



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, ઉદ્ધના-મગદલા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.

Tel : +91 - 261 - 2227141 to 2227146, Toll Free : 1800 2333 011, Digital Helpline No.- 0261 2388888
E-mail : info@vnsgu.ac.in, Website : www.vnsgu.ac.in

સંદર્ભ: યુનિવર્સિટી કાર્યાલયનાં તા. તા.૨૧/૦૮/૨૦૨૩, પરિપત્ર ક્રમાંક : એસ./સિલેબસ/પરિપત્ર/૨૧૭૮૦/૨૦૨૩

-: પરિપત્ર :-

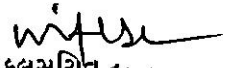
કોમ્પ્યુટર સાયન્સ એન્ડ ઈન્ફોર્મેશન ટેકનોલોજી વિદ્યાશાખા હેઠળની તમામ બીસીએ., બીએસસી. (કોમ્પ્યુટર સાયન્સ), બી. એસસી. (ડેટા સાયન્સ એન્ડ એનાલિટિક્સ) વિષય ચલાવતી સંલગ્ન કોલેજોના આચાર્યશ્રીઓ જણાવવાનું કે, NEP-2020 અંતર્ગત શૈક્ષણિક વર્ષ ૨૦૨૩-૨૪ થી અમલમાં આવનાર પ્રથમ વર્ષ બી.સી.એ./બી.એસસી. (કોમ્પ્યુટર સાયન્સ) તેમજ બી.એસસી. (ડેટા સાયન્સ) અભ્યાસક્રમમાં લાગુ થાય તે મુજબ પ્રથમ વર્ષના કોર્સમાં ઈવેલ્યુશન મેથડમાં ફેરફાર કરી ૫૦ ટકા ઈન્ટર્નલ તથા ૫૦ ટકા એક્સટર્નલ મુજબ ફેરફાર સાથે અભ્યાસક્રમને ડીનશ્રીએ કોમ્પ્યુટર સાયન્સ અને આઈ.ટી. ફેકલ્ટી વતી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ એકેડેમિક કાઉન્સિલની તા. ૧૮/૦૮/૨૦૨૩ની સભાનાં ઠરાવ ક્રમાંક: ૪૦ થી સ્વીકારી મંજૂર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

એકેડેમિક કાઉન્સિલની તા. ૧૮/૦૮/૨૦૨૩ની સભાનાં ઠરાવ ક્રમાંક: ૪૦

:: આથી ઠરાવવામાં આવે છે કે, NEP-2020 અંતર્ગત શૈક્ષણિક વર્ષ ૨૦૨૩-૨૪ થી અમલમાં આવનાર પ્રથમ વર્ષ બી.સી.એ./બી.એસસી. (કોમ્પ્યુટર સાયન્સ) તેમજ બી.એસસી. (ડેટા સાયન્સ) અભ્યાસક્રમમાં લાગુ થાય તે મુજબ પ્રથમ વર્ષના કોર્સમાં ઈવેલ્યુશન મેથડમાં ફેરફાર કરી ૫૦ ટકા ઈન્ટર્નલ તથા ૫૦ ટકા એક્સટર્નલ મુજબ ફેરફાર સાથે અભ્યાસક્રમને ડીનશ્રીએ કોમ્પ્યુટર સાયન્સ અને આઈ.ટી. ફેકલ્ટી વતી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ સ્વીકારી મંજૂર કરવામાં આવે છે.

(બિડાણ: ઉપર મુજબ)

ક્રમાંક : એસ./સિલેબસ/પરિપત્ર/૨૮૬૪૨/૨૦૨૩
તા. ૦૭/૧૧/૨૦૨૩


કુલસચિવ પળ

પ્રતિ,

૧. યુનિવર્સિટી સંલગ્ન તમામ બીસીએ., બીએસસી. (કોમ્પ્યુટર સાયન્સ), બી.એસસી. (ડેટા સાયન્સ એન્ડ એનાલિટિક્સ) વિષય ચલાવતી કોલેજોના આચાર્યશ્રીઓ.

.....આપશ્રીની કોલેજના સંબંધિત શિક્ષકોને જાણ કરી અમલ કરવા સારું.

૨) ડીનશ્રી, કોમ્પ્યુટર સાયન્સ એન્ડ ઈન્ફોર્મેશન ટેકનોલોજી વિદ્યાશાખા.

૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.....તરફ જાણ સારું.

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, 2023-2024

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)
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 1 st , 2 nd and 3 rd Year to obtain Certificate, Diploma, Degree and Honours Degree in Computer Application respectively.
Eligibility:	As per the norms of Veer Narmad South Gujarat University, Surat.
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. These program objectives collectively aim to prepare students for diverse career paths in the field of computer science, including software development, systems analysis, data analysis, cybersecurity, and research.
Program Specific Outcome:	It will open field for the aspiring students to opt further career or masters' level study in the fields of Research, Design, Architecture and software development. 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.								
PO and PSO mapping:			PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	
		PO1							
		PO2							
		PO3							
		PO4							
		PO5							
		PO6							
Medium of Instruction:	English								
Program Structure:	Semester-wise Breakup of the course is given as follows :								

Veer Narmad South Gujarat University, Surat
Program Structure: F.Y.B.Sc.(Computer Science) (SEM – 1 and SEM – 2)
(w.e.f. Academic Year June, 2023-2024)
B.Sc.(Computer Science) – Three Year Program
B.Sc.(Computer Science)(Honours)) – Four Year Integrated Program

