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 તમામ **બી.સી.એ.** કોલેજોનાં આચાર્યશ્રીઓને જણાવવાનું કે, શૈક્ષણિક વર્ષ ૨૦૨૬–૨૭ થી અમલમાં આવનાર F.Y.B.C.A. (Honours) Sem.-1 & 2 નો પેટાસમિતિ દ્વારા તૈયાર કરવામાં આવેલ અભ્યાસક્રમ કોમ્પ્યુટર સાયન્સ વિષયની અભ્યાસ સમિતિની તા.૨૫/૦૩/૨૦૨૬ ની સભાના ઠરાવ ક્રમાંકઃ૧૮ થી મંજૂર કરી કોમ્પ્યુટર સાયન્સ ફેકલ્ટીને કરેલ ભલામણ કોમ્પ્યુટર સાયન્સ ફેકલ્ટીની તા.૨૯/૦૪/૨૦૨૬ ની સભાના ઠરાવ ક્રમાંકઃ૧૫ થી મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ ને એકેડેમિક કાઉન્સિલની તા.૦૭/૦૫/૨૦૨૬ની સભાનાં ઠરાવ ક્રમાંકઃ૫૬ થી મંજૂર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

બિડાણઃ ઉપર મુજબ

ક્રમાંકઃઓથો./પરિપત્ર/સિલેબસ/૧૦૦૪૭/૨૦૨૬
તા.૧૬–૦૫–૨૦૨૬

કુલસચિવ

પ્રતિ,
૧) યુનિવર્સિટી સંલગ્ન બી.સી.એ. કોલેજોનાં આચાર્યશ્રીઓ.
.....આપશ્રીની કોલેજના સંબંધિત શિક્ષકોને જાણ કરી અમલ કરવા સારૂ.
૨) ડીનશ્રી, કોમ્પ્યુટર સાયન્સ વિદ્યાશાખા.
૩) પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.
.....તરફ જાણ તેમજ અમલ સારૂ.

Structure of Program (FYBCA Semester-1)

Course Category	Course Code	Course Title	Mark sheet Title in English	Level of Course	Teaching Hours/Week		Exam Duration		Credit	Internal Marks		External Marks		Total Marks
					TH	PR	TH	PR		TH	PR	TH	PR	
MAJOR	104	Computer Programming and Programming Methodology	Computer Programming and Programming Methodology	200-299	2	4	1	2	4	25	25	25	25	100
	105	Data Processing and Analysis	Data Processing and Analysis	200-299	2	4	1	2	4	25	25	25	25	100
MINOR	103	Introduction to Computers	Introduction to Computers	100-199	4	-	2	-	4	50	-	50	-	100
MDC	102	Mathematics	Mathematics	100-199	4	-	2	-	4	50	-	50	-	100
AEC	101	Communication Skills	Communication Skills	100-199	2	-	1	-	2	25	-	25	-	50
SEC*	106-1	Mastering Worksheet	Mastering Worksheet	100-199	-	4	-	2	2	-	25	-	25	50
	OR													
	106-2	Fundamentals of Google Cloud Application	Fundamentals of Google Cloud Application	100-199	-	4	-	2	2	-	25	-	25	50
VAC/ VAC-IKS	107	Bharatiya Knowledge Systems –an Introduction	Bharatiya Knowledge Systems –an Introduction	100-199	2	-	1	-	2	25	-	25	-	50

* External examination of **SEC Practical** would be conducted at college level

Structure of Program (FYBCA Semester-2)

Course Category	Course Code	Course Title	Mark sheet Title in English	Level of Course	Teaching Hours/Week		Exam Duration		Credit	Internal Marks		External Marks		Total Marks
					TH	PR	TH	PR		TH	PR	TH	PR	
MAJOR	204	Programming Skills	Programming Skills	200-299	2	4	1	2	4	25	25	25	25	100
	205	Concepts of Relational Database Management Systems	Concepts of Relational Database Management Systems	200-299	2	4	1	2	4	25	25	25	25	100
MINOR	203	Operating System	Operating System	100-199	4	-	2	-	4	50	-	50	-	100
MDC	202-1	Computerized Financial Accounting	Computerized Financial Accounting	100-199	4	-	2	-	4	50	-	50	-	100
	OR													
	202-2	Organizational Structure & Behaviour	Organizational Structure & Behaviour	100-199	4	-	2	-	4	50	-	50	-	100
AEC	201	Professional Development and Ability Enhancement	Professional Development and Ability Enhancement	100-199	2	-	1	-	2	25	-	25	-	50
SEC*	206-1	Mastering SQl PLSQL	Mastering SQl PLSQL	100-199	-	4	-	2	2	-	25	-	25	50
	OR													
	206-2	Designing and Publishing Website	Designing and Publishing Website	100-199	-	4	-	2	2	-	25	-	25	50
	OR													
	206-3	Application of AI for Students	Application of AI for Students	100-199	-	4	-	2	2	-	25	-	25	50
VAC/ VAC-IKS	207	Environment - 1	Environment - 1	100-199	2	-	1	-	2	25	-	25	-	50

* External examination of **SEC Practical** would be conducted at college level

Veer Narmad South Gujarat University, Surat

Computer Science and Information Technology Faculty

Syllabus for(Semester-I and Semester-II) of B.C.A. (Honours)

As per NEP- 2020

To be implemented from Academic Year: June, 2026-2027 (Including Winter Session)

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

Name of Program:	Bachelor of Computer Application(Honours)
Abbreviation:	B.C.A.(Honours): Four-year Integrated Program with Multi-Level Entry and Exit option
Multi-level Exit Criteria:	i) Under Graduate Certificate in Computer Application: 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 Application: 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.C.A. (Bachelor's in Computer Application): If the students wish to exit after completion of Third year (Semester-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.C.A.(Honors) degree program with multilevel exit options at 1st, 2nd and 3rd Year to obtain Certificate, Diploma, Degree and Honours Degree in Computer Application respectively.
Eligibility:	Candidate must have passed standard 12th (H.S.C.) Examination in Science (Any Group) / Commerce / vocational / General stream from Gujarat Higher Secondary Board (G.H.S.E.B.) or any other equivalent board (C.B.S.E. / I.C.S.E. etc. which must be approved and possess equivalence certificate from Veer Narmad South Gujarat University) with English as one of the subject. In case of candidates passed out from 12th Board from General Stream; Statistics/Economics/Business Mathematics/Accountancy must be one of the subjects. In case of Students passed out with 12th (H.S.C.) vocational stream, Computer and English must be one of the subject.
Objective of the Program:	Bachelor of Computer Application (BCA) (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 aims 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 aims 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 problem solving, logical, reasoning and analysis capabilities of a problem and integrate the ability with the coding using specific computer programming languages. **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:** Design, implement and evaluate a computer-based system, processing, component or program to meet desired goal with the help of various programming languages, application software, packages, tools, databases on various platforms. **PO5:** An ability to apply design and development principles in construction of software systems of varying complexity using various algorithmic principles, modeling, coding and design of computer-based systems. **PO6:** Prepare the aspiring students to become computer software professionals who can work in corporate/software industry at entry to advanced level as well as independent developers. Overall, the program outcomes aim to produce graduates who are: (a) competent in computer application, development and design. (b) Adapt to changing technology and industry trends. (c) Can make significant contributions to the software applications coding, designing, database managements, testing, deployments and ready to adapt any upcoming technologies.
Program Specific Outcome:	**PSO1:** Developing understanding about the fundamentals of core concepts of logic developments, critical thinking and problem solving capabilities. Emphasis on effective communication.

PSO2: Improving analytical and applied concepts using various technologies, coding concepts and implementation of coding to solve the problems.

PSO3: Development of team building concepts and working in team with positive approach, enhancing the mindset to contribute as an individual to the team. Improving interpersonal skills.

PSO4: Improving student's Understanding related to technical problems and enhancing their capabilities to address the problems to turn into solutions through various possible ways by enhancing critical thinking ability.

PSO5: Develop students to capabilities for self-learning, skill development through self-practicing and problem solving abilities.

PSO6: Develop students to address and work on the real-world problems as an individual and as part of team. Understand the business problems and ability to work on their solutions by applying various software technologies.

PSO7: To enhance development skills at various level including problem analysis, data analysis, logical and critical analysis of the problems and implementing the solutions by imparting various recent and upcoming technologies.

