Re-Accredited 'B++' 2.86 CGPA by NAAC
VEER NARMAD SOUTH GUJARAT UNIVERSITY
University Campus, Udhna-Magdalla Road, SURAT - 395 007, Gujarat, India.
વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી
યુનિવર્સિટી કેમ્પસ, ઉધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.
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-: પરિપત્ર :-

યુનિવર્સિટી સંલગ્ન કોમ્પ્યુટર સાયન્સ વિદ્યાશાખા હેઠળની તમામ કોલેજોના આચાર્યશ્રીઓને જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૨૬–૨૭ થી અમલમાં આવનાર F. Y. B.Sc. Computer Science Sem.-1 & 2 નો પેટા સમિતિ દ્વારા તૈયાર કરવામાં આવેલ અભ્યાસક્રમ કોમ્પ્યુટર સાયન્સ વિષયની અભ્યાસ સમિતિની તા.૨૫/૦૩/૨૦૨૬ ની સભાના ઠરાવ ક્રમાંકઃ૧૫ થી મંજૂર કરી કોમ્પ્યુટર સાયન્સ ફેકલ્ટીને કરેલ ભલામણ કોમ્પ્યુટર સાયન્સ ફેકલ્ટીની તા. ૨૯/૦૪/૨૦૨૬ની સભાના ઠરાવ ક્રમાંકઃ૧૨ થી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ એકેડેમિક કાઉન્સિલ ની તા.૦૭/૦૫/૨૦૨૬ ની સભાનાં ઠરાવ ક્રમાંકઃપ૩ થી મંજૂર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

બિડાણઃ ઉપર મુજબ

ક્રમાંકઃઓથો./પરિપત્ર/૧૦૦૭૬/૨૦૨૬
તા.૧૨/૦૫/૨૦૨૬

કુલસચિવ ૦૦૧

પ્રતિ,

૧) યુનિવર્સિટી સંલગ્ન તમામ કોમ્પ્યુટર સાયન્સ કોલેજોના આચાર્યશ્રીઓ.
.....આપશ્રીની કોલેજના સંબંધિત શિક્ષકો/વિદ્યાર્થીને જાણ કરી અમલ કરવા સારૂ.

૨) ઈ.ચા.ડીનશ્રી, કોમ્પ્યુટર સાયન્સ વિદ્યાશાખા.

૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.
.....તરફ જાણ તેમજ અમલ સારૂ.

Veer Narmad South Gujarat University, Surat

Computer Science, Application and I.T. Faculty

Syllabus for (Semester-I and Semester-II)

of

B.Sc.(Computer Science) (Honours) as per the NEP-2020

To be implemented from

Academic Year: June, 2026-2027

Syllabus Committee :

1) Dr. Snehal K Joshi (Chairman)
2) Prof. Divyesh Mistry

3) Prof. Manish Dodia

4) Dr. Darshna Rajput

5) Prof. Ramnik Gilatar

6) Dr.Jasmin Bhootwala

7) Prof. Chetan Parmar

Veer Narmad South Gujarat University, Surat
Bachelor of Computer Application (B.Sc.(Computer Science)(Honours))
Under the Faculty of
Computer Science, Application and Information Technology

Name of Program:	Bachelor of Science in Computer Science (Honours)
Program Abbreviation:	B.Sc.(Computer Science): Four-year Integrated Program. With Multi-Level Entry and Exit option
Multi-level Exit Criteria:	i) Under Graduate Certificate in Computer Science: If the student wish to exit after completion of First year (Semester-1 and Semeter-2) without any back-log and secure additional 4 credits from work based skill oriented university approved courses /vocational courses / summer internship / Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester. ii) Diploma in Computer Science: If the student wish to exit after completion of Second year (Semester-1 to Semeter-4) without any back-log and secure additional 4 credits from work based skill oriented university approved courses /vocational courses / summer internship / Apprenticeship offered at end of first or second year in addition to 6 credits from skill-based courses earned during first four semesters. iii) B.Sc. (Bachelor's of Science in Computer Science): If the student wish to exit after completion of Third year (Semeste-1 to semester-6) without any back-log and secure additional 4 credits from work based skill oriented university approved courses /vocational courses / summer internship / Apprenticeship offered at end of first or second year in addition to 6 credits from skill-based courses earned during first four semesters.
Multi-Level Entry Criteria:	As per the norms of the Veer Narmad South Gujarat University.
Duration:	4 year of B.Sc.(Computer Science)(Honors) degree program with multi level exit options at 1st, 2nd and 3rd Year to obtain Certificate, Diploma, Degree and Honours Degree in Computer Application respectively.
Eligibility Criteria:	As per the norms of Veer Narmad South Gujarat University, Surat.
Medium of Instruction	English

Objective of the Program:	Bachelor of Science in Computer Science (B.Sc.)(Computer Science)(Honours) is undergraduate degree program in computer application area. Objective of the program is to open a channel of admission for courses in the field of Computer Science, Applications and all relevant fields of information technologies to build career for students who have completed standard 12th (H.S.C.) and are interested in taking computing/computer Application and Information Technology as a career. Main objective is to equip the students with strong foundation in computer programming languages, coding, database handling, software application developments, problem-solving skills and development of analytical and logical skills. The focus is to introduce various programming languages on different platforms and operating systems, interaction with databases available on various platforms, software testing, development and deployment techniques. It also aim to provide knowledge in latest trends and advancements in field of computer technologies. The program caters to the needs of the students aspiring to excel in the field of computer science, applications and technologies. The program is designed to develop computer professionals versatile in almost all field of computer application. It also aim to enhance communication and interpersonal skills.
Program Outcome:	**PO1:** Ability to analyze a problem, identify and define the Computing requirements appropriate to its solution. **PO2:** Enhancing the Understanding related to core ideas of computer, analytical thinking, logical abilities and computational fundamentals. **PO3:** To generate Understanding regarding the core and fundamental ideas about the computer platforms, operating systems, software design concepts, networking concepts and advanced and emerging technologies. **PO4:** Foster critical thinking and innovation: The program encourages students to think critically and creatively in the context of computer science. They are challenged to explore innovative approaches to problem-solving, evaluate alternative solutions, and apply logical reasoning to make informed decisions. **PO5:** Develop technical proficiency: The objective is to equip students with practical skills in software development, programming languages, databases, networking, and other relevant technologies. They gain hands-on experience in designing, implementing, and testing software systems using industry-standard tools and techniques. **PO6:** Promote collaboration and communication skills: The program emphasizes the importance of teamwork and effective communication in the field of computer science. Students are encouraged to collaborate with peers on projects, participate in group discussions, and present their ideas clearly and professionally.

Program Specific Outcome:

PSO 1 : Develop and Strengthen the fundamental core computer science concepts that are required to solve complex problems.

PSO 2 : Develop the professional skills that need independent logical and analytical thinking, teamwork for successful computer professionals.

PSO 3 : Nurture the students for design and development of workable computer application solution for real world problems.

PSO 4 : Develop students for self-learning and practicing computer science application problem solutions.

PSO 5 : Develop ability to service and excel in fulfilling the modern day demands with their knowledge and skills.

PSO 6 : Develop technical project and present them among the users.

Mapping between POs and PSOs:

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
PO1						
PO2						
PO3						
PO4						
PO5						
PO6						

Program Structure;

Semester-wise Breakup of the course is given as follows :

Program Structure: F.Y.B.Sc.(Computer Science) (SEMESTER – 1)
(w.e.f. Academic Year June, 2026-2027) B.Sc.(Computer Science) – Three Year Program

Course Category	Course Code	Course Title	Mark sheet Title in English	Level of Course	Teaching Hours/Week		Exam Duration (Hours)		Credit	Internal Marks		External Marks		Total Marks
					TH	PR	TH	PR		TH	PR	TH	PR	
MAJOR	CS-104	Programming in C	Programming in C	200-299 Intermediate	2	4	1	2	4	25	25	25	25	100
MAJOR	CS-105	Web Designing-I	Web Designing-I	200-299 Intermediate	2	4	1	2	4	25	25	25	25	100
MINOR	CS-103	Fundamentals of Computer	Fundamentals of Computer	100-199 Foundation/ Introductory	4	0	2	-	4	50	-	50	-	100
MDC	CS-102	Multi-Disciplinary Course-01	Fundamentals of mathematics OR Offer by College	100-199 Foundation/ Introductory	4	0	2	-	4	50	-	50	-	100
AEC	CS-101-01 CS-101-02	English Proficiency and Life Skills-I Communication Skills	English proficiency and life skills - I OR Communication Skills	100-199 Foundation/ Introductory	2	0	1	-	2	25	-	25	-	50
SEC	CS-106-01 CS-106-02 CS-106-03 CS-106-04	Word Processing, Data Processing and Presentation Desktop Publishing (DTP) Fundamentals of Windows and Office Applications Fundamentals of Google Docs	Word Processing, Data Processing and Presentation OR Desktop Publishing (DTP) OR Fundamentals of Windows and Office Applications OR Fundamentals of Google Docs	100-199 Foundation/ Introductory	2	0	1	-	2	-	25	-	25	50
VAC/ VAC-IKS	CS-107	**Value Addition Course – I (VAC-01)**	Bharatiya Knowledge Systems –an Introduction	100-199 Foundation/ Introductory	2	0	1 hr	-	2	25	-	25	-	50

Practical and Project:

- Batch Size – 30 Maximum (Desirable). Maximum 40 students can be accommodated in a batch. Separate batch should be considered if the student strength exceed 40 numbers.
- Practical includes Practical sessions for course-CS-104 and course-CS-105. **Minimum** Eight Practical hours(4 hours forcourse-104 and 4 hours for course-105) per week should be allocated per batch. Out of which 8 hours will be in supervisedmode and balance hours in un-supervised mode.
- The journal must be certified by the concerned faculty and by the Head of the Department, failing which the student willnot be allowed to appear for External Practical Examination. Student will submit softcopy of Minor Project duly certified by the internal guide.

Internal/External Evaluation:

CCE (Continuous and Comprehensive Evaluation) : To be conducted by college.

SEE (Semester End Evaluation) : To be conducted by University.

Internship: A student who wish to exit after successfully completion of first year (Semester-1 and Semester-2) without any backlog is required to obtain Four credits at the end of the year either through the summer internship or university approved skill based certificate courses(two courses of 2-credits each or one 4-credit course). Student is required to enrol for the certificate coursesseparately by paying the course fees as decided by the college/institute. For summer training, the Institute/college will grant the permission and evaluate the training outcomes. Based on satisfactory completion of the summer training, the Institute head will recommend to the university to grant four credits for summer training. The Internship/summer training/skill based certificate courses will be an audit course.[The internship cost/fees will be bear by the student.]

Major Course : Major discipline is the main focus (Core) dominant subject and the degree will be awarded in that discipline. Students must secure a prescribed number of credits (50% of total credits) through core courses in the major discipline. Students can choose the courses from the pool of courses.

Minor Course : Minor discipline is the broader understanding course beyond the major discipline course. It contains generic- electives for students to choose from the pool of courses. It helps students to gain broader knowledge in addition to relevant major disciplines courses as per their choices. Minor subjects may be from same or different disciplines. Student may make choices according to their interest/need, from ODL courses also.

Interdisciplinary/Multidisciplinary/Allied Courses: This is constituent discipline of the major courses and it helps learners to acquire core competence in relevant or any other independent courses of their choices. This course may be major specific or otherdiscipline specific. Learner shall have option to choose the course from available basket of approved courses provided by the university or from any other institutions as the learner's choice. The Credit allocated for these courses is 12 credits of total creditsfor 3 years' bachelor's degree and four years' bachelor's degree programme.

Skill Enhancement Course : As per NEP(National Education Policy-2020), it is mandatory for students to select a 2 credit skill enhancement course out of the choices given by the college/institute (From available basket of courses as per University norms). It will be mandatory for the student to opt minimum one 2-credit Skill enhancement course out of offered courses recognized by University during semester-1 to semester-5..

Value Addition Course: As per NEP(National Education Policy-2020), it is mandatory for students to select a 2 credit Value Addition Course out of the choices given by the college/institute (From available basket of courses as per University norms). It will be mandatory for the student to opt minimum one 2-credit Value Addition Course out of offered courses recognized by the University during semester-1 to semester-4..

 # Marks: The scale on which the students will be evaluated. The evaluation methodology will be continuous evaluation and the score obtained will reflect in mark-sheet but not considered for SGPA or CGPA. These courses are mandatory and student isrequired to obtain the specified credits in process to acquire the certificate/diploma/degree.
[The college/Institute will decide the fees for SEC and VAC courses based on the University norms for certificate course per creditfees.]

% : Institute/College will offer any one course from given list of Ability Enhancement Courses approved by the University.

** Major Practical based Subjects: Course 104 and 105 are major courses. Both these courses are carrying 4 credits (2 Hours of theory and 4 hours of practical per week). Both these subjects carry

150 marks of exam weightage (100 theory and 50 practical). External and Internal distribution of marks are in ratio of 50:50 respectively. Students are required to acquire minimum passing marks from theory and practical collectively. Practical exams for course-104 (2hours duration) and course-105(2 hours duration) will be conducted on same day.

Division of Theory internal marks (CCE) :
For courses having 50 marks as Internals :
Class Assignment/Active Learning: 07 marks+Home Assignment/Field Assignment: 08 marks + Attendance: 10 + Class Test*: 25
For courses having 25 marks as Internals :
Class Assignment/Active Learning: 03 marks+Home Assignment/Field Assignment: 03 marks + Attendance: 04 + Class Test*: 15
For Practical internal marks (CCE) :

For courses having 50 marks Internals :
Attendance: 10 marks + Viva-voce/Quiz: 20 marks + Lab-work Assessment/Practical: 20 marks.
For courses having 25 marks Internals :
Attendance: 5 marks + Viva-voce/Quiz: 10 marks + Lab-work Assessment/Practical: 10 marks.
Division of Practical External exam marks (SEE) :

For 25 marks Externals :
Division of marks are: Exam evaluation: 20 marks + Viva-voce: 5 Marks.
Practical examination will be conducted for course code-204 and course-205 separately on same day.