Program Structure		Semester-wise break up for the courses :				
SEMESTER – 1						
Course Code	Course Title	Course Category	Level of Course	Course Credits	Teaching Hours/week	
				Th.+Pra.	Theory	Practical/Fieldwork/Project/Internship
CS-101	Communication Skills (AEC-01) [Modern Indian Language (MIL) & English language focused on language and communication skills.]	Ability Enhancement Course	100-199 Foundation/Introductory	2	2	0
CS-102	Multi-Disciplinary Course-01 [This is multi-disciplinary/inter-disciplinary category of course. Student can select any course from the basket of courses offered by the institute/college from available basket created by the University under the Multi-Disciplinary courses or Inter-disciplinary courses basket.] [Preferably: Mathematics/ Statistics/ Physics/ Electronics]	Multi-Disciplinary	100-199 Foundation/Introductory	4	4	0
CS-103	Fundamentals of Computer	Minor Course	100-199 Foundation/Introductory	4	4	0
CS-104	Programming in C	Major Course	200-299 Intermediate Level Course	4	2	4
CS-105	Web Designing-I	Major Course	200-299 Intermediate Level Course	4	2	4
	Practical (Based on Course Code:CS-104 & CS-105 Equally divided)	No separate credits allocated for practical. The Practical exam/viva-voce will be based on Course CS-104 and CS-105.				
CS-106	Skill Enhancement Course-I (SEC-01) [The student will undergo field training/ internship training <u>OR</u> Select minimum one University approved and recognized 2 credit certificate course from the skill based courses list offered by the respective institute/department.] (The student need to enrol separately and pay the fees as decided by the respective institute/department)	Skill Enhancement Course	100-199 Foundation / Introductory	2	-	4
CS-107	Value Addition Course – I (VAC-01) [The student will select minimum one University approved and recognized 2 credits certificate course from the Value Addition courses list offered by the respective institute/department.] (The student need to enrol separately and pay the fees as decided by the respective institute/department)	Value Addition Course	100-199 Foundation/Introductory	2	2	-
Other Activities	The student is expected to participate in activities related to National Service Scheme (NCC), National Cadet Corps (NCC), adult education/literacy initiatives, mentoring school students, Elderly literacy program/ Environment preservation activities and other similar activities.			-	-	-
Total				22	16	12

Course Code	Course Title	Course Credit	University Exam Type	Exam Duration	External Marks	Internal Marks	Total Marks
CS-101 [%]	Communication Skills (AEC-01)	2	Theory/ Written	2 Hours	25	25	50
CS-102	Multi-Disciplinary Course-02	4	Theory/ Written	2Hours and 30minutes	50	50	100
CS-103	Fundamentals of Computer	4	Theory/ Written	2Hrs & 30Mnts	50	50	100
CS-104**	Programming in C	4	Theory/ Written : Practical :	2Hrs & 30Mnts 2 Hours	50 25	50 25	150
CS-105**	Web Designing-I	4	Theory/Written : Practical :	2Hours and 30minutes 2 Hours	50 25	50 25	150
	Practical : Based on Course Code:CS-104 & CS-105)	-	No separate credits allocated for practical. The Practical exam/viva-voce will be based on Course-104 and 105.				
CS-106	Skill Enhancement Course-I (SEC-01)	2	As per Nature of Course	2 Hours	25	25	50 [#]
CS-107	Value Addition Course-I (VAC-01)	2	As per Nature of course	2 Hours	25	25	50 [#]
Total		22			325	325	650

For 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 for course-104 and 4 hours for course-105) per week should be allocated per batch. Out of which 8 hours will be in supervised mode 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 will 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.

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 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 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 other discipline 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 credits for 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 recognised 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 recognised 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 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 credit fees.]

% : 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 (2 hours 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 and 105 mandatorily.

Program Passing Rules:	As per University rules.
Program Fees : (Per Semester) (One time fees and exam fees are additional as prescribed by the university) (w.e.f. Academic Year : 2023-24)	Semester Tuition Fees : As per University norms. Semester Laboratory Utilization fees : (For Govt. and GIA colleges) : As per University norms. (For Self Finance Institutes) : Rs.1500/- [Other one time /affiliation /exam fees, will be as per the norms of the University] [The fees for all certificate courses, Skill Enhancement Courses and Value Addition Courses; fees will be as per the prescribed limit for per credit as per the SOP of certificate courses decided by the university.] [Tuition and other fees for Govt. colleges and Grant-in-aid colleges will be as per the norms of University.]