PSO8: Enhance the passion among the students for updating knowledge, innovative ideas, up skilling and implementing the knowledge in applied areas and research areas by understanding the real world problems, addressing the real world problems and their possible solutions that lead to build a successful Professional career.

PO and PSO mapping:

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
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.C.A.(SEM–1 and SEM–2)

(w.e.f. Academic Year June, 2026-2027)

Bachelor of Computer Application (B.C.A.) – Three Year Program

Bachelor of Computer Application (B.C.A.(Hon.))–Four Year Integrated Program

Program Structure Semester-wise breakup 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
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
102	Mathematics (Student will opt any one course of multi-disciplinary nature from the basket of courses under Multi-Disciplinary/Inter-Disciplinary courses by the Institute/College And approved by the University).	Multi-Disciplinary/ Inter-Disciplinary	100-199 Foundation/ Introductory	4	4	0
103	Introduction to Computers	Minor Course	100-199 Foundation/ Introductory	4	4	0
104	Computer Programming and Programming Methodology (CPPM)	Major Course	200-299 Intermediate Level Course	4	2	4
105	Data Processing and Analysis (DPA)	Major Course	200-299 Intermediate Level Course	4	2	4
	Practical (Based on Course Code:104 & 105 Equally divided)	No separate credits allocated for practical. The Practical exam/viva-voce will be based on Course 104 and 105				
106	**Skill Enhancement Course-I (SEC-01)**	Skill Enhancement Course	100-199 Foundation Introductory	2	-	4
107	**Value Addition Course–I (VAC-01)** Bharatiya Knowledge Systems – an Introduction	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 (SEE) Marks	Internal (CCE) Marks	Total Marks
101	Communication Skills (AEC-01)	2	Theory/ Written	1 Hour	25	25	50
102	Mathematics	4	Theory/ Written	2 Hours	50	50	100
103	Introduction to Computers	4	Theory/Written	2 Hours	50	50	100
104**	Computer Programming and Programming Methodology (CPPM)**	4	Theory/Written: Practical :	1 Hour 2 Hours	25 25	25 25	100
105**	Data Processing and Analysis (DPA)**	4	Theory/Written: Practical :	1 Hour 2 Hours	25 25	25 25	100
106-01# 106-02#	Mastering Worksheet Fundamentals of Google Cloud Application	2	As per need of course	1 Hour	25	25	50#
107	Bharatiya Knowledge Systems –an Introduction(VAC-01)	2	As per need of Course	1 Hour	25	25	50#
Total		22			275	275	550

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 exceeds 45 numbers.
- Practical includes Practical sessions for course-104 and course-105.**Minimum** Eight Practical hours(4 hours for course-104 and 4 hours for course-105) per week should be allocated per batch.

- 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.

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 is12 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 cost/fees will be bear by the student.]

Skill Enhancement Course: As per NEP (National Education Policy-2020), it is mandatory for students to select 2 credits skill enhancement course (SEC) from offered course list. It will be mandatory for the student to opt minimum one 2-credits Skill enhancement course out of offered courses list (i.e.106-01 or 106-02) during semester-1.

Value Addition Course: As per NEP (National Education Policy-2020), it is mandatory for students to do 2-credits Value Addition Course during semester-1.

 # 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.

**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 100 marks of exam weightage (50 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.
External Theory Practical exam marks (25 marks each for course-104 and course-105)

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

For Practical internal marks(CCE):
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-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)	Semester Tuition Fees : As per norms of University Semester Laboratory Utilization fees : Rs.1,500/- [Other one time/affiliation/exam fees and other fees under various heads, will be as per the norms of the University.]

SEMESTER–2

Course Code	Course Title	Course Category	Level of Course	Course Credits	Teaching per week	
					Theory	**Practical/ Field work/ Project/ Internship**
201	Professional Development and Ability Enhancement **(AEC-02)** [Modern Indian Language(MIL) & English language focused on language and communication skills. The institute can offer any of the University approved course under the basket of AEC]	Ability Enhancement Course	100-199 Foundation/ Introductory	2	2	0
202-01 202-02	Computerized Financial Accounting **OR** Organizational Structure & Behaviour (Student will opt any one course of multi-disciplinary nature.)	Multi-Disciplinary	100-199 Foundation/ Introductory	4	4	0
203	Operating System	Minor Course	100-199 Foundation/ Introductory	4	4	0
204	Programming Skills	Major Course	200-299 Intermediate Level Course	4	2	4
205	Concepts of Relational Database Management Systems	Major Course	200-299 Intermediate Level Course	4	2	4
	Practical (Based on Course Code: 204 & 205:Equally Divided)	No separate credits allocated for practical. The Practical exam/viva-voce will be based on Course 204 and 205				
206	**Skill Enhancement Course-II (SEC-02)**	Skill Enhancement Course	100-199 Foundation/Introductory	2	-	4
207	**Value Addition Course–II (VAC-02)**	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
201	Professional Development and Ability Enhancement (AEC-02)	2	Theory/Written	1Hour	25	25	50
202-01 202-02	Computerized Financial Accounting **OR** Organizational Structure & Behaviour	4	Theory/Written	2 Hours	50	50	100
203	Operating Systems	4	Theory/Written	2 Hours	50	50	100
204**	Programming Skills	4	Theory/Written: Practical:	1 Hour 2 Hours	25 25	25 25	100
205**	Concepts of Relational Database Management Systems	4	Theory/Written Practical:	1 Hour 2Hours	25 25	25 25	100
206-01# 206-02# 206-03#	Mastering SQl PLSQL Designing and Publishing Website Application of AI for Students	2	As per need of the course	2 Hours	25	25	50#
207	Environment -1(VAC-02)#	2	As per need of Courses	2 Hours	25	25	50#
Total		22			275	275	550

For Practical and Project:

- BatchSize–40 Maximum (Desirable). Maximum 45 students can be accommodated in a batch. Separate batch should be considered if the student strength exceeds 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.
- 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(Continuousand 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.

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.

Internship: A student who wish to exit after successfully completion of first year(Semester-1and 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 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 3years' 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 2 credits skill enhancement course (SEC) from offered course list. It will be mandatory for the student to opt minimum one 2-credits Skill enhancement course out of offered courses list (i.e.206-01, 20-02 or 206-03) during semester-2.

Value Addition Course: As per NEP (National Education Policy-2020), it is mandatory for students to do 2-credits Value Addition Course during semester-2.

#Marks:: The students will enroll for the course from the given university approved list of certificate courses offered by the respective college/department. The student will select and enroll separately for any of the offered list of courses at college/department/institute and obtain respective credits. The institute will evaluate the performance (preferably continuous evolution) as per the SOP of certificate courses and on successfully completion of the course, the student will be eligible to obtain respective credits for the course. These credits will be considered and reflect in student's mark-sheet as well as in ABC(Academic Bank of Credit). The marks obtained for these courses will not considered in calculating the SGPA and CGPA. Moreover, these courses are mandatory and student is required to obtain the specified credits in process to acquire the certificate/diploma/degree.

****Major Practical based Subjects:** Course204 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 100 marks of exam weightage (50 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. 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)	Semester Tuition Fees : As per norms of University Semester Laboratory Utilization fees : As per norms of University [Other one time/affiliation/exam fees, will be as per the norms of the University]

Semester-1

Course Code: 102

Course Title: MATHEMATICS

Course Code	102 ***[Subject code-2311000901040001]***
Course Title	Mathematics (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.]
NCrF Credit level	4.5
Course Type	MDC
Course subtype	Employability
Subject Type	Intra disciplinary
Level of Course	100-199(Foundation/Introductory)
Credits	4 Credits - Theory: 4 Hrs
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review/Revision	2025-2026
Implementation Year:	A.Y.2026-2027
Purpose of Course	To impart fundamental knowledge and develop mathematical abilities relevant to applications relevant to Computer Applications. [In lieu of this course, Student can opt any one course of multi-disciplinary/inter-disciplinary 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.]
Course Objective	To Provide a foundation in mathematical concepts and methods that are relevant to Computer Applications and develop the ability to apply mathematical knowledge and techniques to solve problems in computing.
Pre-requisite	Knowledge of Fundamentals of Mathematics of 10th Grade Level
Course Outcomes	**CO1:** Define and explain the fundamental concepts of Mathematical Abilities in organizations. **CO2:** Students can apply set theory concepts to real-world scenario, such as analyzing survey data. **CO3:** Enhance student's logical reasoning to solve problems in various contexts, such as puzzles or legal arguments by learning Truth table. **CO4:** Course aims to equip students with the knowledge and skills to define and operate matrices, compute solutions to business problems through the use of mathematical concepts and techniques. **CO5:** Course aims to develop students' ability to think logically and critically, as well as to apply mathematical concepts and techniques to real-world problems. **CO6:** Develop independent learning skills, including the ability to research and Explore mathematical concept.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	
Course Outcome	After studying the course, students will be able to Implement acquired skills in writing codes using programming languages.

