
Unit II	**Structure, Union and File handling** ▪ Structure: Defintion, declaration of structure, Nested structure,Array ofstructures,Structure pointer, Passing structure to function. ▪ Union:Definition, declaration of Union,Difference between structure and union.File Handling: Concept of file, Text and Binary File. ▪ File opening and closing files- fopen(), fclose()File opening modes- read, write,ap-pend. ▪ Reading and writing functions- gets(), puts()Formatted input- scanf(), sscanf(), fscanf(), fread()Formatted output- printf(), fprintf(),fwrite() Functions: fseek, ftell, re- wind()	**15**

Reference Book :
1. Programming in C - Schuam Outline Series
2. Let Us C- Yashwant Kanetkar
3. Programmig in ANSI C- E. Balagurusamy.
4. The complete reference 'C' - Herbert Schildt
5. C Programming - Venugopal
6. The C Programming Language- Ritchie and Kernighan.

B. Sc. Part- I Information Technology (Entire) (Semester II)

Course I :- DSC IV

Course Title: Microprocessor Architecture

Total Contact Hours: 30 hrs. (30 lectures of 60 min)

Credits: 02   Teaching Scheme: Theory – 02 Lect. / Week Total Marks: 50

COURSE OUTCOME

After Completing this course student will be able to:

CO 1 To study segmented, pipelined architecture in microprocessors.

CO 2 To study memory management in microprocessors.

CO 3 To study microprocessor assembly language.

CO 4 Draw and describe architecture of 8085 microcontroller.

Sr. No.	Description	Hours
Unit I	**Microcomputer Organization** Basic components of microcomputer (CPU, Program memory, Data memory, input and output ports, idea of RAM (SDRAM, DRAM) Types of ROM Memory organization & addressing. MemoryInterfacing. Memory Map. **8085 Microprocessor Architecture** Main features of 8085. Block diagram and Pin-out diagram of 8085. Data and address buses. Registers,ALU, Stack memory, Program counter, Flag register	**15**
Unit II	**Interfacing of I/O Devices** Basic Interfacing concepts, Interfacing Output Displays, Interfacing Input Devices, Memory Mapped I/O. Introduction to 8085 Instructions: Data Transfer Operations, Arithmetic Operations, Logic Operation, Branch Operation, Writing Assembly Languages Programs, Debugging a Program. Instruction classification, addressing modes of Instructions, Instruction set (Data transfer including stacks. Arithmetic, logical, branch, and control instructions). Subroutines, delay loops Programs for: Addition, Subtraction, Multiplication, Division, Block transfer	**15**

Reference Books:
• Microprocessor Architecture Programming & applications with 8085, 2002, R.S. Gaonkar, Prentice Hall.
• Embedded Systems: Architecture, Programming & Design, Raj Kamal, 2008, Tata McGraw Hill
• The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi,
J.G. Mazidi, and R.D. McKinlay, 2nd Ed., 2007, Pearson Education India.
• Microprocessor and Microcontrollers, N. Senthil Kumar, 2010, Oxford University Press

B.Sc. Part -I Information Technology (Entire) (Semester- II)

Course I:- Practical I

Title: Advanced C Programming Lab

Total Contact Hours: 30Hrs.(30 lectures of 60 min)

Credits: 02 Teaching Scheme Practical- 04 Lect./ week Total Marks: 50

Course Outcomes:
Learners will be able to,
1. Develop applications with nested structure .
2. Understand concept of passing arguments .
3. Develop applications with file handling
4. Understand pointer arithmetic operations.