SEMESTER – 2

Course Code	Course Title	Course Category	Level of Course	Course Credits	Teaching per week	
					Theory	Practical/ Fieldwork/ Project/ Internship
CS-201	Ability Enhancement Course-II (AEC-02) [Modern Indian Language (MIL) & English language focused on language and communication skills.]	Ability Enhancement Course	100-199 Foundation/ Introductory	2	2	0
CS-202	Multi-Disciplinary Course-02 [This is multi-disciplinary/inter-disciplinary category of course. Student can select any course from the basket of courses offered by the institute/college from available basket created by the University under the Multi-Disciplinary courses or Inter-disciplinary courses basket.] [Preferably: Mathematics/ Statistics/ Physics/ Electronics]	Multi-Disciplinary	100-199 Foundation/ Introductory	4	4	0
CS-203	E-Commerce and Cyber Security	Minor Course	100-199 Foundation/ Introductory	4	4	0
CS-204	Object Oriented Programming Using C++	Major Course	200-299 Intermediate Level Course	4	4	0
CS-205	Python Programming – I	Major Course	200-299 Intermediate Level Course	4	4	0
	Practical (Based on Course Code: 204 & 205 : Equally Divided)	-	200-299 Intermediate Level Course			
CS-206	Skill Enhancement Course-II (SEC-02) [The student will undergo field training/ internship training <u>OR</u> Select minimum one University approved and recognized 2 credit certificate course from the skill based courses list offered by the respective institute/department.] (The student need to enrol separately and pay the fees as decided by the respective institute/department)	Skill Enhancement Course (Audit Course)	100-199 Foundation / Introductory	2	-	4
CS-207	Value Addition Course – II (VAC-02) [To be selected minimum one University approved and recognized 2 credit certificate course from the Value Addition Courses list offered by the respective institute/department.] (The student can select and enrol separately for the course offered by the respective institute/department and need to pay separately as decided by the institute as per norms of university for certificate courses.)	Value Addition Course	100-199 Foundation / Introductory	2	2	-
Other Activities	The student is expected to participate in activities related to National Service Scheme (NCC), National Cadet Corps (NCC), adult education/literacy initiatives, mentoring school students, Elderly literacy program / Environment preservation activities and other similar activities.			-	-	-
Total				22	16	12

Course Code	Course Title	Course Credit	University Exam Type	Exam Duration	External Marks	Internal Marks	Total Marks
CS-201%	Ability Enhancement Course (AEC -02)%	2	Theory/Written	3 Hours	25	25	50
CS-202	Multi-Disciplinary Course-02	4	Theory/Written	3 Hours	50	50	100
CS-203	E-commerce and cyber Security	4	Theory/Written	3 Hours	50	50	100
CS-204**	Object oriented Programming Using C++	4	Theory/Written:	2Hrs 30 min	50	50	150
			Practical :	2 Hours	25	25	
CS-205**	Python Programming-1	4	Theory/Written:	2Hrs 30 min	50	30	150
			Practical :	2 Hours	25	25	
CS-206	Skill Enhancement Course – II (SEC-02)	2	As per nature of course	2 Hours	25	25	50 [#]
CS-207	Value Added Course – II (VAC-02)	2	As per nature of course	2 Hours	25	25	50 [#]
Total		22			325	325	650

For Practical and Project:

- Batch Size – 40 Maximum (Desirable). Maximum 45 students can be accommodated in a batch. Separate batch should be considered 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 mode and 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 can choose 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 credits of 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 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 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 courses will 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 English Language focused on language and communication skills. It may be a major specific course. The Credit allocated for these courses is 10 credits of total credits for 3 years' bachelor's degree and four years' bachelor's degree programme. The courses can be selected by 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 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 recognised by University during semester-1 to semester-5.

(The student need to enrol 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 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 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 credit fees.]

% : 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 and 205 mandatorily.

Program Passing Rules:	As per University rules.
Program Fees : (Per Semester) (One time fees and exam fees are additional as prescribed by the university) (w.e.f. Academic Year : 2023-24)	Semester Tuition Fees : As per University norms. Semester Laboratory Utilization fees : (For Govt. and GIA colleges) : As per University norms. (For Self Finance Institutes) : Rs.1500/- [Other one time /affiliation /exam fees, will be as per the norms of the University] [The fees for all certificate courses, Skill Enhancement Courses and Value Addition Courses; fees will be as per the prescribed limit for per credit as per the SOP of certificate courses decided by the university.]

Semester - 1

Course Code: CS-101

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

Course Code	CS-101
Course Title	Communication Skill [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 Ability Enhancement courses (AEC) basket.]
Credits	2
Course Category	Ability Enhancement Course (AEC-01) [Modern Indian Language (MIL) & English language focused on language and communication skills.]
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of Course	To be offered to students to achieve competency in a Modern Indian Language and English Language focused on language and communication skills. The course will be selected by the institute from basket of courses under category AEC (Ability Enhancement Course) offered by the university. [Modern Indian Language (MIL) & English language focused on language and communication skills.]
Pre-requisite	Knowledge of English at H.Sc.(12 th) Level
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-102
Course Title: Multi-Disciplinary Course - 01

Course Code	CS-102
Course Title	Multi-Disciplinary Course – 01 [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
Course Category	Multidisciplinary Course / Inter Disciplinary Course (MC-01)
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of Course	Student will opt any one course of multi-disciplinary nature from other than the computer Science and Application faculty. The course will be offered by the institute/college passed by the Board of Studies of University faculties other than the computer science and application faculty. [Preferably: Mathematics/ Statistics/ Physics/ Electronics]
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-103