Practical examination will be conducted for course code-104 and course-105 separately on same day.Students are required to pass in combined head (Theory + Practical) for each course.

Students are required to remain present in internal and external theory and practical exams for course code – 104 and105 mandatorily.

Program Passing Rules: As per University rules.

Program Structure: F.Y.B.Sc.(Computer Science) (SEMESTER – 2)
(w.e.f. Academic Year June, 2026-2027) B.Sc.(Computer Science) – Three Year Program
B.Sc.(Computer Science)(Honours)) – Four Year Integrated Program

Course Category	Course Code	Course Title	Mark sheet Title in English	Level of Course	Teaching Hours/Week		Exam Duration (Hrs)		Credit	Internal Marks		External Marks		Total Marks
					TH	PR	TH	PR		TH	PR	TH	PR	
MAJOR	CS-204	Object Oriented Programming Using C++	Object Oriented ProgrammingUsing C++	200-299 Intermediate	2	4	1	2	4	25	25	25	25	100
MAJOR	CS-205	Python Programming – I	Python Programming – I	200-299 Intermediate	2	4	1	2	4	25	25	25	25	100
MINOR	CS-203	E-Commerce and Cyber Security	E-Commerce and Cyber Security	100-199 Foundation/ Introductory	4	-	2	-	4	50	-	50	-	100
MDC	CS-202	Multi-Disciplinary Course-02	Matrices and Determinants	100-199 Foundation/ Introductory	4	-	2	-	4	50	-	50	-	100
AEC	CS-201-01 OR CS-201-02	Ability Enhancement Course-II (AEC-02) [Modern Indian Language (MIL) & English language focused on language and communication skills.]	Professional Development and Ability Enhancement OR English Proficiency and Life Skill-2	100-199 Foundation/ Introductory	2	-	2	-	2	25	-	25	-	50
SEC	CS-206	Skill Enhancement Course-II(SEC-02)	Digital Content Creation and Web Designing OR Advance Excel OR Advance Communication Skills in English-2	100-199 Foundation/ Introductory	-	2	-	2	2	25	-	25	-	50
VAC/ VAC-IKS	CS-207	Value Addition Course – II(VAC-02)	Environment -1	100-199 Foundation/ Introductory	2	-	1	-	2	25	-	25	-	50

For Practical and Project:

- Batch Size – 40 Maximum (Desirable). Maximum 45 students can be accommodated in a batch. Separate batch should beconsidered if the student strength exceed 45 numbers.
- Practical includes Practical sessions for course-204 and course-205. **Minimum** Eight Practical hours(4 hours for course- 204 and 4 hours for course-205) per week should be allocated per batch. Out of which 8 hours will be in supervised modeand balance hours in un-supervised mode.
- The journal should be certified by the concerned faculty and by the Head of the Department, failing which the student should not be allowed to appear for External Practical Examination. Student will submit softcopy of Minor Project duly certified by the internal guide.

Internal/External Evaluation :
CCE (Continuous and Comprehensive Evaluation) : To be conducted by college.SEE (Semester End Evaluation) : To be conducted by University.

Major Course : Major discipline is the main focus (Core) dominant subject and the degree will be awarded in that discipline. Students must secure a prescribed number of credits (50% of total credits) through core courses in the major discipline. Students canchoose the courses from the pool of courses. The number of courses (subjects) in Major may vary from semester to semester.

Minor Course : Minor discipline is the broader understanding course beyond the major discipline course. It contains generic- electives for students to choose from the pool of courses. It helps students to gain broader knowledge in addition to relevant major disciplines courses as per their choices. Minor subjects may be from same or different disciplines. Student may make choices according to their interest/need, from ODL courses also. The Credit of Minor subject is 24 credits of total credits for 3 years' bachelor's degree and 32 credits of total credits for four years" bachelor's degree programme

Interdisciplinary/Multidisciplinary/Allied Courses: This is constituent discipline of the major courses and it helps learners to acquire core competence in relevant or any other independent courses of their choices. This course may be major specific or other discipline specific. Learner shall have option to choose the course from available basket of approved 2-credit certificate courses provided by the university or from any other institutions as the learner's choice. The Credit allocated for these courses is 12 creditsof total credits for 3 years' bachelor's degree and four years' bachelor's degree programme.

Internship: A student who wish to exit after successfully completion of first year (Semester-1 and Semester-2) without any backlogis required to obtain Four credits at the end of the year either through the summer internship or university approved skill based certificate courses(two courses of 2-credits each or one 4-credit course). Student is required to enrol for the certificate courses separately by paying the course fees as decided by the college/institute. For summer training, the Institute/college will grant the permission and evaluate the training outcomes. Based on satisfactory completion of the summer training, the Institute head will recommend to the university to grant four credits for summer training. The Internship/summer training/skill based certificate courseswill be an audit course.[The internship cost/fees will be bear by the student.]

Ability Enhancement Course (AEC): To be offered to students to achieve competency in a Modern Indian Language and EnglishLanguage focused on language and communication skills. It may be a major specific course. The Credit allocated for these coursesis 10 credits of total credits for 3 years' bachelor's degree and four years' bachelor's degree programme. The courses can be selectedby the college/institute from available basket of approved 2-credit certificate courses provided by the university.

Skill Enhancement Course : As per NEP(National Education Policy-2020), it is mandatory for students to select a 2credit skill enhancement course out of the choices given by the college/institute (From available basket of courses as per University norms). It will be mandatory for the student to opt minimum one 2-credit Skill enhancement course outof offered courses recognised by University during semester-1 to semester-5. The student need to enroll separately and pay the fees as decided by the respective institute/department.)

Value Addition Course: As per NEP(National Education Policy-2020), it is mandatory for students to select a 2 creditValue Addition Course out of the choices given by the college/institute (From available basket of courses as per University norms). It will be mandatory for the student to opt minimum one 2-credit Value Addition Course out of offered courses recognised by the University during semester-1 to semester-4. (The student need to enrol separately and pay the fees as decided by the respective institute/department.)

 # Marks: The scale on which the students will be evaluated. The evaluation methodology will be continuous evaluation and the score obtained will reflect in mark-sheet but not considered for SGPA or CGPA. These courses are mandatory and student is required to obtain the specified credits in process to acquire the certificate/diploma/degree. [The college/Institute will decide the fees for SEC and VAC courses based on the University norms for certificate course per creditfees.]

% : Institute/College will offer any one course from given list of Ability Enhancement Courses approved by the University.
** Major Practical based Subjects: Course 204 and 205 are major courses. Both these courses are carrying 4 credits (2 Hours of theory and 4 hours of practical per week). Both these subjects carry 150 marks of exam weightage (100 theory and 50 practical). External and Internal distribution of marks are in ratio of 50:50 respectively. Students are required to acquire minimum passing marks from theory and practical collectively. Practical exams for course-204 (2 hours duration) and course-205(2 hours duration) will be conducted on same day.

Division of Theory internal marks (CCE) :

For courses having 50 marks as Internals :
Class Assignment/Active Learning: 07 marks+Home Assignment/Field Assignment: 08 marks + Attendance: 10 + Class Test*: 25
For courses having 25 marks as Internals :
Class Assignment/Active Learning: 03 marks+Home Assignment/Field Assignment: 03 marks + Attendance: 04 + Class Test*: 15

For Practical internal marks (CCE) :

For courses having 50 marks Internals :
Attendance: 10 marks + Viva-voce/Quiz: 20 marks + Lab-work Assessment/Practical: 20 marks.For courses having 25 marks Internals :
Attendance: 5 marks + Viva-voce/Quiz: 10 marks + Lab-work Assessment/Practical: 10 marks.

Division of Practical External exam marks (SEE) :

For 25 marks Externals :
Division of marks are: Exam evaluation: 20 marks + Viva-voce: 5 Marks.
Practical examination will be conducted for course code-204 and course-205 separately on same day.
Practical examination will be conducted for course code-204 and course-205 separately on same day.Students are required to pass in combined head (Theory + Practical) for each course.

Students are required to remain present in internal and external theory and practical exams for course code – 204 and205 mandatorily.

Semester - 1

Course Code: CS-101-01

Course Title: Ability Enhancement Course – 01 (AEC-01)

Program Name	B.Sc. (Computer Science)
Semester	1
NCRF Credit Level	4.5
Course Type	Ability Enhancement Course (AEC-01) [Modern Indian Language (MIL) & English language focused on language and communication skills.]
Course Subtypes	Intra –disciplinary
Subject Type	Skill Development
Course Code	CS-101-01
Course Level	100-199 (Foundation / Introductory)
Course Title	ENGLISH PROFICIENCY AND LIFE SKILLS - I
Credits	2 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes:	**CO1:** To develop effective listening skills among students to enhance their ability to understand, interpret, and respond appropriately in academic and professional environments. **CO2:** To build teamwork and collaboration skills, enabling students to work efficiently in groups and contribute positively in organizational settings. **CO3:** To cultivate emotional intelligence, helping students to manage their emotions, understand others, and improve interpersonal relationships. **CO4:** To enhance problem-solving abilities by encouraging analytical thinking, logical reasoning, and decision-making in real-life and workplace situations. **CO5:** To strengthen overall soft skills and communication competence, including vocabulary, grammar, and real-life application of skills required for personal and professional development.
Mapping Between COs and PSOs.	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1							
CO2							
CO3							
CO4							
CO5							

Course Content	**TEXTBOOK: *English and Soft Skills* by S P Dhanavel (Orient Black swan)** Ch. 1.Listening Skills Ch. 2.Teamwork Skills Ch. 3.Emotional Intelligence Skills Ch. 4.Problem – Solving Skills **Note 1**. Understanding the Story ,Vocabulary and Grammar ,Thinking about Soft Skills, Soft Skills from the Story, Proverbs on the Skills ,Soft Skills at workplace, Real life experiences – these sections from the exercises are to be prepared for the Internal and University Exams. **2.** Understanding People , Places and events , Activity ,Self Assessment – these sections may be used for homework/ Assignments for the holistic development of students.

Reference Books	1. *Building Soft Skills for Employability* by Tran Le Huu Nghia (Routledge) 2. *Soft Skills* by M. S. Rao (Motivational Press) 3. *Personality Development and Soft Skills* by Sikha Kapoor (Dreamtech Press) 4. *Soft Skills for Success* by G.R.K. Murty (Viva)
Teaching Methodology	Class work, Discussion, Self-Study, Assignment, Homework, Activity , Self- Assessment etc.
Evaluation Method	50% Internal assessment. 50% External assessment. This course has 02 credits during the semester. The internal evaluation will be out of 25 marks, based on Unit Test marks, Library assignments and Attendance marks; while the external evaluation will be out of 25 marks at the university examination **Distribution of Marks for the University Examination as per NEP SOP** Q 1. MCQs from Understanding the Story and from Grammar and Vocabulary-**5 10 Marks** to be asked from each section (Student can attempt Any 10/10) Q 2. A. Short answer type questions (2/4) **04 Marks** (To be asked from 'Thinking about Soft Skills 'and 'Soft Skills at the Work Place') B. Expansion of an idea/ Proverb relating to soft skills-word limit-75 words (1/2) **04 Marks** C. Case Study or Real Life Experience-word limit 150 words (1/2) **07 Marks** **Total 25 Marks**

Course Code: CS-101-02
Course Title: Ability Enhancement Course – 01 (AEC-01)

[Subject code-*2311001001050001*]

Program Name	B.Sc. (Computer Science)
Semester	1
NCRF Credit Level	4.5
Course Type	Ability Enhancement Course (AEC-01) [Modern Indian Language (MIL) & English language focused on language and communication skills.]
Course SubType	Intra -disciplinary
Subject Type	Soft skill Development
Course Code	CS-101-02
Course Level	100-199 (Foundation / Introductory)
Course Title	COMMUNICATION SKILLS
Credits	2 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes:	**COI:** To make students understand the importance of effective communication skills in personal and professional life. **CO2:** student's will be able to enhance their ability in reading, writing. listening and speaking as per the demand of corporate world. **CO3:** To develop students individual as well as teamwork efficiency **CO4:** To enhance the inquisitiveness in students for up ating knowledge to solve problems, and lead to build a successful professional career. **CO5:** Students will be able to understand the importance of digital communication.
Mapping Between COs and PSOs.	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	■				■			
CO2	■			■	■		■	■
CO3			■					
CO4	■	■		■		■		
CO5	■	■		■	■			

Course Content

Unit: 1: Fundamentals of Communication
1.1 Definition and Meaning, Overview
1.2 Process of Communication
1,3 Features and Process of Professional communication
1.4 Role of creative and critical thinking in communication
1.5 Different forms of communication
1.6 Communication Network in an Organization
1,7 Barriers to communication

Unit: 2: Developing Listening skills
2.1 Listening Vs Hearing
2.2 Effective Listening
2.3 Process of Listening
2.4 Types of Listening
2.5 Barriers to effective listening

Unit: 3: Speaking Skills
3.1 Non-verbal Communication
3.2 Group-discussions-Conducting-G.D on given topics(Oral Practical)

	3.3 Dynamics of Professional presentation/Drafting Presentation on given topics 3.4 Public speaking 3.5 Conversations and Dialogue writing **Unit: 4 Reading Skills** 4.1 Need for Developing Efficient Reading 4.2 Benefits of Effective Reading 4.3 Basic steps To Effective Reading 4.4 Types of Reading 4.5 Reading Comprehension **Unit: 5 Writing Skills** 5.1 Resume writing 5.2. The art of Condensation 5.3 Business Reports 5.4 E-mail writing 5.5 Blog Writing.
Reference Books	1 Handbook of practical Communication skills Chrisle W. JAICO 2. Basic Managerial Skills for all S. J. McGrath - PIII 3. Reading to learn Sheila Smith & Thomas M. Methuen (London) 4. Communication conversation Practice Tata McGraw Hill 5. Communication in English R. P. Bhatnagar & R. T. Bell Orient Longman 6. Good English G.11 Vallins Rups & Co 7. Let's talk English M. L. Joshi
Teaching Methodology	Class work, Discussion, Self-Study, Assignment, Homework, Activity , Self- Assessment etc.
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-102
Course Title: Multi-Disciplinary Course - 01
[Subject code-2311001001043001]