1. Write a function to sort given array elements in ascending and descending order.
2. Write a function to check given number is prime or not.
3. Write a function using call by reference to swap two numbers.
4. Write a function to create copy string using pointer.
5. Write a function to reverse a string.
6. Write a function to find the length of given string.
7. Write a function to concat 2 strings.
8. Write a function to count spaces in given sentence.
9. Write a function to count number of characters and words in given sentence.
10. Write a program to perform pointer arithmetic operations.
11. Write a program to create a structure for date and display it.
12. Write a program to create nested structure read the values and display it.
13. Write a program to display create structure Student
    - (rollno,name,m1,m2,m3) accept values for n students and display the same.
14. Write a program to create union read the values and display it.
15. Write a Program to create text file and read and write characters from/in the file.
16. Write a Program to create text file and read and write string from/in the file.
17. Write a program to create text file and read and write student data(Rollno, Name, Class) from/in the file using fscanf,fprintf().
18. Write a program to demostrate the use of fseek(),ftell() and rewind()functions.

B. Sc. Part- I Information Technology (Entire) (Semester II)
Course II:-DSC III
Course Title: Database Management System
Total Contact Hours: 30 hrs. (30 lectures of 60 min)
Credits: 02   Teaching Scheme: Theory – 02 Lect. / Week Total Marks: 50

Course Outcome-

Students who complete this course should be able to:

1) Handle database.
2) Design & develop database.
3) Get knowledge about data operations and Data Models.
4) Get knowledge about SQL commands.

Sr. No.	Description	Hours
Unit I	**Introduction to Database Management System** Introduction, Basic Concept and Definitions, Data and Information, Types of Databases(Centralized, distributed cloud, relational, No SQL),Applications of DBMS, Role of DBA, File processing system Vs. DBMS, Advantages and Disadvantages of DBMS, DataModels(Network, Hierarchical, Relational, ER model)	**15**
Unit II	**Introduction to SQL** DDL and DML commands, Data types in SQL, Data Constraints – Primary key, foreign key, Unique, Not Null, check, default. SQL operators (Logical, relational, LIKE, IN, BETWEEN), SQL functions (String, Aggregate, Date time), Group by clause, Order by clause. Normalization: 1 NF, 2 NF, 3 NF, 4 BCNF	**15**

Reference Books:

1. Fundamentals of Database Systems 6th Edition, - R. Elmasri, S.B. Navathe
2. Database Management Systems 3rd Edition, McGraw-Hill, 2002- R. Ramakrishanan,
    J. Gehrke
3. Database System Concepts-Korth Silberschartz

Course II:-DSC IV
Course Title: Advanced Electronics
Total Contact Hours: 30 hrs. (30 lectures of 60 min)
Credits: 02   Teaching Scheme: Theory – 02 Lect. / Week Total Marks: 50

Course Objective:
The subject aims to provide the student with:
1. An understanding of Advanced Electronics abstractions on which analysis and design of Integrated circuits(ICs) and Logic Families.
2. The capability to use abstractions to analyze display devices and sensors. Designing of PCB technologies electronics devices. Course Outcomes: Upon successful completion of this course, students will be able to1. Learn how to develop the Integrated circuits (IC) in electronics systems. E.g. Computer systems, Microprocessor, Microcontroller, Mobile, etc. 2. Learn how to Manufacturing Resistors, Capacitors, Diode and Transistor in IC. 3. An understanding of different Display devices, Sensors and PCB technologies used in Computer System.

Sr. No.	Description	Hours
Unit I	**Integrated Circuits and Logic Families** Introduction to IC, Linear or Digital IC's (only Define), Fabrication process of IC (Explain in detail with diagram). Steps of IC fabrication process: 1) Substrate Preparation (Wafer production) 2) Epitaxial Growth (N-Type and P-Type Layer) 3) Insulation Layer (Sio2) 4) Photolithography: i) Masking and Etching 5) Diffusion (Doping or Ion Implantation) 6) Isolation Process 7) Metallization Monolithic IC's: Component Fabrication: Transistor, Diode, Resistor and Capacitor. Applications of IC's Logic Families: Types of IC Families	**15**
Unit II	**Display Devices, Sensors and PCB Technology** LED (Construction, working and Application). Seven segment LED Display (Construction, working and Application). LCD Display (Construction, working and Application). LED Display (Construction, working and Application). Sensors: Introduction to Sensor Types of Sensors: Temperature sensor (Thermistor), Photodiode, LDR, Opto coupler. (Construction, working and Application of Sensors) Introduction to PCB Technology: Single layer and Multilayer PCB Technology. Surface Mounting Devices (SMD), Surface Mounting Technology (SMT), Advantages and Applications of SMT and SMD.	**15**