Course Title: Fundamentals of Computers

Course Code	CS-103									
Course Title	Fundamentals of Computer									
Credits	4									
Course Category	Minor Course									
Level of Course	100-199 (Foundation / Introductory)									
Teaching per Week	4 Hrs.									
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)									
Review / Revision	2022-2023									
Implementation Year:	A.Y. 2023-2024									
Purpose of Course	This course imparts the knowledge of Fundamentals of computers. The concepts of related features of internal devices, input and output devices, introduction to internet browser understanding with required function to work with.									
Course Objective	To make student understand: ➤ Architecture ,Application and types of Computer ➤ Computer peripherals input, output, network devices ➤ Operating system concept ➤ Internet ,web browser and network related hardware equipment									
Pre-requisite	None									
Course Outcomes	CO1: To Understand the fundamental aspects of the application, types and architecture of computers. CO2: To explain basic internal components of computers and concepts of operating systems. CO3: To learn latest input and output devices with architecture and use. CO4: To generate understanding regarding cloud and internet technology 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 Outcome	On completion of this course, students will get knowledge about functional units, number System, devices and memory and storage.									
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 and application) 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 and application) 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 4.1.1 Types of Internet Services 4.1.2 Hardware – Modem, Router, Bluetooth, Fire-Stick 4.1.3 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. How computer work: Ron White – Tech media 2. Introduction to computers: 4th Edition – Peter Norton 3. Fundamentals of Computers: V. Rajaraman 4. Computer Fundamentals: Pradeep K. Sinha & Priti Sinha (BPB) 5. Introduction to Networking Richard McMahon Tata McGraw Hill Publication 6. HTML Black Book – Steven Holzner – Dreamtech Press 7. Computer Network Fundamentals and application – R S Rajesh Vikas Publication 8. HTML for the World Wide Web, Fifth Edition, with XHTML and CSS- Peachpit Press
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-104
Course Title: C Programming Language

Course Code	CS-104							
Course Title	Programming in C							
Credits	4							
Course Category	Major Course							
Level of Course	200-299 (Intermediate Level)							
Teaching per Week	4 Hrs.							
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)							
Review / Revision	2022-2023							
Implementation Year:	A.Y. 2023-2024							
Purpose of Course	- Computer programming is a process that leads from an original formulation of a computing problem to executable computer programs. - Programming involves activities such as analysis, developing, understanding, generating algorithms, verification of requirements of algorithms including their correctness, and implementation (commonly referred to as coding) of algorithms in a target programming language. - To emphasis on concepts of Compiler based programming language, structure of code, algorithms, flow-charts, problem solving attitude, concepts of variables and declaration mechanism of different datatypes, simple I/O statements, conditional statements, loops, compound iterations, strings and certain inbuilt functions, header files, concepts of arrays and one dimensional numeric array operations, numeric inbuilt functions and concepts of pointers							
Course Objective	• To understand the use of problem solving tools • Paradigm of programming • To understand Structured Programming approach to problem solving using C language. • To learn various constructs of the C programming language.							
Pre-requisite	Concepts of Algorithms, flowcharts and basic Logical ability.							
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 using : composite data types CO4 Train students to understand various “c” In-built functions and its working. : 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 (<i>while</i> Loop,<i>do-while</i> Loop, <i>for</i> Loop) 1.3.9.3 <i>switch</i> Statement 1.3.9.4 <i>goto</i> statement 1.3.9.5 <i>break</i> and <i>continue</i> Statements 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 3.2.3 Passing Arguments to a Function 3.2.4 Passing Pointers to a Function
------------------------------	---

	3.3 Recursion 4. Files Handling and 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. “C Language Programming”, By Gottfried, Tata McGraw Hill 2. Let Us C - Yashwant Kenetkar 3. C Programming Language – Kernighan & Ritchie - TMH 4. ‘C’ Odyssey (6 volumes) – Vijay Mukhi – PHI 5. C: How to Program, 6 th Edition, Deitel & Deitel, PHI 6. Magnifying C, Arpita Gopal – PHI 7. Problem Solving with C, Somashekara - PHI 8. Programming in ‘C’ --- Stephan Kochan - CBS 9. Mastering Turbo C --- Kelly & Bootle - BPB 10. Mastering Turbo C --- Stan Kelly – BPB ford
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

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

Course Code	CS-105						
Course Title	Web Designing – I						
Credits	4						
Course Category	Major Course						
Level of Course	200-299 (Intermediate Level)						
Teaching per Week	4 Hrs.						
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)						
Review / Revision	2022-2023						
Implementation Year:	A.Y. 2023-2024						
Purpose of Course	This course imparts the knowledge of HTML page development. Course offers concepts related to various tags of HTML 5.0. The course is aimed to give inner depth of java script for client side programming to make web pages more interactive.						
Course Objective	- To make students understand the fundamentals of developing websites using HTML Technology. - Students will be able to make web pages more interactive using Java Script						
Pre-requisite	Basic knowledge of Internet and web browsers						
Course Outcomes	CO1: Explain students the fundamental concepts of HTML CO2: Explain students to use various tags to make simple websites CO3: Train students to use CSS to make web pages effective and maintain consistent design through web pages. CO4: Explain students to use java script to do interactive programming for certain client side validations and business roles.						
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)		PSO1	PSO2	PSO3	PSO4	PsSO5	PSO6
	CO1						
	CO2						
	CO3						
	CO4						
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>,) 1.3 HTML Attributes (alt, href, src, width, height, style, title, id) 1.4 HTML Headings (<head>) 1.5 Text Formatting Tags(, ,<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 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 and Conditional 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. HTML & CSS: The Complete Reference - Thomas Powell - McGraw Hill Education 2. HTML Unleashed, Darnell Rick –Techmedia 3. HTML, XHTML, and CSS Bible - Steven M. Schafe - Wiley Publications 4. Cascading Style Sheets- The Definitive Guide, E. A Meyer –O'Reilly 5. Java Scripting Programming for Absolute Beginner, Harris -PHI 6. JavaScript Step by Step, Suehring -PHI 7. Bootstrap in 24 Hours, Sams Teach Yourself - JenniferKyrnin 8. Learning Bootstrap 4 - Matt Lambert – Packt Publishing 9. Bootstrap Responsive Web Development - Jake Spurlock - O'Reilly Media. 10. JavaScript and JQuery (Interactive Front-End Web Development) by Jon Duckett 11. JavaScript and JQuery (The missing manual) by David Sawyer MCFarland
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