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	■							
CO2		■		■				
CO3	■						■	
CO4	■	■	■		■			
CO5					■	■	■	
CO6	■				■			■

Course Content	**Unit 1. Set Theory** 1.1.Introduction 1.2.Representation 1.3.Operationanditsproperties 1.4.Venn Diagram 1.5.Cartesianproductandgraph **Unit2. Functions** 2.1. Definition 2.2. Types–Domain and Range 2.3. Construction and functions **Unit3. Mathematical Logic** 3.1. Introduction to logic 3.2. Truth Table **Unit4. Boolean Algebra** 4.1. Definition & Examples of Boolean Algebra 4.2. Boolean Functions 4.3. Representation and minimization of Boolean Functions 4.4. Design example using Boolean algebra **Unit5. Matricesand Determinants** 5.1. Matrices of order M*N 5.2. Row and Column transformation 5.3. Addition, Subtraction and multiplication of Matrices 5.4. Computation of Inverse 5.5. Cramer's Rule 5.6. Business Application of Matrices
Reference Books	1. Co-ordinate Geometry– Shanti Narayan 2. Linear Algebra – Sushoma Verma 3. Advanced Mathematics – B. S. Shah & Co. 4. Schaum's Outline of Boolean algebra and switching circuits – Elliot Mendelson 5. Digital Computer Fundamentals –Tata McGraw Hill, 6th Edition, Thomas C. Bartee 6. Business Mathematics-Qazi Zameeruddin, V. K. Khanna and S. K. Bhambri, Vikas Publishing House Pvt. Ltd.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	Internal Assessment :50 Marks External Assessment :50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. 50% External assessment. - Written Theory exam

Course Code: 103
Course Title: Introduction to Computers

Course Code	103 ***[Subject code-2311000901030001]***
Course Title	Introduction to Computers
NCrF Credit level	4.5
Course Type	Minor
Course Subtype	NIL
Subject Type	Discipline Specific
Level of Course	100-199(Foundation/Introductory)
Credits	4 Credits - Theory: 4 Hrs
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review /Revision	2025-2026
Implementation Year:	A.Y.2026-2027
Purpose of Course	- Concepts and types of computer and various hardware technologies relevant to computer as well as some important peripherals will be covered. - Introduction of computer internal memories, number systems and conversions from decimal to binary. - Exposure of various input and output devices as well as concepts of Internet and relevant gadgets and their application
Course Objective	To provide knowledge of functional units, number System, Devices and memory & its storage.
Pre-requisite	-
Course Outcomes	**CO1:** Students will be able to develop interest in using computers for professional work. **CO2:** Students will be able to learn functional units of computers, how they process information with other computing systems and devices. **CO3:** Students will be able to understand basic computer hardware components. **CO4:** Students will be able to express the major concepts of Application software and System Software. **CO5:** Student will be able to learn how the computer represents and stores information using binary number system, and will be able to convert between binary and decimal number system. **CO6:** Students will be able to understand the functions of input output devices, know the different types of I/O Devices, and assess new technology used for I/O devices. **CO7:** Students will be able to understand types of internet services, internet connections, and also able to learn the concept of cloud applications, essential web browser technologies.
Mapping between Course Outcomes(CO) with Program Outcomes(PSO)	
Course Outcome	On completion of this course, students will get knowledge about functional units, Number System, devices and memory and storage.

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	■	■						
CO2	■	■		■	■			
CO3					■	■	■	
CO4			■	■	■	■	■	
CO5		■		■	■			
CO6						■	■	■
CO7				■	■	■	■	■

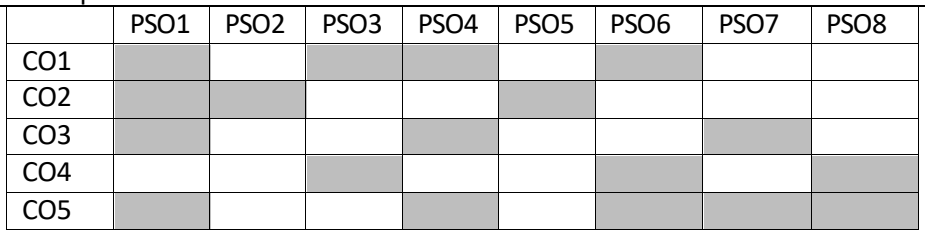
Course Content	**UNIT-1: Introduction** 1.1. Introduction of Computer and its characteristics 1.2. Applications of Computer 1.3. Types of Computers – Super Computers, Mainframes, Mini Computers, Micro computers(Desktop, Laptop, Notebook, Tablet, Smart Phones) 1.4. Block Diagram and functional units of computer **UNIT-2: Basic Computer Architecture** 2.1. Concepts of Address Bus, Control Bus, Power 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. Concept of System Software and Application Software 2.4.2. Purpose and significance of Operating System 2.5. Number System 2.5.1. Introduction of Decimal, Binary, Octal and Hexadecimal number Systems. 2.5.2. Conversion of Decimal to Binary and Binary to Decimal 2.5.3. Binary addition & subtraction 2.5.4. ASCII and ANSI character code **Unit–3: Input & Output Devices** 3.1. Introduction of Input Devices 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 3.2.1. Optical Scanner 3.2.2. Bar Code Reader 3.2.3. Web Camera 3.3. Introduction and comparisons of Output Devices 3.3.1. Monitors–LED, LCD, OLED, Touch Screen 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 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 Rechard McMohan 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	Internal Assessment :50 Marks External Assessment :50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. 50% External assessment. - Written Theory exam

*[Subject code for Theory-**2411000901011001**] [Subject code for Practical-**2411000901011002**]*

Course Code: 104

Course Title: Computer Programming & Programming Methodology (CPPM)

Course Code	104
Course Title	Computer Programming & Programming Methodology(CPPM)
NCrF Credit level	4.5
Course Type	Major
Course Subtype	Skill Development
Subject Type	Discipline Specific
Level of Course	200-299(Intermediate Level)
Credits	4 Credits - Theory : 2 hrs + Practical: 4 hrs = Total : 6 Hrs
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review/Revision	2025-2026
Implementation Year:	A.Y.2026-2027
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 data types, simple I/O statements, conditional statements, loops, compound iterations, strings and certain inbuilt functions, header files, concepts of arrays, Structure, Union, User defined function, numeric inbuilt functions and concepts of pointers
Course Objective	To introduce students the essentials of computer Programming and Programming methodology using C Programming language.
Pre-requisite	-
Course Outcomes	**CO1:** Students will be able to learn programming concept of compiler based programming language. **CO2:** Students will be proficient working on conditional statements, iterative Statements and fundamentals of programming concepts using C and Python. **CO3:** Students will be able to understand and implement conditional statements and improve their logical and reasoning abilities. **CO4:** Students will be able to develop understanding about iterative statements and their practical use. **CO5:** Students will learn about arrays, structure, User Defined Function and pointers.
Mapping between Course Outcomes (CO) with Program Specific Outcomes(PSO)	
Course Content	**UNIT-1: Introduction to C language** 1.1. Concepts of Programming Language 1.1.1. Introduction of Source Code, Object Code and executable code 1.1.2. Concepts of Structured Programming Language

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

1.1.3. Concepts of Editor, Interpreter and Compiler

1.2. Fundamentals of C language

1.2.1. Introduction of C program body structure

1.2.2. Character Set, concepts of variables and constants

1.2.3. Identifiers, literals, Keywords

1.2.4. Data types (signed and unsigned) (Numeric: int, short int, long, float, double) , (Character type: char, string) and void.