Program Name	B.Sc. (Computer Science)
Semester	1
NCRF Credit Level	4.5
Course Type	Multidisciplinary Course / Inter Disciplinary Course (MDC-01)
Course Subtypes	Skill Development
Subject Type	Intra-disciplinary
Course Code	CS-102
Course Level	100-199 (Foundation / Introductory)
Course Title	Fundamentals of Mathematics [Title of the course will be the one selected by the student from courses offered by college/institute out of the course basket offered by the University under the Multi-Disciplinary courses or Inter-Disciplinary courses.]
Credits	4 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes	**CO1:** Understand and perform arithmetic operations on whole numbers, integers, fractions, exponents, radicals, and complex numbers, and solve problems involving absolute value, interval notation, and linear inequalities. **CO2:** Apply concepts of sets, intervals, roundedness', supremum, infimum, and distinguish between countable and uncountable sets, along with using the principle of mathematical induction for proofs. **CO3:** Solve linear and simultaneous equations in two variables using methods such as substitution, elimination, cross multiplication, and Cramer's rule, and solve quadratic equations using appropriate techniques. **CO4:** Interpret and apply coordinate geometry concepts including points, distance, midpoint, and straight lines to represent and solve mathematical problems graphically. **CO5:** Analyze and graph different types of functions including polynomial, exponential, and logarithmic functions, and use graphical methods to solve linear equations and inequalities.
Mapping between Cos and PSOs	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	■				■			
CO2	■			■	■			
CO3			■					
CO4	■	■		■		■	■	■
CO5	■	■		■	■		■	■

Course Content	**Unit-I:** Whole numbers, Integers, Fractions, Exponents and radicals, Complex Numbers, Arithmetic operations on complex numbers, Absolute Value, Interval notation and linear inequalities. **Unit-II:** Sets, Intervals, Boundedness of sets, Supremum and Infimum, and Countable and uncountable sets, Process of the proof by mathematical induction, application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction (weak and strong) and simple applications. **Unit-III:**

	Linear equation in two variables, Solution of simultaneous linear equations in two variables – Method of substitution, Cramer's Rule, Elimination method, Cross multiplication. Quadratic equations, methods to solve quadratic equations. **Unit-IV:** Coordinate plane, points, distance, midpoint, lines, graphical method to solve system of linear equation and linear inequalities, Introduction to functions, Polynomial functions, Graphs of functions, Exponential function, Logarithms.
Reference Books	1.Serge Lang: Basic Mathematics, Addison -Wesley Publishing Company, 1971. 2. S.C. Malik and Savita Arora, Mathematical Analysis, 2nd Edition, New Age International (P) Limited, New Delhi, India, 1994. 3. Colin McGregor, Jonathan Nimmo, Wilson Stothers: Fundamentals of University Mathematics, Woodhead Publishing, 1994. 4. Sanjay Mishra: Fundamentals of Mathematics: Functions and Graphs, Pearson, 2016.
Teaching Methodology	Class work, Discussion, Self-Study, Assignment, Homework, Activity , Self- Assessment etc.
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-103
Course Title: Fundamentals of Computers

[Subject code-2311001001030001]

Program Name	B.Sc. (Computer Science)
Semester	1
NCrF Credit Level	4.5
Course Type	Minor Course
Course Subtypes	Skill Development
Subject Type	Discipline Specific
Course Code	CS-103
Course Level	100-199 (Foundation / Introductory)
Course Title	Fundamentals of Computer
Credits	4 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes	**CO1:** To Understand the fundamental aspects of the application, typesand architecture of computers. **CO2:** To explain basic internal components of computers and conceptsof operating systems. **CO3:** To learn latest input and output devices with architecture and use. **CO4:** To generate understanding regarding cloud and internettechnology **CO5:** Hands on knowledge about using and implementing browsers,URLs and relevant uses.
Mapping between Course Outcomes(CO) with Program Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	■					
CO2		■			■	■
CO3		■			■	
CO4			■	■		■
CO5		■	■		■	■

Course Content

UNIT-1: Introduction

1.1 Introduction of Computer

1.2 Applications of Computer

1.3 Types of Computers – Super Computers, Mainframes, Mini Computers,
Micro computers(Desktop, Laptop, Notebook, Tablet, Smart Phones)

1.4 Block Diagram and functional units of computer

UNIT-2: Basic Computer Architecture

2.1 Concepts of Address Bus and Data Bus

2.2 Concept of virtual memory and cache memory

2.3.Hardware Components

2.3.1 Motherboard

2.3.2 Types of Processor (CPU and GPU)

2.3.3 Understanding processor speed

2.3.4 Memory – RAM(SRAM,DRAM, SDRAM), ROM, EPROM,EEPROM

2.3.5 Storage Devices – Hard Disk, CD, DVD, USB flash memory

2.4 Introduction to Software

	2.4.1 Purpose and significance of Operating System 2.4.2 Concept of System Software and Application Software **Unit – 3: Input & Output Devices** 3.1 Introduction of Input Devices (use, architecture and application) 3.1.1 Pointing Devices – Mouse, Trackball, Joystick, Touch Screen,Light Pen 3.1.2 Keyboard 3.1.3 RFID concepts and application in FastTag 3.2 Introduction and purpose of Scanning Devices (use, architecture andapplication) 3.2.1 Optical Scanner 3.2.2 Bar Code Reader 3.2.3 Web Camera 3.3 Introduction and comparisons of Output Devices (use, architecture andapplication) 3.3.1 Monitors – LED, LCD,TFT, OLED, TouchScreen Monitor 3.3.2 Printers – Dot Matrix Printer, Laser Printer, Inkjet Printer **Unit - 4: Concepts of Internet** 4.1 Concepts of Internet and WWW 4.4.1 Types of Internet Services 4.4.2 Hardware – Modem, Router, Bluetooth, Fire-Stick 4.4.3 Internet connections using Hotspot, WiFi, cable 4.2 Introduction of Cloud 4.2.1 Concepts of cloud 4.2.2 Purpose and application of Cloud (Example of GoogleDoc) 4.2.3 Concepts of Online Data Backup (Example Google Drive) 4.3 Introduction of Web Browser and relevant terminologies : 4.3.1.URL, Address bar, Domain, Links, Navigation Buttons 4.3.2 Tabbed browsing, Bookmarks, History
Reference Books	1. P. K. Sinha & Priti Sinha (2010), Fundamentals of Computers, Vikas Publishing House Pvt. Ltd., ISBN: 978-8125912443. 2. Reema Thareja (2016), Fundamentals of Computers, Oxford University Press, ISBN: 978-0199455277. 3. V. Rajaraman (2014), Fundamentals of Computers, PHI Learning Pvt. Ltd., ISBN: 978-8120340678. 4. Anita Goel (2010), Computer Fundamentals, Pearson Education India, ISBN: 978-8131724962. 5. Alexis Leon & Mathews Leon (2012), Fundamentals of Information Technology, Vikas Publishing House, ISBN: 978-8125938047. 6. Sanjay Saxena (2009), A First Course in Computers, Vikas Publishing House Pvt. Ltd., ISBN: 978-8125914737. 7. Pradeep K. Sinha (2013), Computer Fundamentals, BPB Publications, ISBN: 978-8176567524. 8. Peter Norton (2013), Introduction to Computers, McGraw-Hill Education, ISBN: 978-0073528318. 9. G. B. Shelly & M. Vermaat (2011), Discovering Computers Fundamentals, Cengage Learning, ISBN: 978-1111531161. 10. Douglas E. Comer (2015), The Internet Book: Everything You Need to Know About Computer Networking and How the Internet Works, Pearson Education, ISBN: 978-0133587934.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments

Evaluation Method	50% Internal assessment. 50% External assessment.

[Subject code for Theory-2411001001011001] [Subject code for Practical-2411001001011002]

Course Code: CS-104

Course Title: Programming in C

Program Name	B.Sc. (Computer Science)
Semester	1
NCRF Credit Level	4.5
Course Type	Major Course
Course SubType	Skill Development
Subject Type	Discipline Specific
Course Code	CS-104
Course Level	200-299 (Foundation / Introductory)
Course Title	Programming in C
Credits	4 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes	CO1: Explain students the fundamental aspects of the "c"programming CO2: Explain students Problem Solving techniques using Algorithms Computer Programming Paradigm. CO3: Train students to develop "C" programs for the real-world objects of composite data types. CO4: Train students to understand various "c" In-built functions and its work, CO5: Train students to implement Files I/O handling in "C" program.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2					■	
CO3					■	■
CO4	■		■			■
CO5		■		■	■	

Course Content

1. Fundamentals of Programming and Basics of "C"

1.1 Algorithm & Flowchart

1.2 Programming Languages & Structured Programming

1.2.1 Structured Programming

1.2.2 Levels of Programming languages

1.2.3 Concepts of Compiler / Interpreter, Editor

1.3 Fundamentals of "C"

1.3.1 The Basics of "C": Identifiers, key words, data types, declaration,reserved, words

1.3.2 Concept of expression, statement and block

1.3.3 Arithmetic Operators

1.3.4 Unary Operators

1.3.5 Relational Operators

1.3.6 Assignment Operators

1.3.7 Logical Operator

1.3.8 Conditional Operators

1.3.9 Control Structure

1.3.9.1 branching statement (simple if ,if ..else, nested if , else if ladder)

1.3.9.2 Looping statement (*while* Loop,*do-while* Loop, *for* Loop)

1.3.9.3 switch Statement

1.3.9.4 goto statement

	1.3.9.5 break and continue Statement **2.Arrays ,structure, union and Pointers** **2.1 Arrays** 2.1.1 Array introduction, definition, fundamental of array 2.1.2 Processing an array 2.1.3 Passing array to function 2.1.4 Multidimensional array **2.2 Structure** 2.2.1 Defining Structure 2.2.2 Working with Structure 2.2.3 User Defined Data Type (typedef) **2.3 Union** 2.3.1 Defining union 2.3.2 Working with union **2.4 Pointers** 2.4.1 Pointer Fundamentals 2.4.2 Pointer Declaration 2.4.3 Pointers and One Dimensional Array 2.4.4 Pointers and Multidimensional Array 2.4.5 Array of Pointer 2.4.6 Structure and Pointer 2.4.7 pointer to function **3. Functions** **3.1 Library Functions** 3.1.1 Arithmetic Functions 3.1.2 String handling Functions 3.1.3 Conversion Functions **3.2 User Defined Functions (UDFs)** 3.2.1 function declaration(Function Prototype) 3.2.2 Defining and Calling a Function 3.2.3 UDFs- With and without parameters and return values 3.2.4 Passing Arguments to a Function 3.2.5 Passing Pointers to a Function 3.2.6 Recursion **4. File Handling Miscellaneous.** 4.1 Opening a file & Closing a file 4.2 Reading from a file & Writing to a file 4.3 Various inbuilt functions related for file handling 4.4 Random Accessing a file 4.5 Command line arguments
Reference Books	1. E. Balagurusamy (2017), Programming in ANSI C, McGraw Hill Education, ISBN: 978-9353165137. 2. Brian W. Kernighan & Dennis M. Ritchie (1988), The C Programming Language, Prentice Hall, ISBN: 978-0131103627. 3. Yashavant P. Kanetkar (2018), Let Us C, BPB Publications, ISBN: 978-9388176719. 4. Byron S. Gottfried (2010), Programming with C, Schaum's Outline Series, McGraw Hill, ISBN: 978-0070145907. 5. Reema Thareja (2015), Programming in C, Oxford University Press, ISBN: 978-0199451996. 6. Ashok N. Kamthane (2014), Programming with ANSI and Turbo C, Pearson Education India, ISBN: 978-9332549446.

	7. Herbert Schildt (2000), C: The Complete Reference, McGraw Hill Education, ISBN: 978-0072121244. 8. Pradip Dey & Manas Ghosh (2013), Programming in C, Oxford University Press, ISBN: 978-0198089916. 9. R. G. Dromey (2007), How to Solve It by Computer, Pearson Education, ISBN: 978-8131705626. 10. Paul Deitel & Harvey Deitel (2013), C How to Program, Pearson Education, ISBN: 978-9332555553.
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

[Subject code for Theory-2411001001022001]

[Subject code for Practical-2411001001022002]

Course Code: CS-105
Course Title: Web Designing - I

Program Name	B.Sc. (Computer Science)
Semester	1
NCRF Credit Level	4.5
Course Type	Major Course
Course Subtype	Skill Development
Subject Type	Discipline Specific
Course Code	CS-105
Course Level	200-299 (Foundation / Introductory)
Course Title	Web Designing – I
Credits	4
Effective From:	A.Y. 2026-2027
Course Outcomes	**CO1:** Students will be able to identify and explain the basic concepts of HTML, including structure of web pages, tags, elements, and attributes. **CO2:** Students will be able to design and construct web pages using HTML5 elements, tables, lists, links, and multimedia components. **CO3:** Students will be able to apply CSS techniques and analyze layout requirements to develop visually effective and well-structured web pages. **CO4:** Students will be able to implement JavaScript programs using control structures, functions, and events, and analyze user interactions for dynamic web applications. **CO5:** Students will be able to develop and validate interactive web applications using JavaScript and DOM, and evaluate form inputs for correctness and usability.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	■						
CO2			■	■		■	
CO3	■	■				■	■
CO4	■	■	■	■	■		■
CO5		■		■	■	■	■

Course Content

UNIT-1: HTML & Structure Web Page

1.1 Introduction to HTML

1.1.1 Design and develop web pages using HTML tags (HTML5)

1.1.2 Structure of HTML page

1.1.3 HTML Comments

1.2 HTML Elements (<h1>…<h6>, <p>,
, <a>, <img>)

1.3 HTML Attributes (alt, href, src, width, height, style, title, id)

1.4 HTML Headings (<head>)

1.5 Text Formatting Tags(<b>, ,<i>,,<mark>, <small>, <del>,<ins>,<sub>,<sup>)

1.6 Tables

1.6.1 Table height and width

1.6.2 Table Caption

1.6.3 Cell padding and Cell Spacing

1.6.4 Column Span Rowspan

1.6.5 Links and bookmarks

1.7 List tags and its types

1.8 Frames and its uses

Unit 2. Working with HTML5 and CSS:

2.1 Concepts of CSS:

2.1.1 Adding CSS (Inline, Internal, External)

2.1.2 HTML Links and attribute.(_self, _blank, _parent, _top)

2.1.3 Absolute URL and Relative URL in <href>

2.1.4 <img> tag and its attributes (src, alt, style,width,height)

2.2 HTML forms :

2.2.1 form Elements and their attributes :

2.2.1.1 form (action, method, validate, autocomplete,target)

2.2.1.2 label, input (text, radio button, Checkboxes,submit/reset button)

2.2.1.3 select(id, name,<option>),

2.2.1.4 textarea (name, rows, cols),

2.2.1.5 button(type, onclick())

2.2.1.6 datalist

2.2.2 Media : Audio & Video Tags

Unit 3. Overview of Java Script

3.1 Overview of Client & Server-Side Scripting

3.2 Structure of Java Script

3.3 Data types and Variables

3.4 Operators (Arithmetic, Assignment, Comparison, Logical andConditional Operator)

3.5 Control Structure

3.5.1 If…Else, switch..case

3.5.2 While, Do…While, For Loop

3.5.3 break, continue

3.6 Java Script String and Events

3.6.1 Javascript Strings types

3.6.2 String functions:

concat(), split(), indexOf(), lastIndexOf(),substring(), trim(), slice(), replace(), charAt()

3.6.3 Javascript Events :

3.6.3.1 Mouse Events : (click, mouseover, mouseremove, mouseout, mouseup)

3.6.3.2 keyboard Events : (keyup, keydown)

3.6.3.3 Form Event : (focus, submit, blur, change)

3.7 Creating object :

(By object literal, By creating instance of Object, By using an object constructor)

3.7.1 Date object :

3.7.2 Date constructor: Date(), Date(milliseconds), Date(dateString), Date(year, month, day, hours, minutes, seconds,milliseconds)

3.7.3 Date Methods: getDate(), getDay(),getMonth(), getHours(), setDate, setMonth(),setDay(), toString()

3.8 Document Object Model (DOM):

3.8.1 DOM concepts

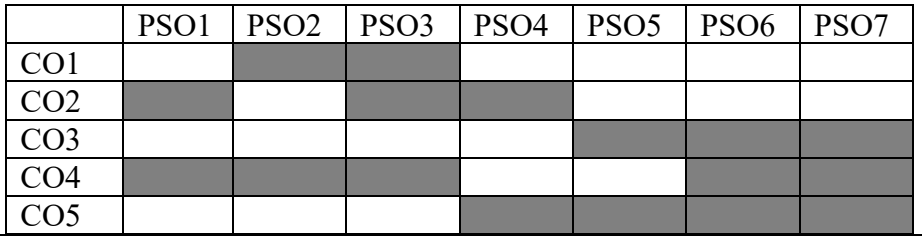
3.8.2 DOM properties

3.8.3 DOM methods :

	write(), writeln(),getElementById(),getElementsByName() **Unit-4: JavaScript Functions:** 4.1 JavaScript Functions: 4.1.1 Defining function (with and without parameters) 4.1.2 calling function 4.1.3 return statement 4.1.4 Page redirection 4.2 Dialog boxes : Alert, confirm, prompt 4.3 Form validation : 4.3.1 Basic validation (All form details are filled) 4.3.2 Data format validation (email, number, string, mobile number, name)
Reference Books	1. Jon Duckett (2011), HTML and CSS: Design and Build Websites, John Wiley & Sons, ISBN: 978-1118008188. 2. Jon Duckett (2014), JavaScript and jQuery: Interactive Front-End Web Development, John Wiley & Sons, ISBN: 978-1118531648. 3. Thomas A. Powell (2010), HTML & CSS: The Complete Reference, McGraw Hill Education, ISBN: 978-0071496299. 4. David Flanagan (2020), JavaScript: The Definitive Guide, O'Reilly Media, ISBN: 978-1491952023. 5. Robin Nixon (2018), Learning PHP, MySQL & JavaScript, O'Reilly Media, ISBN: 978-1491978917. 6. Laura Lemay, Rafe Colburn & Jennifer Kyrnin (2015), Mastering HTML, CSS & JavaScript Web Publishing, BPB Publications, ISBN: 978-8120350783. 7. Kogent Learning Solutions Inc. (2013), HTML5 Black Book: Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and jQuery, Dreamtech Press, ISBN: 978-9351194733. 8. Julie C. Meloni (2018), Sams Teach Yourself HTML, CSS & JavaScript All in One, Pearson Education, ISBN: 978-0135167066. 9. Chris Minnick & Eva Holland (2015), JavaScript for Absolute Beginners, Que Publishing, ISBN: 978-0789752960. 10. Keith J. Grant (2018), CSS in Depth, Manning Publications, ISBN: 978-1617293457.
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

Course : Skill Enhancement Course
Course Title: Word Processing, Data Processing and Presentation
Course Code : CS-106-01

[Subject code-2511001001060108]

Program Name	B.Sc. (Computer Science)
Semester	1
NCRF Credit Level	4.5
Course Type	Skill Enhancement Course
Course Subtype	Skill Development
Subject Type	Intra -discipline
Course Code	CS-106-01
Course Level	100-199 (Foundation / Introductory)
Course Title	Word Processing, Data Processing and Presentation
Credits	2
Effective From:	A.Y. 2026-2027
Course outcome	**CO1 -** Create and format professional documents using Microsoft Word. **CO2 -** Apply advanced features such as Mail Merge, Forms and Document Protection **CO3 -** Perform data handling, analysis and visualization using Microsoft Excel. **CO4 -** Design and deliver impactful presentations using Microsoft PowerPoint. **CO5 –** Use collaborative and cloud-based features of Microsoft 365 effectively.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	
Course Content	**Unit – 1: Microsoft Word – Document Creation and Formatting** **1.1 Introduction to Microsoft Word** 1.1.1 Overview of Microsoft Office Suite 1.1.2 Word Interface (Ribbon, Tabs, Backstage View) 1.1.3 Creating, Saving, Sharing Documents 1.1.4 File Formats and PDF Export 1.1.5 OneDrive and Cloud Collaboration **1.2 Text Editing and Formatting** 1.2.1 Font and Paragraph Formatting 1.2.2 Styles and Themes 1.2.3 Lists and Multilevel Numbering 1.2.4 Page Layout and Sections 1.2.5 Headers, Footers and Page Numbering **1.3 Inserting and Reviewing Tools** 1.3.1 Tables, Pictures, SmartArt and Shapes 1.3.2 Charts Integration 1.3.3 Spell Check and Grammar 1.3.4 Track Changes and Comments 1.3.5 Accessibility and Sharing Tools **Unit – 2: Advanced Word Processing and Automation**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1							
CO2							
CO3							
CO4							
CO5							

Teaching Hours: 07

2.1 Advanced Document Features

2.1.1 Table of Contents
2.1.2 Footnotes, Endnotes and Citations
2.1.3 Captions and Cross References
2.1.4 Index and Bibliography
2.1.5 Cover Page and Templates

2.2 Mail Merge and Data Integration

2.2.1 Creating Letters using Mail Merge
2.2.2 Linking Excel Data Source
2.2.3 Labels and Envelopes
2.2.4 Email Merge
2.2.5 Sorting and Filtering Data

2.3 Forms and Productivity Tools

2.3.1 Creating Fillable Forms
2.3.2 Content Controls
2.3.3 Restrict Editing and Protection
2.3.4 Macros (Introduction)
2.3.5 AI Tools (Dictation, Editor, Translator)

Unit – 3: Microsoft Excel – Data Handling and Analysis

3.1 Excel Basics

3.1.1 Workbook and Worksheet
3.1.2 Data Types and Formatting
3.1.3 Data Validation
3.1.4 Sorting and Filtering
3.1.5 Conditional Formatting

3.2 Formulas and Functions

3.2.1 Arithmetic and Logical Functions (SUM(), SUMIF(), SUMIFS(), PRODUCT(), QUOTIENT(), MOD(), POWER(), SQRT(), ROUND(), ROUNDUP(), ROUNDDOWN(), ABS(), INT(), CEILING(), FLOOR() , IF(), IFS(), AND(), OR(), NOT(), IFERROR(), IFNA(), SWITCH(), XOR())
3.2.2 Statistical Functions (AVERAGE(),,AVERAGEIFS(), COUNT(), COUNTA(), COUNTIF(), COUNTIFS(), MAX(),MIN(),MEDIAN(),LARGE(),MODE.SNGL(), SMALL())
3.2.3 Lookup Functions (VLOOKUP, XLOOKUP)
3.2.4 Date and Text Functions (TODAY(), NOW(), DATE(), DAY(), MONTH(), YEAR(), EDATE(), EOMONTH(), DATEDIF(), WORKDAY(), NETWORKDAYS(), LEFT(), RIGHT(), MID(), LEN(), TRIM(), UPPER(), LOWER(), PROPER(), CONCAT(), TEXTJOIN(), TEXT(), VALUE(),SUBSTITUTE(), REPLACE(), FIND(), SEARCH())
3.2.5 Flash Fill and Data Cleaning

3.3 Data Visualization and Analysis

3.3.1 Charts and Graphs
3.3.2 Pivot Tables and Pivot Charts
3.3.3 Slicers and Timelines
3.3.4 What-If Analysis
3.3.5 Dashboard Creation

	Unit–4: Microsoft PowerPoint – Presentation Skills **4.1 Presentation Basics** 4.1.1 Slides and Layouts 4.1.2 Themes and Design Ideas 4.1.3 Slide Master 4.1.4 Adding Multimedia 4.1.5 Hyperlinks and Action Buttons **4.2 Animations and Advanced Features** 4.2.1 Slide Transitions 4.2.2 Custom Animations 4.2.3 Morph Transition 4.2.4 Zoom Feature 4.2.5 Recording and Presenter View **4.3 Sharing and AI Tools** 4.3.1 Collaboration and Comments 4.3.2 Export to Video and PDF 4.3.3 Screen Recording 4.3.4 Designer Tool 4.3.5 Cloud-Based Presentation Sharing [Students must complete following practical assignments including: 1. Professional Letter with Mail Merge 2. Research Report with TOC and References 3. Excel Mark sheet with Grade Formula 4. Sales Analysis using Pivot Table 5. Interactive PowerPoint Presentation]
Reference Books	1. Joan Lambert & Curtis Frye (2022), Microsoft Office 365 Step by Step, Microsoft Press, ISBN: 978-0137564276. 2. Steven M. Freund, Mali Jones, Joy L. Starks & Jennifer T. Campbell (2020), Microsoft Office 365 & Office 2019 Introductory, Cengage Learning, ISBN: 978-0357025748. 3. Timothy J. O'Leary & Linda I. O'Leary (2017), Computing Essentials 2017, McGraw Hill Education, ISBN: 978-1259665469. 4. Wallace Wang (2019), Office 2019 for Dummies, John Wiley & Sons, ISBN: 978-1119576266. 5. Faithe Wempen (2019), Office 2019 Bible, John Wiley & Sons, ISBN: 978-1119514787. 6. Greg Harvey (2020), Excel 2019 All-in-One for Dummies, John Wiley & Sons, ISBN: 978-1119549895. 7. Joan Lambert (2019), Microsoft Word 2019 Step by Step, Microsoft Press, ISBN: 978-0135368616. 8. Joan Lambert (2019), Microsoft Excel 2019 Step by Step, Microsoft Press, ISBN: 978-0135437015. 9. Joan Lambert (2019), Microsoft PowerPoint 2019 Step by Step, Microsoft Press, ISBN: 978-0135368623. 10. Ramesh Bangia (2016), Learning Computer Fundamentals, MS Office and Internet & Web Technology, Khanna Book Publishing, ISBN: 978-9382609817.
Teaching Methodology	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ Field work and Assignments.

Evaluation Method	Internal Assessment : ___25____ Marks External Assessment : __ 25____ Marks Maximum Marks: 50 (Evaluation and Assessment will be carried out at institute level. On successfulcompletion of the course, the student will be granted 2 credits.