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

Course Code	106
Course Title	Skill Enhancement Course - I (SEC – 01)
Credit	2
Category of Course	Skill Enhancement Course
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	4 Hours (Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of 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. - It will be mandatory for the student to opt minimum one 2-credit Skill Enhancement Course out of the list of offered courses recognised by the University during semester-1 to semester-5. - The student can start an alternative career in the field by obtaining higher degree of knowledge in the area. - It's aimed at imparting practical skills, embedded internship, hands-on training, soft skills, life skills, such approved online courses etc. to enhance the employability of students. This may also include courses as per the need of new evolving technology.
Course Objective	Obtaining skill in particular field along with the regular curriculum of the selected program is essential. It not only enhance the skill but also provide an opportunity to develop skill in particular area where one can pursue career in future. Skill enhancement provides the opportunity and knowledge for an individual to develop and strengthen the necessary skills to gain, maintain, and advance in a chosen area. Skill enhancement programs are focused around training that combines the best practices from varieties of areas. Skill enhancement or training typically uses a combination of cognitive and behaviour problem solving approaches, both of which are used to strengthen a person's positive skill develop.
Pre-requisite	- As per the nature of course.
Course outcome	CO1: Student select the area of skill as per his/her interest. The choices will be given by the institute/department. CO2: The student acquire basic and fundamental level of knowledge in the field that the student opted. CO3: Understand the insight of the area and possibility of to explore more in the field. CO4: Understand effective representation of problems in terms addressing the problems. CO5: Learn to upskill and upgrade the knowledge in the area of selected subject.
Course Content and Implementation road-map.	(i) University has categorised and prepared the basket of the courses including approved online courses that can be offered as Skill Enhancement Course. (ii) The institute/college/department can design and implement skill enhancement course by getting approval from the relevant apex body of the university considering the SOP of the certificate course policies of the University. (iii) The institutes/college/departments can select more than one course out of the given sets of courses and offer them to their students.

	(iv) The students can select any of the courses offered by the institute/college/department from the given choices and enrol for the course. (v) The institute/college/department will arrange appropriate resource person(s) for the course. (vi) The course evaluation will be taken place at the college/institute/department level based on the nature of the course. (vii) The institute/college/department will assess the student based on the nature of the course. The student will be granted the credits on successful completion of the course.
Reference Books	- The reference materials and books will be decided by the Institutes/Colleges/Departments based on the selected Courses. - Minimum five copies of relevant topics are recommended to keep in the library.
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 successful completion of the course, the student will be granted 2 credits.

Course code: 107
Course Title: Value Addition Course-I (VAC-01)

Course Code	107
Course Title	Value Addition Course - I (VAC – 01)
Credit	2
Category of Course	Value Addition Course
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	2 Hrs (Any or Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of 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. It will be mandatory for the student to opt minimum one 2-credit Value Addition Course out of the list of offered courses recognised by the University during semester-1 to semester-4. The student can start an alternative career in the field by obtaining higher degree of knowledge in the area.
Course Objective	Obtaining knowledge in all or any of the components/fields like (i) Understanding India (ii) Environmental Science/Education (iii) Digital/Technological solutions (iv) Health & Wellness, Yoga education, sports, and fitness are essential for holistic development (v) Indian Knowledge system(IKS). The course components should be among these five categories/fields and as per the Curriculum and Credit Framework for Undergraduate Programmes of the UGC (Page-22 of the document). The purpose is to impart knowledge and understand the necessities of these aspects in life to make the healthy society and nation. It help in development of a dedicated and responsible citizen of the country by adding value to the life.
Pre-requisite	-
Course outcome	CO1: Student select the area of Value addition as per his/her interest. The choices will be given by the institute/department. CO2: The student acquire basic and fundamental level of knowledge in the field that the student opted. CO3: Understand the insight of the area and possibility of to explore more in the field. CO4: Understand effective representation of problems, solutions and insights of the challenges and problems of the peer subject relevant to value addition. CO5: Learn to upskill and upgrade the knowledge in the area of selected subject.
Course Content and Implementation road-map.	(i) The university has categorised and prepared the list of the courses that can be offered as Value Addition Course. (ii) The institute/college/department can design and implement skill enhancement course by getting approval from the relevant apex body of the university considering the SOP of the certificate course policies of the University. (iii) The institutes/college/departments can select more than one course out of the given sets of courses and offer them to their students. (iv) The students can select any of the courses offered by the institute/college/department from the given choices and enrol for the course. (v) The institute/college/department will arrange appropriate resource person(s) for the course. (vi) The evaluation will be taken place at the college/institute/department based on the nature of the course.