1.2.5. Operators (Arithmetic, Logical, Relational, Bitwise, Assignment, Ternary operator and sizeof() operator)

1.2.6. Concepts of Header files (STDIO, CONIO), Concepts of pre-compiler directives (Use of #inlcude and #define)

1.3. Input/ Output Statements:

1.3.1.Input statements: scanf(), getc(), getch(), gets(), getchar()

1.3.2.Output Statements: printf(), putc(), puts(), putchar()

1.3.3.Type specifiers (formatting strings):%d, %ld, %f, %c, %s, %lf

UNIT-2: Decision Making and Iterative statements:

2.1. if statements: simple if, if…else, if…else if….else and Nested if statements.

2.2. Switch..case statements: Use of break and default

2.3. Iterative statements: while, do..while and for loop

2.4. Nested while, do..while and for loops

2.5. Jumping statement:(goto, break and continue)

UNIT-3: Concepts of Arrays and pointer

3.1. Concepts of Array

3.1.1. One dimensional array of numbers and characters

3.1.1.1. Declaring and Initialization of one dimensional array

3.1.1.2. Operations on one dimensional array (bubble and selection sort, linear search)

3.1.2. Two-Dimensional Numeric and character Array

3.1.2.1. Declaring and Initialization of two dimensional array

3.1.2.2. Operations on Two-Dimensional (Addition, Subtraction, Multiplication, Transpose of matrix, search and merge string)

3.2. Pointers

3.2.1. Concepts of Pointers

3.2.2. Declaring and initializing int, float, char and void pointers

3.2.3. Pointer arithmetic

3.2.4. Pointer to single dimensional numeric array.

Unit 4: Functions and Structure

4.1. Concept of functions

4.2. Introduction to Built-in functions

4.2.1. String functions: (strlen, strcmp, strcpy, strcat, strrev)

4.2.2. Mathematical functions: abs(),floor(),round(),ceil(),sqrt(),exp(),log(),sin(),cos(), tan(), pow() and trunc())

4.3. Introduction to User Defined Functions

4.3.1. Function return type, parameter list, local function variables

4.3.2. Passing arguments to function: Pass by value and pass by reference

4.3.3. Recursive function

4.4. Concept of Structure and union

4.4.1. Defining, declaring, initializing and accessing structure and union

4.4.2. Difference between structure and union

Reference Books	1. Programming in C,Balaguruswami–TMH 2. C: How to Program, Deitel & Deitel-PHI 3. C Programming Language, Kernigham & Ritchie-TMH 4. Programming in C, Stephan Kochan- CBS 5. Mastering Turbo C, Kelly & Bootle-BPB 6. C Language Programming– Byron Gottfried-TMH 7. Let us C, Yashwant Kanetkar -BPB Publication 8. Magnifying C, Arpita Gopal -PHI 9. Problem Solving with C, Somashekara - PHI 10.Programming in C, Pradip Dey & Manas Ghosh– Oxford
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	Internal Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks External Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. - Practical exam, viva-voce, Journal 50% External assessment. - Written Theory exam - Practical Exam, viva-voce

Course Code: 105
Course Title: Data Processing and Analysis (DPA)

[Subject code for Theory-2411000901022001] [Subject code for Practical-2411000901022002]

Course Code	105
Course Title	Data Processing and Analysis (DPA)
NCrF Credit level	4.5
Course Type	Major
Course Subtype	Skill Development
Subject Type	Discipline Specific
Level of Course	200-299 (Intermediate Level)
Credits	4 Credits - Theory : 2 hrs + Practical: 4 hrs = Total : 6 Hrs
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review/Revision	2025-2026
Implementation Year:	A.Y. 2026-2027
Purpose of Course	Understand concepts of Data and storage of data. This course is aimed to impart knowledge about storing data, concepts of database, retrieval of data and manipulation of data. It is aimed to cover effective storage of data, statistical analysis of data and graphical presentation of data. It also covers concepts of database and fundamental of query languages to insert, access, and manipulate data. This course is not spreadsheet or database specific. The course is not Software specific. Any open source software can be used for practical.
Course Objective	To learn and obtain the skills related to i) Concepts of data, data storage and statistical manipulation of data. ii) Introduction of spreadsheet and data manipulation using spreadsheet. iii) Concepts of database, storage and manipulation of data using query language.
Pre-requisite	-
	CO1: Students will learn the concept of data and storage of data using worksheet. **CO2:** Learn the Concept of Spreadsheet, Using the spreadsheet students will able to learn data manipulation, Statistical analysis of data and graphical presentation of data. **CO3:** Learn the concept of database and data storage in database **CO4:** To understand the concept of data storage through the concept of fundamental of query language by learning DDL and DML Statements. **CO5:** To Learn the concept of Queries to manipulate data and handling of database using SQL.
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: Concepts of worksheet:** 1.1. Fundamentals of Worksheet: 1.1.1. Concepts of workbook, adding worksheet, cell address, formula bar, column, rows, cells, Insert, delete, format cells , cell size (row-height, column weight), rename sheet, protect sheet, lock cell. 1.1.2. Cut, copy, paste, paste special, format painter, font size, font face, fill color, font color, font alignment 1.2. Alignment, indent, Number format, percent style, coma style, increase/decrease decimal 1.2.1. Insert picture, shapes 1.2.2. Insert Textbox, Header & Footer, Symbols 1.2.3. Save, save as, save file as csv, spell check, protect sheet and Workbook, Linking spread sheets. 1.2.4. Print, Quick print, Print preview 1.2.5. Split, Hide and freeze panes in worksheet. **UNIT-2: Formulas, Chart and Data:** 2.1. Charts: 2.1.1. Creating 2D and 3D charts(Columns, Line, Pie, Bar, Scatter) 2.1.2. Difference among columns, Line and bar charts. 2.2. Formulas: 2.2.1. sum, average, count, max, min, sumif, pmt, stddev 2.2.2. Logical(if, AND, OR, NOT, TRUE, FALSE) 2.2.3. Date and Day function : Date, day, time, now, Hour, Minute, Second, Month, Days360, weekday 2.3. Data: 2.3.1. Sort Data, Filter Data 2.3.2. Text to columns, Remove Duplication 2.3.3. Consolidated Data(sum, count, max, min, average) **UNIT-3: Concepts of Database** 3.1. Database characteristics: 3.1.1. Data Independence (Logical and Physical) 3.1.2. Components of Database(User, Application, DBMS, Database) 3.1.3. Database Architecture(1-tier, 2-tier, 3-tier) 3.1.3.1. Comparison, advantages and disadvantages. 3.2. Database Models(Hierarchical, Network, E/R, Relational) 3.2.1. E/R model: Entity, Relationship, Attribute 3.2.2. E/R Diagram: One to one, one to many, many to one, many to many 3.2.3. Strong entity, weak entity 3.2.4. key attribute, derived attribute, Multi-valued attribute 3.3. Types of keys: 3.3.1. Super key, candidate key, Primary key, Composite key, Foreign key, Unique key. 3.4. Normalization 3.4.1. Why normalization(Insertion, Updating, Deletion anomalies) 3.4.2. Normalization Rules 3.4.2.1. Concepts of Dependency, Transitive Dependency 3.4.2.2. Armstrong Axioms 3.4.2.3. 1st Normal Form,2nd Normal Form,3rd Normal Form, B.C.N.F.