[Subject code-2611001001060260]

Skill Enhancement Course
Course Title : Desktop Publishing (DTP)
Course Code : CS-106-02

Program Name	**B.Sc. (Computer Science)**
Semester	**1**
NCrF Credit Level	**4.5**
Course Type	**SEC**
Course Subtype	**Skill Development**
Subject Type	**Discipline Specific**
Course Code	**CS-106-02**
Course Level	**UG**
Course Title	**Desktop Publishing (DTP)**
Credit	**2 Credits (1 Th + 2 PR)**
Effective From	**Academic Year : 2026-27**
Course Outcomes	After completing the course, students will be able to: **CO1 –** Understand the fundamentals of Desktop Publishing and page layout design. **CO2 -** Use DTP tools to create professional documents and layouts. **CO3 -** Apply typography, color schemes, and graphic elements effectively. **CO4 -** Design brochures, pamphlets, newsletters, and posters. **CO5 –** Prepare documents for print and digital publishing.
Mapping between Cos and PSOs	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1							
CO2							
CO3							
CO4							
CO5							

Course Content	**Unit – 1 : Introduction to Desktop Publishing** 1.1 Introduction to DTP 1.2 History and importance of DTP 1.3 Applications of Desktop Publishing 1.4 Types of DTP software 1.5 Overview of commonly used tools 1.6 Adobe PageMaker 1.7 Adobe InDesign 1.8 CorelDraw 1.9 Scribus 1.10 Basic concepts of page layout **Unit – 2 : Typography and Page Design (8 Hours)**

	2.1 Fonts and typography basics 2.2 Font families and styles 2.3 Paragraph formatting 2.4 Page layout concepts 2.5 Margins, columns, and grids 2.6 Alignment and spacing 2.7 Working with text frames 2.8 Inserting and formatting images **Unit – 3 : Graphics and Design Elements (8 Hours)** 3.1 Introduction to graphics in DTP 3.2 Image formats (JPEG, PNG, TIFF, SVG) 3.3 Importing and editing images 3.4 Working with shapes and design elements 3.5 Color models (RGB, CMYK) 3.6 Using templates and layouts 3.7 Designing simple visual compositions **Unit – 4 : Practical Design Projects (8 Hours)** 4.1 Creating the following documents using DTP tools: 4.2 Visiting Card 4.3 Poster Design 4.4 Pamphlet / Flyer 4.5 Brochure 4.6 Newsletter / Magazine Page 4.7 Preparing document for printing (PDF export, print settings)
Reference Books	1. Desktop Publishing Course Kit – Kogent Learning Solutions, Dreamtech Press. 2. Adobe InDesign Classroom in a Book – Adobe Creative Team, Adobe Press. 3. CorelDRAW: The Official Guide – Gary David Bouton, McGraw-Hill Education. 4. The Non-Designer's Design Book – Robin Williams, Peachpit Press. 5. Typography Essentials: 100 Design Principles for Working with Type – Ina Saltz, Rockport Publishers. 6. Graphic Design School: A Foundation Course for Graphic Designers – David Dabner, Thames & Hudson. 7. The Complete Manual of Typography – James Felici, Adobe Press. 8. Scribus: Open Source Desktop Publishing – Robert J. Chalmers, Friends of ED. 9. Digital Design and Desktop Publishing – Ashley Friedlein, Wiley Publishing. 10. Adobe PageMaker Classroom in a Book – Adobe Creative Team, Adobe Press.
Teaching Methodology	Lecture Method, Demonstration Method , Hands-on Practical Sessions, Assignment-Based Learning, Collaborative Learning and Continuous Assessment
Evaluation Method	Internal Assessment : 25 Marks (13 Marks Theory(MCQ Based) + 12 Marks Practical) External Assessment : 25Marks (13 Marks Theory(MCQ Based) + 12 Marks Practical)

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
Skill Enhancement Course
106-03 : Fundamentals of Windows and Office Applications

Program Name	**BSC-COMPUTER SCIENCE**
Semester	**1**
Credit Level	**4.5**
Course Type	**SEC**
Course Subtype	**Skill Enhancement Course (SEC)**
Subject Type	**Discipline Specific, Emerging Technology**
Course Code	**106-03**
Course Level	**UG**
Course Title	**Fundamentals of Windows and Office Applications**
Credit	**2 Credits (Th:1 Hr. , Pr.:2 hr.)**
Effective From	**Academic Year : 2026-27**
Course Outcomes	**CO1 - Operate and manage files in Windows OS environment.** **CO2 - Create professional documents using MS Word.** **CO3 - Perform basic data analysis using MS Excel.** **CO4 - Prepare effective presentations using MS PowerPoint.** **CO5 – Apply office tools for academic and professional purposes.**

Mapping between Cos and PSOs

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	■	■						
CO2	■	■	■					
CO3	■	■	■	■				
CO4	■	■	■	■				
CO5	■	■	■	■	■	■	■	

Course Content

Unit 1: Introduction to Windows Operating System

1.1. Overview of Operating System
1.2. Introduction to Windows environment
1.3. Desktop, Taskbar, Start Menu
1.4. File and Folder management
   a. Create, Rename, Delete, Copy, Move
1.5. File extensions and types
1.6. Control Panel basics
1.7. Installing and uninstalling software
1.8. Basic system settings
1.9. Keyboard shortcuts

Practical:

1.10. Create folder hierarchy
1.11. Organize files properly
1.12. Compress and extract files
1.13. Use system tools (Calculator, Notepad, Snipping Tool)

Unit 2: MS Word

2.1 Introduction to Word interface
2.2 Creating and saving documents
2.3 Text formatting:
a. Font, Size, Color
b. Alignment & Paragraph formatting
2.4 Page setup (Margins, Orientation, Size)
2.5 Bullets & Numbering
2.6 Tables creation & formatting
2.7 Insert images & shapes
2.8 Headers, Footers & Page numbers
2.9 Spell check & Grammar tools

Practical:

2.10 Create resume
2.11 Draft formal letter
2.12 Create formatted report
2.13 Insert table and image

Unit 3: MS Excel

3.1 Introduction to Spreadsheet
3.2 Workbook & Worksheet
3.3 Data entry & formatting
3.4 Basic formulas:
a. SUM()
b. AVERAGE()
c. COUNT()
d. MAX()
e. MIN()
3.5 Cell referencing (Relative & Absolute)
3.6 Sorting & Filtering
3.7 Conditional formatting
3.8 Creating charts:
f. Bar chart
g. Line chart
h. Pie chart

Practical:

3.9 Prepare mark sheet
3.10 Attendance sheet
3.11 Budget sheet
3.12 Generate charts from data

Unit 4: MS PowerPoint

4.1 Introduction to PowerPoint
4.2 Creating presentation
4.3 Slide layouts & themes
4.4 Insert images, shapes, SmartArt
4.5 Slide transitions
4.6 Basic animations
4.7 Slide show settings
4.8 Export presentation to PDF

Practical:

4.9 Create 5–8 slide presentation

	4.10 Topic: “Role of AI in Education” 4.11 Apply transitions & animations 4.12 Deliver short presentation
Reference Books	(1) Computer Fundamentals Author: Pradeep K. Sinha, Priti Sinha Publisher: BPB Publications ISBN: 978-8176567528 (2) Introduction to Computers Author: Peter Norton Publisher: McGraw-Hill ISBN: 978-0070679901 (3) Microsoft Office 365 & Office 2019 Step by Step Authors: Joan Lambert, Curt Frye Publisher: Microsoft Press ISBN: 978-0135957050 (4) Microsoft Office 2019 Bible Authors: Michael Alexander Richard Kusleika Publisher: Wiley ISBN: 978-1119514788 (5) Microsoft Excel 2019 Step by Step Author: Curt Frye Publisher: Microsoft Press ISBN: 978-0135957067 (6) Microsoft Word 2019 Step by Step Author: Joan Lambert Publisher: Microsoft Press ISBN: 978-0135957043 (7) Microsoft PowerPoint 2019 Step by Step Author: Joan Lambert Publisher: Microsoft Press ISBN: 978-0135957036 (8) Basic Computer Skills Author: Faithe Wempen Publisher: Wiley ISBN: 978-1119041772 (9) Windows 10 Step by Step Author: Joan Lambert, Steve Lambert Publisher: Microsoft Press ISBN: 978-0735697981 (10) Using Microsoft Office 365 Author: Kevin Wilson Publisher: Elluminet Press ISBN: 978-1913151096
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	Internal Assessment : 25 Marks (13 Marks Theory(MCQ Based) + 12 Marks Practical) External Assessment : 25Marks (13 Marks Theory(MCQ Based) + 12 Marks Practical) (Evaluation and Assessment will be carried out at institute level by seminar/online exam/offline exam/practical etc.. On successfulcompletion of the course, the student will be granted 2 credits

[Subject code-2511001001060211]

Skill Enhancement Course (SEC)
Course code: CS-106-4
Course Title: Fundamentals of Google Docs

Program Name	B.Sc. (Computer Science)
Semester	01
NCRF credit Level	4.5
Course Type	SEC
Course Sub Type	Skill Enhancement
Subject Type	Intra Disciplinary
Course Code	CS-106-04
Course Level	100-199 (Foundation /Introductory)
Course Title	Fundamentals of Google Docs
Credits	2 Credits (Pr:4 Hrs.)
Effective From:	A.Y.2026-2027
Course Outcomes	**CO1:** Understand the basic concepts, importance, and applications of Google tools and acquire essential skills to work with Google Drive, Docs, Sheets, Slides, and Forms for academic and professional use. **CO2:**Demonstrate the ability to create, organize, manage, convert, and share files and folders in Google Drive, including working with offline editing and collaboration features. **CO3:**Develop and format professional documents using Google Docs, including inserting tables, images, charts, using revision history, and managing sharing permissions for collaborative document editing. **CO4:**Create and analyze spreadsheets using Google Sheets, apply formulas, sorting, filtering, charts, and collaborative tools to organize and interpret data effectively. **CO5:**Design presentations and online surveys using Google Slides and Google Forms, including creating quizzes, managing responses, and using Google mobile applications for collaboration and data collection..
Mapping between Course Outcomes(CO)with Program Specific Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1							
CO2							
CO3							
CO4							
CO5							

Course Content	**Unit-1:** 1.1 Basic Understanding and Importance of Google 1.2 Acquire the essentials for using Google apps: Drive, Docs, Sheets, Slides, and Forms. 1.3 Move through the basics of setting up a Google Drive account 1.3.1 complete with personalized folders, helpful apps, file conversion, sharing, and even editing offline 1.3.2 Complete Practical Overview of Google Drive **Unit-2 :** 2.1 Google Doc 2.1.1 Work with the specifics on Google Docs, 2.1.2 Creating documents,

	2.1.3 Exploring and organizing own Docs, 2.1.4 Starting a new document, formatting text effectively using the toolbar, inserting images, drawings, and charts, 2.2 Creating tables, using the web clipboard to save parts of a document to paste into another one, 2.3 Different sharing modes/permissions (editing, suggesting, or viewing), 2.4 Using the revision history tool. **Unit-3 : Google Sheets** 3.1 Create, edit, analyze, manipulate, and share spreadsheets using Google Sheets. 3.2 Basic toolbar and sorting tools, 3.3 Commenting tool to collaborate, customizing/adding tabs to a sheet, using formulas, 3.4 Inserting charts to analyze information, 3.5 Sharing and permissions, freezing rows and column, and filtering to organize data. 3.6 Add-ons **Unit-4 : Google Slides** 4.1 Creating, editing, sharing, and presenting using Google Slides. 4.2 Collaboration and tools for making presentations unique and artistic. 4.3 Google Forms 4.3.1 Creating Google forms 4.3.2 Various features and setting of Google forms 4.3.3 Send and receive forms through Google Drive 4.3.4 Customize surveys and creating quizzes 4.4 Managing Reponses 4.5 Google Mobile Apps
Reference Books	1. Scott La Counte (2020), Google Drive & Docs In 30 Minutes, i30 Media Corporation, ISBN: 978-1939924596. 2. James Bernstein (2021), Google Workspace: The Ultimate Guide to Google Drive, Docs, Sheets, Slides & Forms, Independently Published, ISBN: 979-8725032489. 3. Michael Miller (2020), Google Drive & Docs: The Missing Manual, O'Reilly Media, ISBN: 978-1492072638. 4. Kevin Wilson (2019), Google Docs, Sheets, Slides & Forms for Beginners, Elluminet Press, ISBN: 978-1911174834. 5. Edward Jones (2020), Google Apps Made Easy: Learn to Use Google Drive, Docs, Sheets and Slides, Independently Published, ISBN: 978-1656482300. 6. Steven Holzner (2016), Google Docs 4 Everyone, Pearson Education, ISBN: 978-0789749366. 7. Paul McFedries (2020), Teach Yourself VISUALLY Google Workspace, Wiley Publishing, ISBN: 978-1119755739. 8. Sandra K. Smith (2018), Google Drive Essentials, Packt Publishing, ISBN: 978-1783551243. 9. Ryan Teeter (2019), Google Workspace for Beginners: A Complete Guide, Independently Published, ISBN: 978-1704048571. 10. Ramesh Bangia (2016), Learning Computer Fundamentals, MS Office and Internet & Web Technology, Khanna Book Publishing, ISBN: 978-9382609817.

Teaching Methodology	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ Field work and/or Assignments.
Evaluation Method	50%Internal assessment. (Practical / viva-voce/ lab-work/ attendance: 25 marks) 50% External assessment. (Practical and viva-voce : 25 marks) (Evaluation and Assessment will be carried out at institute level by seminar/online exam/offline exam/practical etc.. On successfulcompletion of the course, the student will be granted 2 credits

Course code: 106-04
Course Title: Skill Enhancement Course (SEC-01)

<table>
<tr><td>Program Name</td><td colspan="6">B.Sc. (Computer Science)</td></tr>
<tr><td>Semester</td><td colspan="6">01</td></tr>
<tr><td>NCRF Credit Level</td><td colspan="6">4.5</td></tr>
<tr><td>Course Type</td><td colspan="6">SEC</td></tr>
<tr><td>Course SubType</td><td colspan="6">Skill Development</td></tr>
<tr><td>Subject Type</td><td colspan="6">Intra -discipline</td></tr>
<tr><td>Course Code</td><td colspan="6">CS-106-04</td></tr>
<tr><td>Course Level</td><td colspan="6">100-199 (Foundation / Introductory)</td></tr>
<tr><td>Course Title</td><td colspan="6">Advanced Communication Skills in English -I</td></tr>
<tr><td>Credits</td><td>Theory</td><td>02</td><td>Practical</td><td>00</td><td>Total</td><td>02</td></tr>
<tr><td>Effective From:</td><td colspan="6">A.Y. 2026-2027</td></tr>
<tr><td>Course outcome</td><td colspan="6">After completing the course the students would be able to :

CO1: develop knowledge, skills and judgement around human communication that facilitate their ability to work collaboratively with others.

CO2: understand and practice different techniques of communications.