Reference Books:
1. B.L.Theraja, Basic Solid State Electronic. S.Chand& Company Ltd.
 2. V.K. Mehta, Principles of Electronics, S.Chand& Company Ltd.
3. Electronic Instrumentation byK.S.Kalsi, TMH Publication.
4. Electronic Measurements by U.A.Bakshi
5. and V.U.Bakshi, Technical Publication
6. Transducers and Display Systems by B.S.Sonde

B. Sc. Part- I Information Technology (Entire) (Semester II)
Course II: Practical I
Course Title: Database Management System Lab
Total Contact Hours: 30 hrs. (30 lectures of 60 min)
Credits: 02   Teaching Scheme: Practical – 04Lect. / Week Total Marks: 50

Course Outcomes:
Learners will be able to:
1. Design database schema for a given application and apply normalization.
2. Acquire skills in using SQL Commands for data Definition and data manipulation.
3. Design table & use different clause.
4. Acquire skill in using aggregate function

1. Perform the following:

   View all databases , Creating a Database, View all Tables in a Database
2. Write SQL Query to Perform the following operations
   a. Create Table
   b. Altering a Table
   b. Drop/Truncate/Rename Table
3. Create student table with appropriate field and do.
   a. Insert 10 appropriate records
   b. Display all records
   b. Update any record
   c. Delete record
4. Create Employee master and Department table with appropriate field toapply following constraint on field.
   a. Primary Key
   b. Foreign Key
   c. Not null key
   d. default key
   e. Check constraint etc.
5. Use any tables and do select operations using SQL Operators.
6. Write a query aggregate functions(Count, sum, avg, Min, Max)
7. Use any tables and do select operations using different clauses,
   a. where
   b. group by
   c. order by

B.Sc. Information Technology (Entire) Part-I (Semester II)

Course III:- DSC III

Course Title: Cascading Style Sheets

Total Contact Hours: 30 hrs (30 lectures of 60 min)

Credits: 02 Teaching Scheme: Theory – 02 Lect. / Week Total Marks: 50

Course Outcomes:

After completion this course students will be enable to:

1. Understand basic concept of HTML.

2. Learn how to use HTML tags.

3. Understand how to design Webpages using HTML and CSS.

4. Understand use of frames to design.

Sr. No	Description	Hours
Unit I	**Introduction to CSS:** Introduction Understanding the concepts of CSS, Advantages and disadvantages CSS syntax Grouping selectors and rulers Using the class selectors Using the ID selectors Comparing ID and classes selectors, Using CSS comments, Types of Style sheets-External Internal, Inline. Formatting text and fonts, CSS Selectors- id, group, class. CSS properties- Border, background, list, image, margin. List properties: list-style-images, list-style-position, list- style-type, list-style. CSS positioning(relative, absolute, fixed and Z-index) CSS properties and table attributes	15
Unit II	**Introduction to XML : XML** Introduction, XML versus HTML, XML terminologies, XML standards(XML,XML namespace,DTD,CSS,XSL,XML schema, Xquery, Xlink, Xpointer,Xpath), Creating XML Document XML syntax checking, The idea of markup ,XML structure, Organizing information in XML, Creating well formed XML documents, XML namespaces(overview) XML Documentation Introduction to DTD, Document type declaration Element type declaration, Attribute declaration, Conditional sections, limitations of DTD	15

Reference Books:

1. Step By Step XML(First Edition-2000)Publisher: PHI Practice-Hall India.By Michael J. Young

B.Sc. Information Technology (Entire) Part-I (Semester II)
Course III: DSC IV
Course Title: Advanced Operating System

Total Contact Hours: 30hrs (30lectures of 60 min)

Credits: 02 Teaching Scheme: Theory – 02 Lect. / Week   Total Marks: 50

Course Outcomes:

After completion this course students will be enable to:
1. Demonstrate understanding of design issues of Advanced operating systems and compare Different types of operating systems.
2. Analyze design aspects and data structures used for file subsystem, memory subsystem and Process subsystem of Unix OS.
3. Demonstrate understanding of different architectures used in Multiprocessor OS and analyses the design and data structures used in Multiprocessor operating systems.