	UNIT-4: Concepts of SQL and Queries (Single Table only) 4.1. Concepts of Structure Query Language (SQL) 4.1.1. SQL datatypes: int, float, double, char, varchar, number, varchar2, Text, date 4.2. DDL , DML and DQL(Data Query Language) Statements 4.2.1. Create, Drop, Truncate, Rename, Alter, insert, Update, Delete, select 4.3. Using where clause and operators with where clause 4.3.1. In, between, like, not in,=,!=,>,=,<=,wildcard operators, Order by, Group by, Distinct 4.3.2. AND, OR operators, Exists and not Exists, Use of Alias 4.4. Constraints(Table level and Attribute Level) 4.4.1. NOTNULL, CHECK, DEFAULT, UNIQUE, Primary Key, Foreign Key, On Delete Cascade 4.5. SQL Functions 4.5.1. Aggregate Functions: avg(), max(), min(), sum(), count(), first(), last(). 4.5.2. Scalar Functions: ucase(), lcase(), round(), mid(). 4.6. Creating sequence 4.7. Views 4.7.1. Creating simple view, updating view, dropping view 4.7.2. Difference between View and Table
Reference Books	1. Open Office.org For Dummies-Gurdy Leete, Ellen Finkelstein, Mary Leete - Wiley Pub. 2. Beginning OpenOffice3: From Novice to Professional-Andy Channellle-Apress Pub. 3. The OpenOffice.org2 Guidebook- Solveig Haugland 4. Taming Apache OpenOffice: Getting Started-Jean Hollis Weber-Friends of OpenDocument Inc. 5. Open Office Basic:An Introduction-James Steinberg-Gold Turtle Pub. 6. Database System Concepts:–Henry F. Korth & Abrahim Silberschatz–McGraw Hill Education 7. Introduction to Database Management System–Bipin C. Desai–Galgotia Publication 8. Principles of database systems–Jeffery Ullman–Galgotia Publication 9. An introduction to Database Systems–C. J. Date–Addison Wesley 10. Introduction to database Management–Navin Prakash-TMH 11. Learn Open Office 3.1Base –AZIMUTH 12. OpenOffice3.4 Volume III: Base-Christopher N. Cain, Riley W. Walker-Quantum Scientific Publishing 13. Discovering SQL-A Hands-on Guide for Beginner-Alex Kriegel Wrox Publication 14. A Conceptual Guide to OpenOffice.org3-R. Gabriel Gurley(Free E-book). 15. Database System Concepts Avi Silberschatz Henry F. Korth,S. Sudarshan McGraw-Hill.
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	Internal Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks External Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. - Practical exam, viva-voce, Journal 50% External assessment. - Written Theory exam - Practical Exam, viva-voce

Course code: 106
Course Title: Skill Enhancement Course

Course Code	106
Course Title	Skill Enhancement Course-I
NCrF Credit level	4.5
Category of Course	Skill Enhancement Course (SEC)
Course Subtype	Skill Development
Subject Type	Discipline Specific
Level of Course	100-199(Foundation/Introductory)
Credits	2Hrs (Any or Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review/ Revision	2025-2026
Implementation Year:	A.Y.2026-2027
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 behavior problem solving approaches, both of which are used to strengthen a person's positive skill develop.
Pre-requisite	-
Course outcome	**CO1:** Student selects the area of skill as per his/her interest. The choices will be given by the institute/department. **CO2:** The students 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 up skill and upgrade the knowledge in the area of selected subject.

Course Content (List of courses)	College can offer any one of the course from the following list: 106-01: Mastering Worksheet 106-02 Fundamentals of Google Cloud Application [Detailed syllabus is available at the last]
Reference Books	- As per the selection of the course.
Teaching Methodology	Class Work/Discussion/Self-Study/Seminars/fieldworks/practical training/ Field work and/or Assignments.
Evaluation Method	Internal Assessment :25 Marks External Assessment :25 Marks

Course code: 107
Course Title: Bharatiya Knowledge System – an Introduction
[Subject code-2311000901070001]

Course Code	107
Course Title	Bharatiya Knowledge System – an Introduction
NCRF Credit level	4.5
Course Type	VAC
Course Subtype	Value Added Course
Subject Type	Intra-Discipline
Level of Course	100-199(Foundation/Introductory)
Credits	Theory : 2 hrs
Review /Revision	2025-2026
Implementation Year:	A.Y.2026-2027
Purpose of Course	The purpose of this course is to introduce students to the rich heritage of Bharatiya Knowledge Systems, culture, philosophy, and traditions. The course aims to develop an understanding of Indian knowledge traditions, values, way of life, and philosophical concepts such as karma, co-existence, and Vasudhaiva Kutumbakam. It helps students develop ethical values, cultural awareness, creativity, and holistic thinking, which contribute to personal development and social harmony.
Course Objective	After completion of this course, students will be able to: 1. Understand the concept and evolution of Bharatiya Knowledge Systems and Indian traditions. 2. Explain the contribution of Indian knowledge systems in science, art, culture, and philosophy. 3. Understand the Bharatiya way of life and philosophical concepts such as karma, rebirth, and co-existence. 4. Develop awareness about Indian cultural values and social systems. 5. Analyze the relevance of Bharatiya Knowledge Systems in modern society. 6. Develop moral values, self-awareness, and holistic thinking. 7. Encourage research, creativity, and innovation based on Indian knowledge traditions.
Pre-requisite	There are no specific prerequisites for this course. However, students should have: • Basic awareness of Indian culture and traditions. • Interest in philosophy, culture, and heritage studies. • Open-mindedness towards traditional knowledge and value systems. • Basic reading and analytical skills.
Course Outcomes	**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 Outcomes(PSO)

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	✔		✔	✔	✔			✔
CO2	✔	✔		✔	✔	✔	✔	✔
CO3	✔		✔	✔	✔			✔
CO4	✔		✔		✔	✔		✔
CO5	✔		✔		✔			✔

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

2.1 Way of life as Bharatiya Knowledge Systems.
2.2 The Implicit Concepts in Bharatiya Knowledge Systems.
2.3 Birth, Death, Rebirth, Law of Karma, Idea of Sukhha,
2.4 Social Viewpoint in Bharatiya Knowledge systems.
2.5 Co - existence of Nature and Human Nature, Manifold Paths of Upasana, Value co-Existence- Ritam.
2.6 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.
4. 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

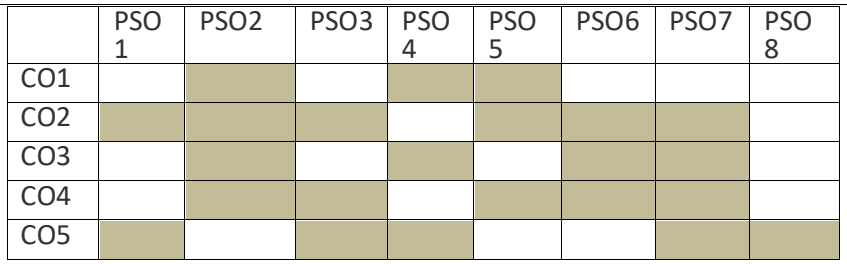
Class Work/ Discussion/ Self-Study/ Assignments /Home Work/ Activity /Seminars/ Self Assessment etc.

Evaluation Method

50% Internal assessment. :
- Attendance, Class and home Assignment
- Test (Theory / MCQ)

50% External assessment.
- Theory

Course Code: 106-01
Course Title: Mastering Worksheet
[Subject code-2311000901060062**]**

Course Code	106-01
Course Title	Mastering Worksheet
Credits	2
Course Category	Skill Enhancement Course
Level of Course	100-199 (Foundation/Introductory)
Course Duration	30 hours of Practical/Applied knowledge
Purpose of Course	- To develop practical skills in using Microsoft Excel for data management, calculation, and reporting. - To enable students to analyze business data and create professional dashboards, charts, and automated reports
Course Objective	1) To understand the fundamentals of Microsoft Excel and spreadsheet concepts. 2) To develop skills in using formulas and functions for data calculation and analysis. 3) To manage and organize large datasets using sorting, filtering, and Pivot Tables. 4) To create professional charts, dashboards, and KPI reports for decision-making. 5) To enhance technical and analytical skills required for software, IT, and data-related careers.
Pre-requisite	Basic understanding of data entry and fundamental mathematics concepts is recommended before enrolling in a Microsoft Excel course.
Course Outcomes	**CO1:** Create and manage spreadsheets professionally **CO2:** Apply formulas and logical functions **CO3:** Analyze business data using Pivot Tables **CO4:** Use advanced lookup and automation features **CO5:** Design interactive dashboard
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	
Course Content	**Unit 1: Introduction to Excel & Basics Formatting** 1.1Introduction to Spreadsheet Software 1.1.1 Features of MS Excel, Excel Interface (Ribbon, Tabs, Groups), Workbook &Worksheet, Rows, Columns, Cells 1.2 Data Types (Text, Number, Date) 1.3 Basic Formatting (Font, Alignment, Borders) 1.3.1 Saving & Opening Files, Excel Environment & Navigation, Custom Number Formatting 1.4 Format as Table 1.4.1 Cell Styles & Themes, Freeze Panes & Split Window, Page Layout & Printing Settings 1.4.2 Headers & Footers 1.5 Excel Shortcuts (Productivity Tips) **Unit 2: Advance Formulas, function, chart and Data Analysis** 2.1 Cell Referencing (Relative, Absolute, Mixed) 2.2 Basic Functions: 2.2.1 SUM, AVERAGE, COUNT, MAX, MIN