CO3: would understand the importance of effective communication personally and professionally.</td></tr>
<tr><td>Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)</td><td colspan="6"><table><tr><td></td><td>PSO1</td><td>PSO2</td><td>PSO3</td><td>PSO4</td><td>PSO5</td><td>PSO6</td><td>PSO7</td><td>PSO8</td></tr><tr><td>CO1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>Course Content</td><td colspan="6">TEXTBOOK: Pathmaker (OB)
Unit 1 : Basic Language Skills : Grammar
1. Articles
2. Prepositions
3. Tenses
Unit 2 : Communication and Writing Skills
1. Meeting People, Exchanging Greetings and Taking Leave
2. Introducing Yourself
3. Information Transfer-Table, Bar chart, Pie Chart
Unit 3 : Prose
1. The Homecoming by Rabindranath Tagore
2. A Lesson My Father Taught Me by A.P.J. Abdul Kalam</td></tr>
<tr><td>Reference Books</td><td colspan="6">1. Communication Skills by Sanjay Kumar and Pushp Lata (Oxford)
2. Communication Skills for Professionals by Nira Konar (PHI)
3. Crucial Communication Skills for Everyday by Gerard Shaw (Communication Excellence)
4. Spoken English Part I & II by Kamlesh Sadanand & Susheela Punitha (OB)</td></tr>
</table>

Teaching Methodology	Class Work/ Discussion/ Self-Study/ Assignments /Home Work/ Activity /Seminars/ Self Assessment etc.
Evaluation Method	Internal marks :20 ,External Marks :30 , Maximum Marks: 50 (This course has 02 credits during the semester. The internal evaluation will be out of 20 marks, based on Unit Test marks, Library assignments and Attendance marks; while the external evaluation will be out of 30 marks at the university examination. Evaluation and Assessment will be carried out at institute level. On successfulcompletion of the course, the student will be granted 2 credits.) **Distribution of Marks for the University Examination as per NEP SOP** Q 1. MCQS from Prose & Grammar , 5 from each (10/10) 10 Marks Q 2. A. Write a dialogue (1/2) 05 Marks 15 Marks B. Information Transfer (1/2) 05 Marks C. Self – Introduction (1/2) 05 Marks

Course code: 107
Course Title: Value Addition Course-I (VAC-01)
[Subject code-2311001001070001]

Program Name	B.Sc. (Computer Science)
Semester	01
NCRF Credit Level	4.5
Course Type	VAC
Course Subtype	Value Addition
Subject Type	Intra -discipline
Course Code	CS-107
Course Level	100-199 (Foundation / Introductory)
Course Title	Bharatiya Knowledge Systems –an Introduction
Credits	2 Credits
Effective From:	A.Y. 2026-2027
Course outcome	CO1: Students will have an understanding of the basics of the Indian knowledge system and its relevance and applications to various fields. CO2: This will ideally also inspire future research and applications of these systems in their respective academic disciplines. CO3: IKS can enhance a student's creative skills by allowing them to inculcate novel thought process. CO4: Additionally, it will help the students build their self-confidence. CO5: It will enhance their aesthetic creativity by nurturing them to be more open-minded and confident.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO6
CO1							
CO2							
CO3							
CO4							

Course Content

Unit- 1 Bharatiya Knowledge Systems and Tradition

1.1 Self – Revelation of Bharat.
1.2 Knowledge Tradition of Glorious Bharat.
1.3 The Sublime Journey of Bharatiya Culture & Civilization.
1.4 Dissemination and contribution of Bharatiya Knowledge systems in the world Glorious tradition of Science and Art in Bharat.

Unit-2 The Way of Life/ Jivan Darshan in Bharatiya Knowledge Systems

1.1 Way of life as Bharatiya Knowledge Systems.
1.2 The Implicit Concepts in Bharatiya Knowledge Systems.
1.3 Birth, Death, Rebirth, Law of Karma, Idea of Sukhha,
1.4 Social Viewpoint in Bharatiya Knowledge systems.
1.5 Co - existence of Nature and Human Nature, Manifold Paths of Upasana, Value co-Existence- Ritam.
1.6 Idea of Vasudhaiv kutumbkam.

Reference Books	1. Kapoor Kapil, Singh Avadhesh (2021). "Indian Knowledge Systems Vol – I & II", Indian Institute of Advanced Study, Shimla, H.P. 2. B. Mahadevan, Introduction to Indian Knowledge Systems, IISC Bangalore 3. R. C. Majumdar, Ancient India, Motilal Banarsidas, Publishers, New Delhi, First edition , Vransi 1952, reprint 2003. Basham, A.L. (ed.). A Cultural History of India, New Delhi, Oxford University Press, 1975. 5. Sri Aurobindo, The Foundation of Indian Culture, SABDA, Sri Aurobindo Ashram, Pondicherry,1972. Also available in Gujarati Translation as " Bhatatiya Sanskruti Na Paya." 6. Sri Aurobindo, India's Rebirth, SABDA, Sri Aurobindo Ashram, Pondichery,1972. 7. Swami Vivekananda, Bharat Ma Aapela Bhashano, Books Libraria, 2020 8. Sharad Hebalkar, Bharatiya Sanskruti No Vishva Sanchar, Sahitya Sadhana Trust, Ahmedabad, 2004. 9. Sri Aurobindo and The Mother, Char Tapasyao ane Char Mukti, SABDA, Sri Aurobindo Ashram, Pondicherry. 10. Swami Vivekananda, Sapanao Nu Bharat, Diamond Books, New Delhi. 11. B S Shah, Shikshan Chintakonu Shikshan Darshan, B S Shah Prakashan, 12. V H Patel, Hindu Dharma Ni Mahanata, Pravin Prakashan, Rajkot,2015 13. V K Bhatt, Sri Aravind Nu Tatva Darshan, University Granth Nirmana Board, Gandhinagar. 14. Katdare Indumati, Kutumb Aur Kutumb Shiksha, Punarutthan Vidyapith, Ahmedabad.
Teaching Methodology	Class Work/ Discussion/ Self-Study/ Assignments /Home Work/ Activity /Seminars/ Self Assessment etc.
Evaluation Method	50%Internal assessment. 50% External assessment. Maximum Marks: 50

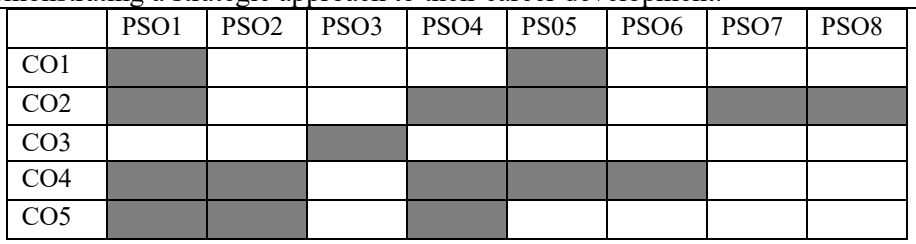
Internship: Student willing to exit the program at the end of the two semesters to avail the Certificate in Computer Science or exit the program at the end of the first four semesters and to avail the Diploma in Computer Science, it is essential to acquire four credits from internship. A key aspect of the internship is induction into actual work situations. Internships involve working with local industry, government or private organizations, business organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on-site experiential learning. In option to these internships, the student can avail such four credits by availing two 2-credit university approved courses during any of these semesters. The student is required to enroll and avail these 4-credits and produce the evidence in process to opt the multi-level exit option after successfully completion of first year (two semester) or second year(four semesters).

Semester - 2

[Subject code-2411001002050002]

Course Code: CS-201-01

Course Title: Ability Enhancement Course-02

Program Name	B.Sc. (Computer Science)
Semester	02
NCRF Credit Level	4.5
Course Type	AEC Ability Enhancement Course (AEC-02)
Course Subtype	Softskill Development
Subject Type	Intra -discipline
Course Code	CS-201-01
Course Level	100-199 (Foundation / Introductory)
Course Title	Professional Development and Ability Enhancement
Credits	2 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes	**CO1:** Self-Discovery and Awareness: Students will demonstrate an increased understanding of their personality traits, values, and motivations, fostering a greater sense of self-awareness. **CO2:** Interview Techniques: Students will exhibit proficiency in interview techniques, including effective communication, confident self-presentation, and the ability to handle various interview scenarios. **CO3:** Effective Application Writing: Students will showcase enhanced written communication skills through the creation of well-crafted resumes, cover letters, and personal statements tailored to specific job opportunities **CO4:** Budgeting Competence: Students will develop and present realistic budgets, showcasing the ability to manage financial resources effectively and plan for both short-term and long-term career goals. **CO5:** Integrated Professional Success Plan: Students will create a comprehensive professional su success plan that integrates personality development, interview strategies, application writing skills, and budgeting, demonstrating a strategic approach to their career development.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	
Course Content	**Unit-1: Personality Development** 1.1 Understanding Self 1.2 Importance of self-awareness 1.3 Personality assessments and tools 1.4 Identifying strengths and areas for improvement 1.5 Effective Communication and Interpersonal Skills 1.5.1 Verbal and non-verbal communication techniques 1.5.2 Building and maintaining positive relationships 1.5.3 Conflict resolution and collaboration skills **Unit-2: Interview Tips and Techniques** 2.1 Preparing for Success 2.2 Researching the company and job role 2.3 Crafting a compelling resume and cover letter 2.4 Developing a personal elevator pitch 2.5 Mastering the Interview 2.6 Common interview formats and question types

	2.6.1 Interview etiquette and body language 2.6.2 Strategies for handling challenging questions **Unit-3: Application Writing Skills** 3.1 Effective Application Writing 3.2 Crafting a powerful statement of purpose 3.3 Writing persuasive letters of recommendation 3.4 Tailoring applications to specific opportunities 3.5 Portfolio Development 3.5.1 Building a professional portfolio 3.5.2 Showcasing achievements, projects, and skills. 3.5.2 Showcasing achievements, projects, and SHIS 3.5.3 Online presence and personal branding **Unit-4: Fundamentals of Preparing and Presenting Budgets with Case Studies** 4.1 Budget Basics 4.1.1 Understanding financial terminology 4.1.2 Creating a personal budget fo career development 4.1.3 Introduction to budgeting tools and apps 4.2 Budgeting case studies 4.2.1 Preparing income and expenditure statements for home. 4.2.2 Allocating resources for ongoing education and skill development. 4.2.3 Preparing monthly, quarterly and yearly home budget. 4.2.4 Preparing monthly, quarterly and yearly budget for a restaurant..
Reference Books	1.)"The Power of Habit: Why We Do What We Do in Life and Business" by Charles Duhigg, ISBN: 9780812981605. ublisher: Random House 2.) "Quiet: The Power of Introverts in World That Can't Stop Talking" by Susan Cain ISBN: 9780307352149, Publisher: Crown 3.) "Cracking the Coding Interview: 189 Programming Questions and Solutions" by Gayle Laakmann McDowell ISBN: 9780984782857, Publisher: CareerCup 4.) "Sweaty Palms: The Neglected Art of Being Interviewed" by H. Anthony Medley ISBN: 9780312155668, Publisher: St. Martin's Griffin 5.) "Resumes that Knock 'em Dead" by Martin Yate ISBN: 9781440536793, Publisher: Adams Media 6.) "Cover Letter Magic, 4th Ed: Trade Secrets of Professional Resume Writers" by Wendy S. Enelow and Louise M. Kursmark, ISBN: 9781593577353, Publisher: JIST Works 7.) "Budgeting Basics and Beyond" by Jae K. Shim and Joel G. Siegel, ISBN: 9781119133899, Publisher: Wiley. 8.) "Financial Intelligence, Revised Edition: A Manager's Guide to Knowing What the Numbers Really Mean" by Karen Berman and Joe Knight ISBN: 9781422144114, Publisher: Harvard Business Review Press 9.) "What Color Is Your Parachute? 2022: Your Guide to a Lifetime of Meaningful Work and Career Success" by Richard N. Bolles ISBN: 9781984858444, Publisher: Ten Speed Press 10.) "The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change" by Stephen R. Covey ISBN: 9781982137274, Publisher: Simon & Schuster
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. One presentation by the student on given topic. A project report on given topic and participation in group discussion. 50% External assessment. Final project report will be prepared and presented by the student. Viva-voce and personal interaction with the student to evaluate student's understanding about the topics.

[Subject code-2411001002050001]

Course Code: CS-201-02
Course Title: Ability Enhancement Course – 01 (AEC-01)

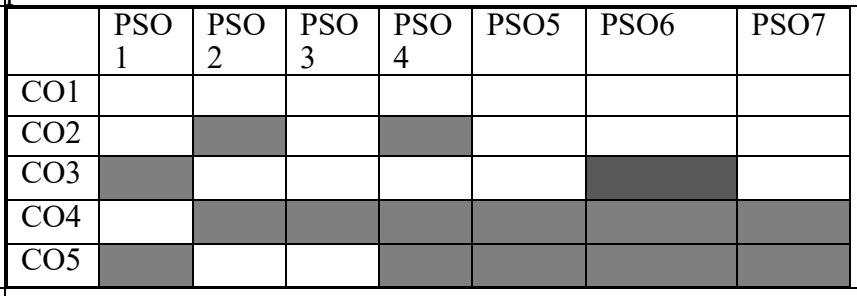
Program Name	B.Sc. (Computer Science)
Semester	2
NCRF Credit Level	4.5
Course Type	Ability Enhancement Course (AEC-01) [Modern Indian Language (MIL) & English language focused on language and communication skills.]
Course SubType	Intra -disciplinary
Subject Type	Sofskill Development
Course Code	CS-201-2
Course Level	100-199 (Foundation / Introductory)
Course Title	ENGLISH PROFICIENCY AND LIFE SKILLS- II
Credits	
Effective From:	A.Y. 2026-2027
Course Outcomes:	After completing the course the students would have CO1: understood of what Soft Skills is . CO2: understood the significance of Soft Skills in the working environment. CO3: developed levels in their ability through soft skills
Mapping Between COs and PSOs.	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO5	PSO6
CO1							
CO2							
CO3							

Course Content	**TEXTBOOK: *English and Soft Skills* by S P Dhanavel (Orient Black swan)** • Ch. 4. Assertive Skills • Ch. 5. Learning Skills • Ch. 8. Adaptability Skills • Ch. 9. Non – Verbal Communication Skills **Note** **1**. Understanding the Story ,Vocabulary and Grammar ,Thinking about Soft Skills, Soft Skills from the Story, Proverbs on the Skills ,Soft Skills at workplace, Real life experiences – these sections from the exercises are to be prepared for the Internal and University Exams. **2.** Understanding People , Places and events , Activity ,Self Assessment – these sections may be used for homework/ Assignments for the holistic development of students.
Reference Books	1.Building Soft Skills for Employability by Tran Le Huu Nghia (Routledge) 2.Soft Skills by M. S. Rao (Motivational Press) 3.Personality Development and Soft Skills by Sikha Kapoor (Dreamtech Press) 4.Soft Skills for Success by G.R.K. Murty (Viva)
Teaching Methodology	Class work, Discussion, Self-Study, Assignment, Homework, Activity , Self-Assessment etc.
Evaluation Method	50% Internal assessment. 50% External assessment.