	(vii) The institute/college/department will assess the student based on the nature of the course. The student will be granted the credits on successful completion of the course.
Reference Books	- The reference materials and books will be decided by the Institutes/Colleges/Departments or as per the university guidelines based on the selected Courses. - Minimum five copies of relevant topics are recommended to keep in the library.
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 successful completion of the course, the student will be granted 2 credits.

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

Course Code: CS-201

Course Title: Ability Enhancement Course-02

Course Code	CS-201
Course Title	Ability Enhancement Course – 02 [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 Ability Enhancement courses.]
Credits	2
Course Category	Ability Enhancement Course (AEC-02)
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of Course	To be offered to students to achieve competency in a Modern Indian Language and English Language focused on language and communication skills. This will be an elective course. Can be selected from the list of elective options available under the basket of Ability Enhancement certificate Courses offered by the University.
Course Objective	The course aim at enabling the students to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic writing skills that help students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity. They would also enable students to acquaint themselves with the cultural and intellectual heritage of the chosen MIL and English language, as well as to provide a reflective understanding of the structure and complexity of the language/literature related to both the MIL and English language. The courses will also emphasize the development and enhancement of skills such as communication, and the ability to participate/conduct discussion and debate.
Pre-requisite	Knowledge of English at H.Sc.(12 th) Level
Course Outcomes	The list of Electives are showing individual course's Course Outcomes.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	The list of Ability Enhancement Elective courses are showing mapping between Course Outcomes(CO) with Program Specific Outcomes (PSO) for individual courses.
Course Content	The list of Electives are showing individual course's Course Contents.
Reference Books	- The list of reference books will be decided by the Institutes/Colleges/Departments or as per the university guidelines based on the selected Courses. - Minimum five copies of five different titles relevant topics are recommended to keep in the library. Electives are showing individual course's reference books.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Code: CS-202
Course Title: Multi-Disciplinary Course - 02

Course Code	CS-202
Course Title	Multi Disciplinary Course – 02 [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
Course Category	Multidisciplinary Course (MC-02)
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of Course	- 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 pool of courses or from any other institutions as the learner's choice. - Interdisciplinary course can help to gain the skills needed to adapt to a rapidly changing workplace, combining theory with practice to help students develop valuable transferable skills. - Multi-disciplinary course allows the students to understand the power of new ideas. It helps them to develop a pragmatic attitude by allowing them to decide what subjects they will opt for and what could be their possible benefits. They get time to make a decision by calculating the risks & advantages. - Student can opt any one course of multi-disciplinary nature from other than the computer Science and Application faculty. The course will be offered by the institute/college passed by the Board of Studies of University faculties other than the computer science and application faculty. [Preferably: Mathematics/ Statistics/ Physics/ Electronics]
Course Objective	- Integration of Knowledge and Skills: One objective of a multidisciplinary course is to foster the integration of knowledge and skills from different disciplines. By combining various areas of study, students can gain a holistic understanding of a particular topic or problem. This objective aims to break down the traditional boundaries between subjects and encourage students to see connections and relationships across different fields. - Promoting Critical Thinking and Problem Solving: Another objective is to enhance students' critical thinking and problem-solving abilities. Multidisciplinary courses often involve complex real-world issues that require a multifaceted approach. By engaging with diverse perspectives and methodologies, students develop the capacity to analyze problems from multiple angles, think creatively, and propose innovative solutions. - Enhancing Collaboration and Communication Skills: Collaboration and effective communication are essential skills in today's interconnected world. Multidisciplinary courses aim to cultivate these skills by providing opportunities for students to work collaboratively with peers from different disciplines. Through group projects, discussions, and presentations, students learn how to articulate their ideas, listen actively to others, and collaborate effectively to achieve common goals. This objective prepares students for interdisciplinary work environments and encourages the exchange of ideas across disciplinary boundaries
Pre-requisite	-

Course Outcomes	CO1: Analyze complex societal issues using multiple disciplinary perspectives, fostering a comprehensive understanding of interconnected factors. CO2: Apply interdisciplinary knowledge and skills to propose innovative solutions to real-world problems, demonstrating the practical application of cross-disciplinary approaches. CO3: Critically evaluate and synthesize information from diverse sources, developing the ability to integrate and make connections between different disciplinary perspectives. CO4: Collaborate effectively with peers from various backgrounds, demonstrating strong teamwork and communication skills in multidisciplinary settings. CO5: Demonstrate adaptability and flexibility in navigating and addressing interdisciplinary challenges, showcasing the ability to think creatively and embrace diverse viewpoints
Course Outcome	- The course outcome of a multidisciplinary course is typically to provide students with a comprehensive understanding of a specific topic or problem by integrating knowledge and perspectives from multiple disciplines. This outcome aims to develop critical thinking skills, problem-solving abilities, interdisciplinary collaboration, and the capacity to apply diverse approaches to real-world issues. Ultimately, the course seeks to prepare students for interdisciplinary work environments and equip them with the skills necessary to tackle complex, multifaceted challenges. - The course outcome of an interdisciplinary course is to enable students to integrate knowledge and methodologies from different disciplines in order to gain a holistic understanding of a specific topic or problem. This outcome aims to develop students' ability to think critically across disciplinary boundaries, synthesize information from diverse sources, and apply interdisciplinary approaches to address complex real-world challenges. The course also seeks to enhance students' communication and collaboration skills, preparing them to work effectively in interdisciplinary teams and contribute to cross-disciplinary discussions and solutions.
Course Content	Course content will be based on the selected course from the basket of courses of Multi-Disciplinary courses or Inter-Disciplinary courses.
Reference Books	- As mentioned in the course structure for the selected course.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