	2.2.2 Logical Functions: IF, AND, OR, NOT, TRUE, FALSE 2.2.3 Text Functions: LEFT, RIGHT, MID,CONCAT, LEN 2.2.4 IFERROR 2.2.5 Lookup Functions: VLOOKUP, HLOOKUP, XLOOKUP 2.2.6 Financial Functions: PMT, NPV 2.2.7 Date & Time Functions: TODAY,NOW, DATEDIF 2.3 Data: 2.3.1 Sorting & Filtering 2.3.2 Data Validation (Drop-down List) 2.3.3 Conditional Formatting (Color Scale, Icon Sets) 2.3.4 Remove Duplicates 2.3.5 Pivot Tables 2.3.6 Subtotal Feature 2.3.7 Slicers & Timeline 2.3.8 Data Consolidation 2.3.9 Flash Fill 2.4 Types of Charts: Column Chart, Bar Chart, Line Chart, Pie Chart 2.4.1 Advanced Chart Types: Combo Chart, Waterfall Chart, Radar Chart 2.4.2 Formatting Charts 2.5 Creating Interactive Dashboards 2.5.1 KPI (Key Performance Indicator) Reports 2.5.2 Sparklines **Unit 3: Automation & Advanced Tools** 3.1 Macro Recording 3.2 Introduction to VBA Editor 3.2.1 Basic VBA Concepts 3.3 What-If Analysis 3.31Goal Seek 3.3.2 Scenario Manager 3.3.3 Data Table 3.4 Power Query (Introduction) 3.5 Power Pivot (Basic Concept) 3.6 Workbook Security & Protection
Reference Books	1. Microsoft 365 Excel All-in-One For Dummies by Michael Alexander, Richard Kusleika, and John Walkenbach. ISBN: 978-1119844426. Publisher: Wiley. Publication Year: 2022. 2. Excel 2019 Bible by Michael Alexander, Richard Kusleika, and John Walkenbach. ISBN: 978-1119514787. Publisher: Wiley. Publication Year: 2018. 3. Microsoft Excel 2019 Step by Step by Curtis Frye. ISBN: 978-1509307623. Publisher: Microsoft Press. Publication Year: 2018. 4. Excel Dashboards and Reports (Mr. Spreadsheet's Bookshelf) by Michael Alexander and John Walkenbach. ISBN: 978-1119026082. Publisher: Wiley. Publication Year: 2016. 5. Excel 2016 Formulas (Mr. Spreadsheet's Bookshelf) by Michael Alexander and Richard Kusleika. ISBN: 978-1119067726. Publisher: Wiley. Publication Year: 2016. 6. Microsoft Excel Functions & Formulas by Brian Moriarty, Bernd Held, and Theodor Richardson. ISBN: 978-1904312834. Publisher: Mercury Learning & Information. Publication Year: 2014. 7. Microsoft Excel Professional 2021 Guide by Manmeet Singh Mehta. ISBN: 978-9391030995. Publisher: BPB Publications. Publication Year: 2021. 8. Excel VBA Programming For Dummies by Michael Alexander and John Walkenbach. ISBN: 978-1119518174. Publisher: Wiley. Publication Year: 2018. 9. Microsoft Excel Data Analysis and Business Modeling by Wayne L. Winston. ISBN:

	978-1509305889. Publisher: Microsoft Press. Publication Year: 2019. 10. Business Analytics: Data Analysis & Decision Making with Excel by S. Christian Albright, Wayne L. Winston, and Christopher J. Zappe. ISBN: 978-1337406420. Publisher: Cengage Learning. Publication Year: 2018. 11. Excel Power Programming with VBA by Michael Alexander and Richard Kusleika. ISBN: 978-1119518242. Publisher: Wiley. Publication Year: 2019. 12. Excel for Dummies (Microsoft Excel Basics) by Greg Harvey. ISBN: 978-1119287551. Publisher: Wiley. Publication Year: 2016. 13. Microsoft Excel 2013 Step by Step by Curtis Frye. ISBN: 978-0735669123. Publisher: Microsoft Press. Publication Year: 2013. 14. Excel 365 Essential Skills by Leonard Webb. ISBN: 978-1840788938. Publisher: In Easy Steps. Publication Year: 2021.
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. : - Attendance, Class and home Assignment, - Test (Theory /Practical / MCQ) 50% External assessment. : :(Practical / MCQ)

Course Code: 106-02
Course Title: Fundamentals of Google Cloud Applications

<table>
<tr><td>Course Code</td><td>106-02 [Subject code-2411000901060028]</td></tr>
<tr><td>Course Title</td><td>Fundamentals of Google Cloud Applications</td></tr>
<tr><td>Credits</td><td>2</td></tr>
<tr><td>Course Category</td><td>Skill Enhancement Course (SEC)</td></tr>
<tr><td>Level of Course</td><td>100-199 (Foundation/Introductory)</td></tr>
<tr><td>Course Duration</td><td>30 hours of Practical/Applied knowledge</td></tr>
<tr><td>Purpose of Course</td><td>The purpose of this course is to equip students with practical knowledge and hands-on skills in using Google Workspace tools for academic and professional productivity. The course focuses on developing the ability to create, manage, collaborate, and share digital content using Google applications such as Docs, Sheets, Slides, Forms, and Drive. It aims to enhance digital literacy, improve data handling and presentation skills, and enable efficient collaboration in cloud-based environments.</td></tr>
<tr><td>Course Objective</td><td>(1) Provide Practical knowledge and practice of Google Products
(2) Learn about Cloud concept and its storage</td></tr>
<tr><td>Pre-requisite</td><td>Basic knowledge of Microsoft Office</td></tr>
<tr><td>Course Outcome</td><td>After successful completion of the course, students will be able to:
CO1: Understand the fundamentals of cloud-based tools and demonstrate effective use of Google Workspace applications.
CO2: Create, format, organize, and collaboratively manage documents using Google Docs with appropriate sharing and version control.
CO3: Apply spreadsheet functionalities in Google Sheets, including formulas, sorting, filtering, and data visualization using charts.
CO4: Design and deliver effective presentations using Google Slides with appropriate formatting and sharing options.
CO5: Develop and manage online forms for data collection, surveys, and quizzes using Google Forms, and analyze responses efficiently.</td></tr>
<tr><td>Mapping Between COs and PSOs</td><td>
<table>
<tr><th>COs / PSOs</th><th>PSO 1</th><th>PSO2</th><th>PSO3</th><th>PSO4</th><th>PSO5</th><th>PSO6</th><th>PSO7</th><th>PSO8</th></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>
<tr><td>CO4</td><td>✔</td><td></td><td>✔</td><td></td><td>✔</td><td>✔</td><td></td><td>✔</td></tr>
<tr><td>CO5</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>Unit 1: Overview
1.1 Basic understanding and Importance of Google
1.2 Acquire the essentials for using Google apps: Drive, Docs, Sheets, Slides, forms

Unit 2: Google Docs
2.1 Work with the specifics of Google docs
2.2 Creating Documents
2.3 Exploring and organizing own docs
2.4 Toolbar, images, drawings and charts
2.5 Tables
2.6 Different sharing modes/permissions</td></tr>
</table>

	2.7 Using the revision history tool **Unit 3: Google Sheets and slides** 3.1 Google Sheets 3.1.1 Toolbar and sorting tools 3.1.2 Adding tabs to sheets and formulas 3.1.3 Charts 3.1.4 Sharing, Permissions, freezing rows and column and filtering 3.2 Google Slides 3.2.1 Creating and editing slides 3.2.2 Sharing and presenting slides **Unit 4: Google Forms** 4.1 Creating forms 4.2 Various features and settings 4.3 Send and receive forms 4.4 Surveys and quizzes 4.5 Managing responses
Reference Books	1. Guay, M. & Thayer, W (2017), The Ultimate Guide to G Suite: Everything you need to set up and administer Google's apps for your business 2. Google Workspace 2023 Handbook: A Quick Guide to Master Google Apps, Leonard A. McFizz, Independently Published, 2023, 9798390263082 3. Mastering Google Workspace: A Beginner's Guide to Collaboration and Document Management, Arthur N. Thiel, Independently Published, 2025, 9798298155885 4. Google Workspace for Beginners: Mastering Collaboration and Productivity, Melody C., Independently Published, 2025, 9798289518422 5. Welcome to Google Workspace: A Comprehensive Guide to Google Workspace, Laurence Lars Svekis, Independently Published, 2025, 9798280803664 6. Master Google Workspace 2025: A Practical Productivity Manual, Marcus D. Rye, Independently Published, 2025, 9798281138185 7. Google Workspace Guide for Beginners: Master Gmail, Docs, Sheets & More, Oliver Williams, Independently Published, 2025, 9798288984624 8. Google Workspace For Dummies (Latest Edition), Paul McFedries, Wiley, 2024, 9781394253227 9. Learning Google Workspace (G Suite): A Practical Approach, Vijay Kumar Yadav, BPB Publications, 2023, 9789391030308 10. Google Drive, Docs, Sheets and Slides: Complete Guide for Beginners, S. K. Singh, BPB Publications, 2024, 9789355512345
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. : - Attendance, Class and home Assignment - Test (Theory /Practical / MCQ) 50% External assessment. : : - Practical

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 Application, 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).