	This course has 02 credits during the semester. The internal evaluation will be out of 25 marks, based on Unit Test marks, Library assignments and Attendance marks; while the external evaluation will be out of 25 marks at the university examination **Distribution of Marks for the University Examination as per NEP SOP** Q 1. MCQs from Understanding the Story and from Grammar and Vocabulary-**5 10 Marks** to be asked from each section (Student can attempt Any 10/10) Q 2. A. Short answer type questions (2/4) **04 Marks** (To be asked from 'Thinking about Soft Skills 'and 'Soft Skills at the Work Place') B. Expansion of an idea/ Proverb relating to soft skills-word limit-75 words (1/2) **04 Marks** C. Case Study or Real Life Experience-word limit 150 words (1/2) **07 Marks** _____ **Total 25 Marks**

Course Code: CS-202
Course Title: Multi-Disciplinary Course - 02
[Subject code-2411001002043001]

Program Name	B.Sc. (Computer Science)
Semester	2
NCRF Credit Level	4.5
Course Type	Multidisciplinary Course / Inter Disciplinary Course (MDC-01)
Course SubType	Skill Development
Subject Type	Intra-disciplinary
Course Code	CS-202
Course Level	100-199 (Foundation / Introductory)
Course Title	Matrices and determinants
Credits	4 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes	**CO1:** Understand the concept of matrices, identify different types of matrices, and perform operations such as addition, multiplication, transpose, and conjugate of matrices. **CO2:** Apply the properties of determinants to compute minors, cofactors, adjoint, and inverse of square matrices, and distinguish between singular and non-singular matrices. **CO3:** Analyze special types of matrices including symmetric, skew-symmetric, Hermitian, skew-Hermitian, orthogonal, and unitary matrices. **CO4:** Solve systems of linear equations in three variables using methods such as Martin's Rule and Cramer's Rule. **CO5:** Determine eigenvalues and eigenvectors of matrices and apply the Cayley–Hamilton theorem to compute matrix inverses and solve related problems.
Mapping between Cos and PSOs	
Course Content	**Unit-I:** Matrix, Types of Matrices, Operation on matrices, Transpose of a matrix, Conjugate of a matrix. **Unit-II:** Determinants, Properties of determinant, Minors, Cofactors, Adjoint of a matrix, Inverse of a square matrix, Singular and Non-singular Matrices. **Unit-III:** Special types of Matrices: Symmetric and Skew Symmetric, Hermitian and skew Hermitian, Orthogonal, Unitary, Methods to solve system of linear equations in three variables: Martin's Rule, Cramer's rule.

	Unit-IV: Characteristics equation of a matrix, Eigen values, Eigen vectors, Cayley-Hemilton theorem and its application to find an inverse of a matrix.
Reference Books	1. Vasistha and Vasistha: Matrices, Krishna Prakashan, 2008. 2. Shantinarayan: Text book of Matrices, S. Chand and Co., New Delhi 3. Shantinarayan and P. K. Mittal: A textbook of Matrices, S. Chand, 1953. 4. Serge Lang: Basic Mathematics, Addison-Wesley Publishing Company, 1971.
Teaching Methodology	Class work, Discussion, Self-Study, Assignment, Homework, Activity , Self- Assessment etc.
Evaluation Method	50% Internal assessment. 50% External assessment.

[Subject code-2411001002030001]

Course Code: CS-203

Course Title: E-Commerce and Cyber Security

Program Name	B.Sc. (Computer Science)
Semester	02
NCRF Credit Level	4.5
Course Type	Minor
Course Subtype	Subject Specific
Subject Type	Discipline Specific
Course Code	CS-203
Course Level	200-299 (Foundation / Introductory)
Course Title	E-Commerce and Cyber Security
Credits	4 Credits
Effective From:	A.Y. 2026-2027
Course Outcomes	At the end of the course, students are expected to have clear concepts about e-commerce, types of e-commerce, e-commerce framework, and security issues pertaining to e-commerce, cyber crimes and related cyber laws.
Mapping between Course Outcomes(CO) with Program Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PsSO5	PSO6
CO1						
CO2						
CO3						
CO4						

Course Content

Unit-1: Introduction to E-commerce

1.1 What is E-commerce
- 1.1.1 E-commerce framework
- 1.1.2 E-commerce consumer applications
- 1.1.3 E-commerce organization applications

1.2 Network for E-commerce
- 1.2.1 What is information way

Unit-2:E-commerce and World wide web

2.1 E-commerce application services
2.2 Consumer to Business Transaction
2.3 Business to Business Transaction
2.4 Security on the web
2.5 Categories of Internet data and transactions

Unit-3: E-commerce security Issues

3.1 Secure Socket layer
3.2 Types of Electronic payment systems
- 3.2.1 E-cash
- 3.2.2 Electronic checks
- 3.2.3 Smart cards and electronic payment systems

3.2.4 Credit card and debit cards payment and their authentication

	Unit-4: Introduction to Cyber Crimes 4.1 Category of cyber crimes 4.2 Technical aspects of cyber crimes 4.2.1. Unauthorized access & Hacking 4.2.2 Trojan , virus and Worm attacks 4.3 E-mail & IRC related crimes 4.3.1 Email spoofing and Spamming 4.3.2 Email bombing 4.3.2.1 Sending threatening emails 4.3.2.2 Defamatory emails 4.3.2.3 Email frauds , IRC related 4.3.2.4 Denial of Service attacks 4.3.2.5 A distributed denial of service attack **Unit-5: Prohibited actions on Cyber** 5.1 Pornography 5.2IPR violation , software piracy , copyright infringement, trademarks violation, theft of computer source code, patent violations 5.3 Cyber squatting 5.4 Cyber terrorism 5.5 Banking/Credit card related crimes 5.6 E-commerce/Investment Frauds- Sales and investment frauds 5.7 Sales of Illegal articles 5.8 Defamation(Cyber smearing) 5.9 Cyber stalking
Reference Books	1) E-Commerce: Strategy, Technologies and Applications – David Whiteley, McGraw-Hill Education, ISBN: 978-0077098366 2) Electronic Commerce: A Managerial Perspective – Efraim Turban, David King, Jae Lee, Pearson, ISBN: 978-0132145387 3) E-Commerce: Business, Technology, Society – Kenneth C. Laudon, Carol Guercio Traver, Pearson, ISBN: 978-0134837358 4) Fundamentals of E-Commerce – Ravi Kalakota, Andrew B. Whinston, Pearson, ISBN: 978-8177586844 5) Cyber Security and Cyber Laws – Alfred Basta, Nadine Basta, Cengage Learning, ISBN: 978-8131515262 6) Cyber Security Essentials – James Graham, Richard Howard, Ryan Olson, CRC Press, ISBN: 978-1439821196 7) Computer Security: Principles and Practice – William Stallings, Lawrie Brown, Pearson, ISBN: 978-0133773923 8) Network Security Essentials: Applications and Standards – William Stallings, Pearson, ISBN: 978-0134527334 9) Cryptography and Network Security – William Stallings, Pearson, ISBN: 978-9352862982 10) Cyber Laws: Intellectual Property & E-Commerce Security – Rohas Nagpal, Asian School of Cyber Laws, ISBN: 978-8190778306

Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-204
Course Title: Object Oriented Programming using C++

Program Name	B.Sc. (Computer Science)
Semester	02
NCRF Credit Level	04
Course Type	Major
Course Subtype	Skill Development
Subject Type	Discipline Specific
Course Code	CS-204
Course Level	200-299 (Foundation / Introductory)
Course Title	Object Oriented Programming using C++
Credits	4 Credits (Th: 2 Hours, Pr: 4 Hours)
Effective From:	A.Y. 2026-2027
Course Outcomes	CO1: Articulate the principal of object oriented program solving and programming. CO2: To determine the difference between traditional imperative design and object oriented design. CO3: Outline the essential features and elements of c++ programming language. CO4: To grasp and apply the concept of class , method, constructor , abstraction , inheritance and static polymorphism. CO5: To understand and apply dynamic polymorphism in real world application. CO6: To implement generosity through the usage of templates.

Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						
CO3						
CO4						
CO5						
CO6						

Course Content

Unit 1: Introduction to OOP

1.1Introduction to OOP, Features of OOP, Advantages of OOP
1.2Difference between OOP and Procedural programming
1.3Class, Object, Data member, member function
1.4 Access specifier - private, public, protected
1.5 Constructor and destructor, parameterized constructor, copyconstructor, default constructor

	1. 6. Nested classes. 1.7Inline function, default arguments 1.8Friend functions, friend classes 1.9Array of objects 1.10 new, delete operators and this pointer **Unit 2: Inheritance** 2.1 Base and derived class 2.2 Single inheritance 2.3 Multilevel and Multiple inheritance 2.4 Hybrid inheritance 2.5 Using constructor in inheritance 2.6 Abstract base class **Unit: 3 Polymorphism** 3.1 Overloading and overriding 3.2 Function overloading 3.3 Operator overloading rules and implementation 3.4 Virtual function 3.5 Early binding and late binding, runtime polymorphism 3.6 pure virtual function and its benefits **Unit 4: File handling and Template** 4.1 File - input and output - file opening modes 4.2 text and binary files 4.3 read, write operations 4.4 Benefits of text and binary files. 4.5 template
Reference Books	1. Complete reference C++ : Herbert Schildt, TMH. 2. Obj Object Oriented Programming in C++ : Robert Lafore - Galgotia Publication. 3. C+ Effective Object Oriented Software Construction - Kayshav Dattari. 4. Obj Object Oriented Programming using C++ - Addison Wesley. 5. Obj Object Oriented Programming in C++ - Balaguruswamy
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-205

Course Title: Python Programming-1

[Subject code for Theory-2411001002011001] [Subject code for Practical-2411001002011002]

Program Name	B.Sc. (Computer Science)
Semester	02
NCRF Credit Level	4.5
Course Type	Major
Course Subtype	Subject Specific
Subject Type	Discipline Specific
Course Code	CS-205
Course Level	200-299 (Foundation / Introductory)
Course Title	Python Programming-1
Credits	4 Credits (2 Th + 4 Pr)
Effective From:	A.Y. 2026-2027
Course Outcomes	**CO1:** Understand Python fundamentals, execution process, and development environments. **CO2:** Apply Python data types (string, list, dictionary) for basic operations. **CO3:** Develop programs using control structures, functions, and modules. **CO4:** Analyze data using NumPy and Pandas libraries. **CO5:** Implement file handling and CSV operations in Python.

Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	■		■		■	
CO2	■					
CO3	■				■	
CO4		■	■		■	
CO5			■			

Course Content

Unit 1 Introduction to Python

1.1 Python History and Usability
- 1.1.1 Application areas of Python
- 1.1.2 Technical Strengths of Python

1.2 Program Execution in Python - Program Execution, Python Virtual Machine (PVM)

1.3 IDLE of Python, Jupyter Notebook

Unit 2 Python Object Types and Operations

2.1 String : Indexing, Slicing, Text Parsing

2.2 List : Indexing, Slicing and Merging List

2.3 Dictionaries : Add, Update, Remove and Sort

2.4 Arrays and Matrices : Sorting and Searching

Unit 3 Python Programming Statements

3.1 Comments, Indentations, Exception Handling

3.2 Assignment, Expressions, and print

3.3 Branching and Looping - if , while and For loops

3.4 List and Dictionary Traversal

3.5 Function Basics

	3.5.1 Definition, Call, Passing Arguments 3.5.2 Lambda Functions 3.6 Modules 3.6.1 Python program structure 3.6.2 Import and Attributes 3.6.3 Module Creation and Usage **Unit 4 : Useful Python Libraries and interaction with text and CSV** 4.1 Introduction to NumPy Creating Arrays, Array Slicing, Copy, Shape, Reshape, Array Iterating, Array Join, Array Split, Array Search, Array Sort, Array Filter 4.2 Introduction to pandas Slicing the data frame, Merging & Joining. Concatenation. Changing the index. Change Column headers, Data mugging. 4.3 Data frame Handling using Panda and Numpy 4.3.1 csv and excel file extract and write using Data frame 4.3.2 Extracting specific attributes and rows from Dataframe. 4.3.3 Central Tendency measures : 4.3.3.1 mean, median, mode, variance, Standard Deviation 4.3.4 Data frame functions: head, tail, loc, iloc, value,to_numpy(), describe() 4.4 File handling (text and CSV files) using CSV module : 4.4.1 CSV module , File modes: Read , write, append 4.5 Important Classes and Functions of CSV modules: 4.5.1 Open(), reader(), writer(), writerows() 4.5.2 DictReader(), DictWrite( ).
Reference Books:	1) Learning Python – Mark Lutz, O'Reilly Media, ISBN: 978-1449355739 2) Python Crash Course – Eric Matthes, No Starch Press, ISBN: 978-1593279288 3) Core Python Programming – Wesley J. Chun, Prentice Hall, ISBN: 978-0132269939 4) Introduction to Python Programming – Y. Daniel Liang, Pearson, ISBN: 978-0132747185 5) Automate the Boring Stuff with Python – Al Sweigart, No Starch Press, ISBN: 978-1593275990 6) Python for Data Analysis – Wes McKinney, O'Reilly Media, ISBN: 978-1491957660 7) Effective Python: 90 Specific Ways to Write Better Python – Brett Slatkin, Addison-Wesley, ISBN: 978-0134034283 8) Think Python: How to Think Like a Computer Scientist – Allen B. Downey, O'Reilly Media, ISBN: 978-1491939369 9) Python Cookbook – David Beazley, Brian K. Jones, O'Reilly Media, ISBN: 978-1449340377 10) Data Science from Scratch: First Principles with Python – Joel Grus, O'Reilly Media, ISBN: 978-1492041139
Teaching Methodology:	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method:	50% Internal assessment. - Continuous evaluation, unit test, Practical, viva-voce 50% External assessment. - Theory exam and Practical exam, viva-voce