Sr. No	Description	Hours
Unit I	**CPU Scheduling:** Basic Concepts, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, SRTF, Priority, RR, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling), Thread Scheduling **Deadlocks:** System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock Principles of I/O Hardware, I/O devices , Device controllers o Direct memory access	15
Unit II	**Main Memory:** Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table **Virtual Memory:** Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing Mass-Storage Structure: Overview, Disk Structure, Disk Scheduling, Disk Management **File-System Interface**: File Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing **File-System Implementation:** File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management	15

Reference Books:
1. Achyut S. Godbole, Atul Kahate, Operating Systems, Tata McGraw Hill
2. Naresh Chauhan, Principles of Operating Systems, Oxford Press
3. Andrew S Tanenbaum, Herbert Bos, Modern Operating Systems, 4e Fourth Edition, Pearson Education, 2016

Course III: Practical I

Course Title: Cascading Style Sheet Lab

Total Contact Hours: 30 hrs. (30 lectures of 60 min)

Credits: 02 Teaching Scheme: Practical – 04 Lect. / Week Total Marks: 50

Course Outcomes:

After completion this course students will be enable to:

To gain the knowledge of various advanced web development tools like CSS &JavaScript.2)

To develop skills for effective use of the XML in web site development

Practical Program List

1. Create a web page with all types of Cascading style sheets.

2. Design a web page using CSS (cascading Style sheets) which includes the following:

   1 Use different font , styles: In the style definition you define how each selector should work (font , color etc.). Then in the body of your pages, you refer to these selectors to activate the styles.

3. Write a Program in to Create your own style sheets and use them in your web page .

4. Design simple webpage using Inline CSS

5. Design simple webpage using Internal CSS

6. Design simple webpage using External CSS

7. Create a Static Website for your College using HTML and CSS

8.Crate an id called menu . List item descendants of this id should have no list style (list-style-type:none)

9. Create a css class called course .This class should provide collapsed borders and set text so that it text-align to the center of every cell.

10. Style the h1 element so that its font-size is smaller.

Course Code :- OE

Course Title : - District Mathematics

Total Contact Hours :30 hrs. (30lectures of 60 min)
Credits: 02   Teaching Scheme: Theory – 02Lect. / Week Total Marks: 50

Learning Outcomes:

1. Be able to apply problem-solving and logical skills.
2. Analyze logical propositions via truth tables.
3. Understand and applies concept related to variables, expressions, equations, identities, etc.
4 . Understand types of Propositions.

Sr.No	Description	Hours
Uint I	Functions: Definition, Types of mapping, Injective, Surjective &Bijective functions, Inverse function,Composition of functions Counting :Addition & Multiplication principle, Permutation & Combination Cardinality of finite set. Principle of Inclusion &Exclusion. Examples Pigeonhole Principle (Statement only). Examples	15
Unit II	Linear Recurrence relation with constant coefficient Homogeneous solutions and Examples Particular and Total Solution, Examples ropositions & Logical connectives: Definition, Types of Propositions, Truth Truth Tables, Tautology&Contradiction, Logical equivalence Rules of inferences Methods of Proofs: Direct &Indirect Examples.	15

Reference Books:
2. Elements of Discrete Mathematics by C. L. Liu
3. Discrete Mathematics by Olympia Nicodemi
4. Discrete Mathematical Structure for Computer Science by Alan Doer & K. Levasicur.