Course Code:202-01
Course Title: Computerized Financial Accounting
[Subject code-2411000902040001]

Course Code	202-01
Course Title	Computerized Financial Accounting [This is multi-disciplinary/inter-disciplinary category of course. Student can select any course from the basket of courses offered by the institute/college offered by the University under the Multi-Disciplinary courses or Inter-disciplinary courses basket.]
NCrF Credit level	4.5
Course Type	MDC
Course subtype	Employability
Subject Type	Intra disciplinary
Level of Course	100-199(Foundation/Introductory)
Credits	4 Credits - Theory: 4 Hrs
Review/Revision	2025-2026
Implementation Year	A.Y.2026-27
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Purpose of Course	- To impart knowledge about accounting and how the accounts can be maintained using computer software. - This will give an idea to understand the Financial accounting terminologies and the model which is computerized. - [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.]

Course Objective

The course will give fundamental ideas about the accounting software and as a course study, the students can understand how the accounting software works. It also give an idea about various terminologies related to the computerized financial accounting.

- 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.

Course Outcome

CO1: After learning this subject student will be able to know the basic concepts of Financial Accounting & use of a good Financial Accounting Software
CO2: student will able to learn basic about financial accounting and its concepts
CO3: students will able to learn about transaction and types of accounts
CO4: student will able to learn the book-keeping concept
CO5: student will able to know about the journal and other related details
CO6: student will learn about the ledger and trail balance

Mapping Between Cos with PSOs

	PS01	PS02	PS03	PS04	PS05	PS06	PS07	PS08
CO1	■						■	
CO2	■							
CO3							■	
CO4		■			■		■	■
CO5				■	■	■	■	
CO6	■	■		■	■	■	■	■

Course Content	**Unit1: Introduction to Accounting System** 1.1. Meaning & Definition of Accounting 1.2. Objectives of Accounting 1.3. Concepts and Features of Book Keeping 1.4. Branches of Accounting (FinancialManagement, Cust) 1.5. Basis of Accounting(Accrual Bases, Cash Bases) 1.6. Accounting Concepts **Unit2: Accounting Equation & Transaction Analysis** 2.1. Introduction to Assets, Liabilities, Equities 2.2. Concepts of Transaction Analysis 2.3. Classification of Accounts(Real Account, Personal Account, Nominal Account) **Unit3: Concepts of Book-Keeping** 3.1. Introduction of Single Entry System and advantages/ disadvantages 3.2. Introduction of Double Entry System and its advantages 3.3. Types of Business Transaction 3.4. Concepts of important Terminologies : Opening Stock, Closing Stock, Goods, Inventory, Assets, Liabilities, Capital, Debit, Debtors, Creditors, Income, Expenses, Loss, Profit, Credit, Debit. **Unit4: Journal & Subsidiary Books(With Preliminary examples)** 4.1. Meaning of Journal 4.2. Format of Journal 4.3. Concept of format of cash Book 4.4. Concept and format of Petty cash Book 4.5. Concept of format of Purchase Sale, Purchase Return andSale Return Book **Unit5: Concepts of Accounting Mechanism** 5.1. Meaning and Definition of Ledger 5.2. Types of Ledger 5.3. Trial Balance and its objectives
Reference Books	1. Accounting for Management– By Dr. Jawaharlal 2. Financial Management –By Dr. S. N. Maheshwari 3. Accounting for Management–By S. K. Bhattacharya &John Dearden 4. Advanced Accountancy– By S. P. Jain & K. I. Narang 5. Implementing Tally 6.3–By K. K. Nathani – BPB Publication 6. Implementing Tally7.2– By A. K. Nathani & K. K. Nathani BPB Publication
Teaching Methodology	Class work, Discussion, Self Study, Seminars and/or Assignment
Evaluation Method	Internal Assessment :50 Marks External Assessment :50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. 50% External assessment. - Written Theory exam

Course Code:202-02
Course Title: Organizational Structure and Behaviour

[Subject code-2411000902040002]

Course Code	202-02
Course Title	Organization Structure & Behaviour (Multidisciplinary Course) [This is multi-disciplinary/inter-disciplinary category of course. Student can select any course from the basket of courses offered by the institute/college offered by the University under the Multi-Disciplinary courses or Inter-disciplinary courses basket.]
NCrF Credit level	4.5
Course Type	MDC
Course subtype	Employability
Subject Type	Intra disciplinary
Level of Course	100-199(Foundation/Introductory)
Credits	4 Credits - Theory: 4 Hrs
Review/Revision	2025-2026
Implementation Year	A.Y.2026-2027
Minimum weeks per Semester	15(Including Class work, examination, preparation, holidays etc.)
Purpose of Course	- Computer Science professionals work at different levels in the hierarchy of various jobs in IT. It is essential to understand the Organization Structure and behavior. - Integration of Knowledge and Skills: One objective of a multi disciplinary 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.
Course Objective	The objective of this course is to make students aware about the Structure of an Organization and provide them concepts that leads to better understanding of human behavior in an organization.

Course Outcome

CO1: After completion of the course the student will be aware about the Structure of an organization

CO2: Also,will have better understanding of human behavior in an organization

CO3: Students will understand and develop their attitude

CO4: Students will learn the importance of motivation.

CO5: Students will be able to understand the leader, skills of leader and leadership styles

CO6: students will have idea about BPO and call centers

Mapping Between Cos with PSOs

	PS01	PS02	PS03	PS04	PS05	PS06	PS07	PS08
CO1	■		■					
CO2	■							
CO3					■			
CO4	■		■	■				■
CO5	■		■	■	■	■		
CO6		■		■		■		■

Course Content

Unit1: Introduction to Organization and Management

1.1. What makes an organization
1.2. Structure of organization
1.3. What is Management
1.4. Scope of Management
1.5. Role of Management
1.6. Manager's Role(Interpersonal Role, Information Role and Decisional Role)
1.7. Managerial Skills(Technical Skills, Human Skills, Conceptual Skills)

Unit2: Attitude

2.1. Meaning of Attitude
2.2. Characteristic of Attitude

Unit3: Motivation

3.1. What is motivation?
3.2. Nature and Characteristics of Motivation
3.3. Importance & Benefits of Motivation

Unit4: Leadership

4.1. What is Leadership?
4.2. Characteristics of Leadership
4.3. Leadership Styles
4.4. Leadership Skills(Technical Skills, Conceptual Skills, Personal Skills)

Unit5: BPO and Call Centre

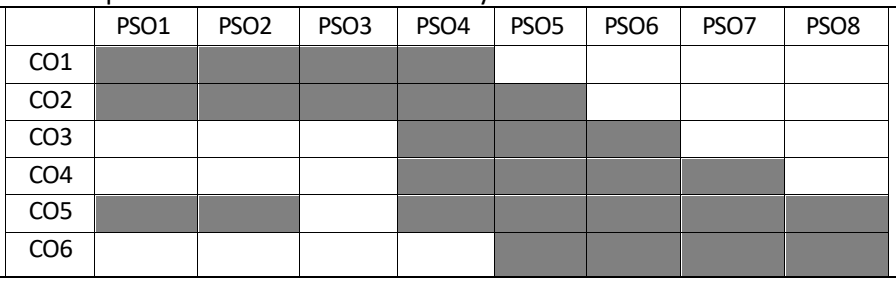
5.1. What is B.P.O?
5.2. What is out-sourcing? Benefits of outsourcing
5.3. What is Call Centre?
5.4. Call Centre setup & functions