[Subject code-2611001002060262]

Course Code: CS-206-01

Course Title: Digital Content Creation and Web Designing

Program Name	B.Sc. (Computer Science)
Semester	02
NCrF Credit Level	04
Course Type	SEC
Course Sub Type	Skill Enhancement Course-02
Subject Type	Intra Disciplinary
Course Code	CS-206 – 01
Course Level	100-199 (Foundation /Introductory)
Course Title	Digital Content Creation and Web Designing
Credits	2 Credits
Effective From:	A.Y.2026-2027
Course Outcomes	CO1: Understand the fundamentals of Canva and demonstrate the ability to create and manage a free Canva account while navigating the dashboard, templates, and design workspace. CO2: Apply Canva design tools to create basic visual designs by using text formatting, shapes, elements, background settings, and image editing features. CO3: Design simple digital materials such as posters, invitation cards, logos, and certificates using Canva and export or share the designs in different formats. CO4: Understand the concept of Content Management Systems (CMS) and demonstrate the installation and configuration of WordPress on a local server environment. CO5: Manage WordPress websites by working with dashboard tools, posts, pages, media, themes, plugins, and basic maintenance tasks including updates, security, and backup concepts.
Mapping between Course Outcomes(CO)with Program Specific Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1								
CO2								
CO3								
CO4								
CO5								

Course Content	Unit – 1: Introduction to Canva and Basic Designing (Free Version) **1.1 Introduction to Canva** 1.1.1 Creating a free Canva account 1.1.2 Understanding Canva dashboard, templates and blank design option **1.2 Canva Interface and Tools** 1.2.1 Toolbar and editor panel 1.2.2 Adding and editing text, Changing font style, size, and color, Text alignment and spacing 1.2.3 Adding shapes and elements 1.2.4 Changing background color **1.3 Working with Images** 1.3.1 Using free photos and elements 1.3.2 Uploading images, Cropping images, Rotating and flipping images **1.4 Design Creation** 1.4.1 Creating a simple poster 1.4.2 Designing an invitation card 1.4.3 Designing a basic logo using text and shapes 1.4.4 Creating a simple certificate 1.4.5 Downloading design in PNG, JPG, and PDF format 1.4.6 Sharing design link **Unit 2: WordPress Fundamentals & Installation** 2.1 Concept of Website and CMS 2.2 Introduction to WordPress and its Features 2.2.1 Applications and Advantages of WordPress 2.3 System Requirements (PHP, MySQL, Web Server) 2.3.1 Installing Local Server (XAMPP/WAMP) 2.3.2 Creating Database 2.3.3 Installing WordPress on Localhost 2.3.4 Basic Configuration and Login Dashboard **Unit 3: Dashboard & Content Management** 3.1 Dashboard Overview and Menu Structure 3.2 Screen Options and Admin Toolbar 3.3 Posts and Pages 3.4 Categories and Tags 3.5 Media Library Management 3.6 Block Editor (Basic Tools) 3.7 General Settings and Permalinks 3.8 User Roles and Comment Management **Unit 4: Themes, Plugins & Maintenance** 4.1 Concept of Themes 4.2 Install and Activate Theme 4.3 Theme Customization (Logo, Menu, Widgets) 4.4 Concept of Plugins 4.5 Install Plugin 4.6 Activate / Deactivate Plugin 4.7 Delete Plugin 4.8 Updating WordPress, Themes and Plugins 4.9 Basic Security and Backup Concept

	Students must complete practical assignments including: 1. Poster Design using Canva 2. Invitation Card & Certificate Design 3. WordPress Installation on Localhost 4. Create WordPress Website (Basic) 5. Theme & Plugin Customization
Reference Books	1. Canva for Beginners – Victor Ivy – Independently Published,ISBN-13: 9798336810707 2. The Canva Story – Eric Ries – Portfolio Publications ISBN-13: 9781490532479 3. WordPress for Beginners – Dr. Andy Williams – CreateSpace, ISBN-13: 9798311699877 (2025 edition) 4. Professional WordPress – Brad Williams – Wrox Publications,ISBN-13: 9781118987247 5. WordPress All in One For Dummies – Lisa Sabin-Wilson – Wiley India ISBN-13: 9781119553168 6. Building a Website with WordPress – David Karlins – Wiley ISBN-13: 9781118008188 7. WordPress: The Missing Manual – Matthew MacDonald – O'Reilly Media ,ISBN-13: 9781491963050 8. HTML, CSS and WordPress – Jessica Minnick – Cengage India ISBN-13: 9781305394049 9. Web Design with WordPress – Parramatta – Firewall Media (India) ISBN-11: **9780357025741** 10. Mastering WordPress – Chad Tennant – BPB Publications (India) ISBN-12: **9348762826**
Teaching Methodology	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ Field work and/or Assignments.
Evaluation Method	Internal Assessment : 50% Marks External Assessment: 50% Marks Maximum Marks: 50 (Evaluation and Assessment will be carried out at institute level by seminar/online exam/offline exam/practical etc.. On successfulcompletion of the course, the student will be granted 2 credits.

Course code: 206-02 : Advance Worksheet
Course Title: Skill Enhancement Course (SEC-02)

Program Name	B.Sc. (Computer Science)					
Semester	02					
NCRF Credit Level	04					
Course Type	SEC-02					
Course SubType	Skill Development					
Subject Type	Intra -discipline					
Course Code	CS-206-02					
Course Level	100-199 (Foundation / Introductory)					
Course Title	Advance Worksheet					
Credits	Theory	02	Practical	00	Total	02
Effective From:	A.Y. 2026-2027					
Course outcome	CO1: Develop understanding of computer functions and their classifications CO2:Demonstrate proficiency in Advance Excel. CO3:Applyformatting and editing features to enhance work sheets CO4: Use styles, themes, and conditional formats to customize worksheets C05: Understand use of charts, filters and macros practical implementation					

Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1								
CO2	■							
CO3					■			
CO4		■	■			■		
CO5				■	■	■	■	■

Course Content

Unit1:Introductionto Excel

1.1 An Over view of the Screen, Navigation and Basic Spread sheet Concept What is Shopify?
1.2 Absolute and Relative Cells
1.3 Protecting and Un-Protecting work sheets and cells
1.4 Shortcut Keys

Unit2:WorkingwithFunctions&Formulas

2.1 Basic Functions
2.2 Logical If Functions
2.3 Maths & String Functions
2.4 Date &Time Functions
2.5 Real Time Problem with Solution Examples

Unit3:WorkingwithAdvanceFunctions&Formulas:

3.1 Look up Functions
3.2 Financial Functions
3.3 Statistical Functions
3.4 Conditional Formatting

	3.5 Record Macros &Freeze Panes 3.6 Real Time Problem with Solution Examples **Unit4:Filters,Shorting&Validation** 4.1 Introduction To Filters 4.2Normal Filter & Advance Filter 4.3 Data Validations 4.4 Real Time Problem with Solution Examples **Unit5:Charts& Subtotals** 5.1 Different Types of Charts 1.2 Pivot Tables and Charts 1.3 Subtotals 5.4 Real Time Problem with Solution Examples
Reference Books	**1.** Advance Excel Essentials–By Jordan Goldmeier **2.** Microsoft Excel Formulas & Functions for Dummies–By Ken Bluttman **3.** ExcelFormulas&Functions2020–ByAdamRamirez
Teaching Methodology	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ Field work and/or Assignments.
Evaluation Method	Internal Assessment : 50% Marks External Assessment : 50% Marks Maximum Marks: 50 (Evaluation and Assessment will be carried out at institute level. On successful completion of the course, the student will be granted 2 credits.

Course Code: 206-03
Course Title: Skill Enhancement Course (SEC-02)
[Subject code-2411001002060002]

Program Name	B.Sc. (Computer Science)					
Semester	02					
NCRF Credit Level	02					
Course Type	SEC (Skill Enhancement Course)					
Course SubType	Skill Development					
Subject Type	Discipline Specific					
Course Code	CS-206-03					
Course Level	100-199					
Course Title	Advanced Communication Skills in English -II					
Credits	Theory	02	Practical	00	Total	02
Effective From:	A.Y. 2026-2027					

Course outcome

After completing the course the students would be able to :

CO1: develop knowledge, skills and judgment around human communication that facilitate their ability to work collaboratively with others.

CO2: understand and practice different techniques of communications.

CO3: would understand the importance of effective Communication personally and professionally.

Mapping between Course Outcomes(COs) withProgram Specific Outcomes(PSOs)

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1					
CO2					
CO3					

Course Content

TEXTBOOK: ***Pathmaker*** (OB)

Unit 1: Basic Language Skills : Grammar & Vocabulary

1. Question Tags
2. Synonyms and Antonyms
3. Prefixes, Suffixes, Zero suffixes and Infix

Unit 2: Communication and Writing Skills

1. Making Requests and Responding to requests
2. Thanking someone and responding to thanks
3. Developing a thought
4. Information Transfer (Line Graph, Tree Diagrams)

Unit 3: Prose

1. On the Rule of the Road- A.G. Gardiner
2. The Thief- Ruskin Bond

Reference Books	1. *Communication Skills* by Sanjay Kumar and Pushp Lata (Oxford) 2. *Communication Skills for Professionals* by Nira Konar (PHI) 3. *Crucial Communication Skills* for Everyday by Gerard Shaw (Communication Excellence) 4. Spoken English Part I & II by Kamlesh Sadanand & Susheela Punitha (OB)
Teaching Methodology	Class work, Discussion, Self-Study, Assignment, Homework, Activity , Self-Assessment etc.
Evaluation Method	Internal Marks :20 External Marks :30 Total Marks :50 This course has 02 credits during the semester. The internal evaluation will be out of 25 marks, based on Unit Test marks, Library assignments and Attendance marks; while the external evaluation will be out of 25 marks at the university examination. **Distribution of Marks for the University Examination as per NEP SOP** Q 1. MCQS from Prose & Grammar , 5 from each (10/10) 10 Marks Q 2. A. Write a dialogue (1/2) 05 Marks 15 Marks B. Information Transfer (1/2) 05 Marks C. Write a paragraph or develop a thought(1/2) 05 Marks
Teaching Methodology	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ field work and/or Assignments.
Evaluation Method	50% Internal assessment. 50% External assessment. Maximum Marks: 50 - (Evaluation and Assessment will be carried out at institute level. On successfulcompletion of the course, the student will be granted 2 credits.

Course code: 207
Value Addition Course-II (VAC-02)
Course Title : Environment - I
[Subject code-2611001002077002]

Program Name	B.Sc. (Computer Science)
Semester	02
NCrFr Credit Level	4.5
Course Type	VAC
Course Subtype	Value Added Course
Subject Type	Intra-disciplinary
Course Code	CS-207
Course Level	100-199 (Foundation / Introductory)
Course Title	Environment -1
Credit	2 Credits
Effective From:	A.Y. 2026-2027
Course outcome	**CO1:** Program Outcome of learning environment studies aims to enlighten the students to realize our prime social responsibility to conserve our environment in the face of increasing human population and anthropogenic activities which is the major cause of depletion of environmental resources and ecological balance. **CO2:** An Environmental Studies major will be able to apply lessons from various courses through field experiences. These experiences will allow students to develop a better sense of not only individual organisms, but of the systems in which these organisms live. Students will also see how natural systems and human-designed systems work together, as well as in conflict with each other. **CO3:** An Environmental Studies major will be able to do independent research on human interactions with the environment. **CO4:** Developing values and attitudes towards comprehending intricate environmental economic-social issues and actively taking part in resolving present environmental issues and averting those that arise in the future.
Mapping between Course Outcomes(CO)with Program Specific Outcomes(PSO)	

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						
CO3						
CO4						

Course Content

UNIT: 1- Introduction to Environment and Environmental Studies

1.1.1 Definition and Components of Environment
1.1.2 Relationship between the different components of Environment
1.1.3 Man and Environment relationship
1.1.4 Impact of technology on Environment
1.1.5 Environmental Degradation
1.1.6 Muhidisciplinary nature of the Environment studies
1.1.7 Its scope and importance in the present day Education System

UNIT: 2-Natural Resources

2.1.1 Renewable and Non-renewable resources, exploitation and conservation, Role of individual in conservation of natural resources.
2.1.2 Water resources: Water sources Surface and Ground water sources,

	Indian and Global Scenario. 2.1.3 Land as a resource, social issues 2.1.4 Forest resources: Definition and Classification of Forests Ecological and Economic importance and benefits of forest, Indian scenario, Deforestation: causes and effects remedial measures. 2.1.5 Food resources: Sources of food, Global and Indian food demand scenario, Limits of food production, Environmental effect of Agriculture.
Reference Books	1. Agarwal, K.C.: 2001 Environmental Biology. Nidi publication Ltd., Bikaner. (TB) 2. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt.Ltd. Ahmedabad -380013. India. 3. Brunner R.C., 1989, Hazardous West incineration, McGraw Hill Inc.480p. (R) 4. Clark R.S.Marine Pollution, Clanderson Press Oxford (TB) 5. Cunningham, W.P.Cooper, T.H.Grohani, E. & Hepworth, M.T. 2001,Environmental Encyclopedia, Jaico Pub. House, Mumbai, 1196p. (R)
Teaching Methodology	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ field work and/or Assignments.
Evaluation Method	50% Internal assessment. 50% External assessment. Maximum Marks: 50 (Evaluation and Assessment will be carried out at institute level. On successfulcompletion of the course, the student will be granted 2 credits.

Internship: Student willing to exit the program at the end of the two semesters and to avail the Certificate in Computer Application or exit the program at the end of the first four semesters and to avail the Diploma in Computer Science, it is essential to acquire four credits from internship. A key aspect of the internship is induction into actual work situations. Internships involve working with local industry, government or private organizations, business organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on-site experiential learning. In option to these internships, the student can avail such four credits by availing two 2-credit university approved courses during any of these semesters. The student is required to enroll and avail these 4-credits and produce the evidence in process to opt the multi-level exit option after successfully completion of first year (two semester) or second year(four semesters).