Course Title: E-Commerce and Cyber Security

Course Code	CS-203							
Course Title	E-Commerce and Cyber Security							
Credits	4							
Course Category	Minor Course							
Level of Course	100-199 (Foundation / Introductory)							
Teaching per Week	4 Hrs.							
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)							
Review / Revision	2022-2023							
Implementation Year:	A.Y. 2023-2024							
Purpose of Course	This course imparts the knowledge of Electronic commerce, online order processing concepts and related threats. The concepts of electronic transactions, e-commerce framework, related security issues and threats are covered in this course. It also highlights the issues related to cyber crime, types of possible cyber crimes and related issues. The course is aimed to give e-commerce related issues and concepts.							
Course Objective	CO1: To make students understand concepts of e-commerce framework. CO2: To make students understand concepts of types of online transactions. CO3: To make students understand the basic concepts of security issues pertaining to e-commerce. CO4: To make students understand various possible cyber crimes and its related laws.							
Pre-requisite	Basic knowledge of computer.							
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, 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: 1. Introduction to E-commerce 1. What is E-commerce 1.1.2 E-commerce framework 1.2. E-commerce consumer applications 1.2.1 E-commerce organization applications 1.2.2 Network for E-commerce 1.2.3 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 5.2 IPR violation , software piracy , copyright infringement, trademarks violation, theft of computer source code, patent violations 5.3 Cybersquatting 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 Strategies --- Charle s Trepper 2.)E- Commerce an Indian Perspective—Joseph- PHI 3.)Electronics Commerce : A Managerial Perspective – Efraim Turban, Jae Lee 4.)Cyber Crime in India ---- Dr M Dasgupta 5.)Cyber Law and Crimes – BarkhaU, Rama Mohan 6.)Cyber Laws Law---Dr Sarla Gupta 7.)Email Hacking - Ankit Fadia Ethical hacking Guide to Corporate Security—Ankit Fadia
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++

Course Code	CS-204								
Course Title	Object Oriented Programming using C++								
Credits	4								
Course Category	Major Course								
Level of Course	200-299 (Intermediate Level)								
Teaching per Week	2 Hours (theory) + 4 Hours Practical.								
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)								
Review / Revision	2022-2023								
Implementation Year:	A.Y. 2023-2024								
Purpose of Course	This course imparts the knowledge of Object Oriented Programming Language. The concepts of class, objects and related features of OOPs are covered in this course. The course is aimed to give the inner depth of Object oriented programming language concepts								
Course Objective	To make student understand: • Use of problem solving tools • Paradigm of programming • Structured Programming approach to problem solving using C ++ language. Various constructs of C++ programming language								
Pre-requisite	Concepts of C programming Language.								
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 genericity 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 1.4Access specifier - private, public, protected 1.5Constructor and destructor, parameterized constructor, copy constructor, default constructor								

	1. 6. Nested classes. 1.7 Inline function, default arguments 1.8 Friend functions, friend classes 1.9 Array 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

Course Code	CS-205								
Course Title	Python Programming-I								
Credits	4								
Course Category	Major Course								
Level of Course	200-299 (Intermediate Level)								
Teaching per Week	2 Hours (Theory) + 4 Hours (Practical)								
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)								
Review / Revision	2022-2023								
Implementation Year:	A.Y. 2023-2024								
Purpose of Course	● Implementing Basic concepts, methods ● Use Tools/IDE of python programming. ● Use Python Object Types and Operations(String, list, dictionary, matrices, set etc.) ● Implementing Python Programming Basics like variable, loops, branching, function and modules ● Implementing various inbuilt functions of Python Libraries like numpy, pandas etc. ● Interaction with text and CSV ● Data Visualization using data frame								
Course Objective	To make students learn of python programming skill for high level Computational programming.								
Pre-requisite	The basic knowledge of C programming language.								
Course Outcomes	C01: Understand and aware about Various IDEs of Python. C02: Understand the concepts of Basic Python Programming C03: Learn to handle list, set, dictionary and array C04: Understand the use of loops ,branches ,functions, modules, libraries etc. C05: Learn pandas library C06: Learn file handling C07: Learn the concepts of leader and leadership style C08: Learn data visualization.								
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)			PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	
	CO1								
	CO2								
	CO3								
	CO4								
	CO5								
	CO6								
	CO7								
	C08								
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 Data frame.
 - 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(), DictReader(), DictWrite().
- 4.6 Data Visualization :
 - 4.6.1 Importing matplotlib.pyplot and plotting:
 - (only two dimensional Plots)
 - 4.6.1.1 range() , subplot() , legend(), columns(), len() functions.
 - 4.6.2 Scatter plot: concept of Scatter plot, set title, xlabel and ylabel
 - 4.6.3 Line chart : concept of line plot: plot(), set_title(), legend()
 - 4.6.4 Histogram chart : Concepts of histogram hist(), set title, xlabel,ylabel
 - 4.6.5 Bar Chart : Concepts of Bar chart, bar(),set title, xlabel and ylabel.

Reference Books	1. Learning Python -Mark Lutz : O'Reilly Media 2. Core Python Programming – by Wesley J Chun ISBN-13: 978-0132269933 3. Python for Everybody: Exploring Data in Python 3, by Charles Severance (Author), Aimee Andiron (Illustrator), Elliott Hauser (Editor), Sue Blumenberg (Editor) 4. An Introduction to Python - by van Rossum Guido ISBN: 9780954161767, 0954161769 5. Core Python Application Programming – by Wesley J Chun Prentice Hall
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.

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

Course Code	206
Course Title	Skill Enhancement Course - II (SEC – 02)
Credit	2
Category of Course	Skill Enhancement Course
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	4 Hrs (Any or Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of 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. - It will be mandatory for the student to opt minimum one 2-credit Skill Enhancement Course out of the list of offered courses recognised by the University during semester-1 to semester-5. - The student can start an alternative career in the field by obtaining higher degree of knowledge in the area. - It's aimed at imparting practical skills, embedded internship, hands-on training, soft skills, life skills, such approved online courses etc. to enhance the employability of students. This may also include courses as per the need of new evolving technology.
Course Objective	Obtaining skill in particular field along with the regular curriculum of the selected program is essential. It not only enhance the skill but also provide an opportunity to develop skill in particular area where one can pursue career in future. Skill enhancement provides the opportunity and knowledge for an individual to develop and strengthen the necessary skills to gain, maintain, and advance in a chosen area. Skill enhancement programs are focused around training that combines the best practices from varieties of areas. Skill enhancement or training typically uses a combination of cognitive and behaviour problem solving approaches, both of which are used to strengthen a person's positive skill develop.
Pre-requisite	-
Course outcome	CO1: Student select the area of skill as per his/her interest. The choices will be given by the institute/department. CO2: The student acquire basic and fundamental level of knowledge in the field that the student opted. CO3: Understand the insight of the area and possibility of to explore more in the field. CO4: Understand effective representation of problems in terms addressing the problems. CO5: Learn to upskill and upgrade the knowledge in the area of selected subject.
Course Content and Implementation road-map.	(i) University has categorised and prepared the basket of the courses including approved online courses that can be offered as Skill Enhancement Course. (ii) The institute/college/department can design and implement skill enhancement course by getting approval from the relevant apex body of the university considering the SOP of the certificate course policies of the University. (iii) The institutes/college/departments can select more than one course out of the given sets of courses and offer them to their students.

	(iv) The students can select any of the courses offered by the institute/college/department from the given choices and enrol for the course. (v) The institute/college/department will arrange appropriate resource person(s) for the course. (vi) The course performance evaluation of student will be taken place at the college/institute/department level based on the nature of the course. (vii) The institute/college/department will assess the student based on the nature of the course. The student will be granted the credits on successful completion of the course.
Reference Books	- The reference materials and books will be decided by the Institutes/Colleges/Departments based on the selected Courses. - Minimum five copies of relevant topics are recommended to keep in the library.
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 successful completion of the course, the student will be granted 2 credits.

Course code: 207
Course Title: Value Addition Course-II (VAC-02)

Course Code	207
Course Title	Value Addition Course - II (VAC – 02)
Credit	2
Category of Course	Value Addition Course
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	2 Hrs (Any or Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of 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. It will be mandatory for the student to opt minimum one 2-credit Value Addition Course out of the list of offered courses recognised by the University during semester-1 to semester-4. The student can start an alternative career in the field by obtaining higher degree of knowledge in the area.
Course Objective	Obtaining knowledge in all or any of the components/fields like (i) Understanding India (ii) Environmental Science/Education (iii) Digital/Technological solutions (iv) Health & Wellness, Yoga education, sports, and fitness are essential for holistic development (v) Indian Knowledge system (IKS). The course components should be among these five categories/fields and as per the Curriculum and Credit Framework for Undergraduate Programmes of the UGC (Page-22 of the document). The purpose is to impart knowledge and understand the necessities of these aspects in life to make the healthy society and nation. It help in development of a dedicated and responsible citizen of the country by adding value to the life.
Pre-requisite	-
Course outcome	CO1: Student select the area of Value addition as per his/her interest. The choices will be given by the institute/department. CO2: The student acquire basic and fundamental level of knowledge in the field that the student opted. CO3: Understand the insight of the area and possibility of to explore more in the field. CO4: Understand effective representation of problems, solutions and insights of the challenges and problems of the peer subject relevant to value addition. CO5: Learn to upskill and upgrade the knowledge in the area of selected subject.
Course Content and Implementation road-map.	(i) The university has categorised and prepared the list of the courses that can be offered as Value Addition Course. (ii) The institute/college/department can design and implement skill enhancement course by getting approval from the relevant apex body of the university considering the SOP of the certificate course policies of the University. (iii) The institutes/college/departments can select more than one course out of the given sets of courses and offer them to their students. (iv) The students can select any of the courses offered by the institute/college/department from the given choices and enrol for the course. (v) The institute/college/department will arrange appropriate resource person(s) for the course. (vi) The evaluation will be taken place at the college/institute/department based on the nature of the course. (vii) The institute/college/department will assess the student based on the nature of the course. The student will be granted the credits on successful completion of the course.

Reference Books	- The reference materials and books will be decided by the Institutes/Colleges/Departments or as per the university guidelines based on the selected Courses. - Minimum five copies of relevant topics are recommended to keep in the library.
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 successful completion 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).