Reference Books

1. Management & Organization Development–By Ahmed Abod Rachana Prakashan, New Delhi
2. Organization Behaviour– By Applewhite Philip, Prentice hall
3. Management & Organization Development–By Argyris Chris McGraw Hill
4. Human Behaviour at work–By Devis Keith, Tata MacGraw Hill
5. Organization Behaviour–By L.M. Prasad
6. Principles and Practices of Management –By L.M. Prasad
7. Managing People at work–By Harris O Jeff, John Wiley & Sons Publication
8. Call Centres– By S. Pankaj (APII Publication)

Teaching Methodology	Class work, Discussion, Self Study, Seminars and/or Assignment
Evaluation Method	Internal Assessment :50 Marks External Assessment :50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. 50% External assessment. - Written Theory exam

Course Code:203
Course Title: Operating System
[Subject code-2411000902030001]

Course Code	203
Course Title	Operating System
NCrF Credit level	4.5
Course Type	Minor
Course Subtype	NIL
Subject Type	Discipline Specific
Level of Course	100-199(Foundation/Introductory)
Credits	4 Credits - Theory: 4 Hrs
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review/Revision	2025-2026
Implementation Year:	A.Y.2026-2027
Purpose of Course	An Operating System (OS) is a software that manages computer hardware and software resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function. The course is based on open source operating systems like Linux.
Course Objective	1. To understand functionality provided by an Operating System. 2. To make aware of basic concepts of Windows O.S. Management. 3. To learn about device management.
Pre-requisite	Basic knowledge of computers.
Course Outcomes	**CO1:** Students will learn how operating system is important for computer system and what is the role of an OS, and also learn different types of operating system and their services. **CO2:** Students will be able to understand the structure and organization of file system. **CO3:** To differentiate between windows and linux OS **CO4:** To install and maintain linux workstation and also able to manage user accounts. **CO5:** To understand devices, usage of devices, scheduling algorithms and decide which is the best one. **CO6:** Students will be able to develop application the coordinate with respective OS in a much better way which is an essential.
Mapping between Course Outcomes (CO) with Program Outcomes(PSO)	
Course Content	**Unit1. Operating System Concepts** 1.1. Evolution of Operating System & History 1.2. Need of an Operating System 1.3. Single User & Multi User Operating System 1.3.1. Types of OS and their advantages and disadvantages 1.3.2. Batch OS, Distributed OS, Multi-Tasking OS 1.3.3. Rea-time OS, Mobile OS 1.4. Elements of an Operating System

	1.5. Operating System as a Resource Manager **Unit2. File and Memory Management** 2.1. File Concept 2.1.1. Operations on File 2.1.2. File Access Methods(Sequential Access and Direct Access) 2.1.3. Directory Systems File Management Functions. 2.1.4. File System and Directory Structure organization. 2.1.5. File Protection. 2.2. Memory Concept 2.2.1. Memory Management Units 2.2.2. Physical and Logical Memory 2.2.3. Contiguous and Non-Contiguous Memory Allocation 2.2.4. Swapping 2.2.5. Memory allocation Techniques (Fixed and variable) 2.2.6. Storage Placement policies (First Fit, Best fit, Worst fit) 2.2.7. Fragmentation 2.2.8. Segmentation **Unit3. Device Management** 3.1. Device Management Function 3.2. Device Characteristics 3.3. Disk space Management 3.4. Allocation and Disk Scheduling Methods **Unit 4. Introduction of Linux Operating system** 4.1. Introduction of Linux versions 4.2. Components of Linux 4.3. Comparison of Windows and Linux 4.4. Installing Linux 4.5. Installation of Open Source Software 4.6. Maintaining User Accounts 4.7. System Config Services(Package)
Reference Books	1. Operating System Concepts:–James Peterson:–McGraw Hill 2. Operating System:–Stallings- PHI 3. Operating System Principles:–Silberschatz, Galvin, Gagne-Willey, India 4. Operating Systems–A. S. Godbole– Tata McGrawHill 5. Linux–The Complete Reference–Richard Petersen–Tata McGraw Hill 6. "Operating System Concepts" Author:Abraham Silberschatz, Greg Gagne, Peter B. Galvin ISBN: 978-1118063330 Publisher: Wiley 7. "Linux System Programming: Talking Directly to the Kernel and C Library" Author: Robert Love ISBN: 978-1449339531 Publisher: O'Reilly Media 8. "Linux Bible" Author: Christopher Negus ISBN:978-1118999875 Publisher: Wiley 9. "Understanding the Linux Kernel" Author: Daniel P. Bovet, Marco Cesati ISBN: 978-0596005658 Publisher: O'Reilly Media 10. "Linux Command Line and Shell Scripting Bible" Author: Richard Blum ISBN: 978-1118983843 Publisher: Wiley

Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	Internal Assessment :50 Marks External Assessment :50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. 50% External assessment. - Written Theory exam

Course Code: 204
Course Title: Programming Skills

[Subject code for Thoery-2411000902011001] [Subject code for Practical-2411000902011002]

Course Code	204
Course Title	Programming Skills
NCrF Credit level	4.5
Course Type	Major
Course Subtype	Skill Development
Subject Type	Discipline Specific
Level of Course	200-299(Intermediate Level)
Credits	4 Credits - Theory : 2 hrs + Practical: 4 hrs = Total : 6 Hrs
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review/Revision	2025-2026
Implementation Year:	A.Y.2026-2027
Purpose of Course	To understand concepts of programming using Interpreter based programming Language Python. [Python codes can be executed using any open source IDE. This is not IDE specific course.]
Course Objective	i) Introduction of Interpreter based Programming language Python. ii) Enhancing basic programming skills using Interpreter based and Compiler based programming languages
Pre-requisite	Fundamental knowledge of Python IDE installation is recommended.
Course Outcomes	**CO1:** Students will be able to learn advanced programming concept of Interpreter based programming language. **CO2:** Students will be proficient working on conditional statements, iterative Statements and fundamentals of programming concepts using Python. **CO3:** Students will be able to represent compound data using lists, tuples and dictionaries in Python programs. **CO4:** Students will be able to develop real world application. **CO5:** Students will learn important libraries like Numpy, Pandas which are useful in Data analysis, Machine Learning.
Mapping between Course Outcomes (CO) with Program Specific Outcomes (PSO)	
Course Outcome	- Concept of conditional statements, iterative Statements and fundamentals of programming concepts using Python.
Course Content	**UNIT-1: Python Fundamentals** 1.1. Concepts of Interpreter based programming language 1.1.1. Structure of Python Programming language. 1.1.2. Python code Indention and execution 1.2. Python Variables 1.2.1. Naming of variables and Dynamic declaration of variables 1.2.2. Comments in Python 1.2.3. Assigning values to multiple variables

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

	1.2.4. Global variables 1.3. Python Data types 1.3.1. Text(str), Numeric Type(int, float, complex),Boolean(bool) 1.3.2. Setting Data types 1.3.3. Type conversion(int, float, complex),casting(int, float, str) 1.4. Operators 1.4.1. Arithmetic Operators (+,-,*,/,%,**,//) 1.4.2. Assignment Operators (=,+=,-=,/=,*=,//=) 1.4.3. Comparison Operators (==,!=,>,<,>=,<=) 1.4.4. Logical Operators(and, or, not) 1.4.5. Identity and member operators(is, is not, in, not in) 1.5. User defined function. 1.4.6. Defining function, Function with Parameters 1.4.7. Parameter with default value, Function with return value **UNIT-2: Conditions, loops and strings** 2.1. If statement, if..elif statement, if..elif…else statements, nested if 2.2. Iterative statements 4.1.1. While loop, nested while loop, break, continue statements. 4.1.2. for loop, range, break, continue, pass and Else with for loop, nested for loop. 2.3. Python Strings 2.3.1. Multiline string, String as character array, triple quotes 2.3.2. String operations: Slicing string, negative indexing, string length, concatenation 2.3.3. String Methods: centre, count, join, len, max, min, replace, lower, upper, replace, split **UNIT-3: Python collections** 3.1. Concept of List 3.1.1. List operations: creating list, indexing, accessing list members, range in list 3.1.2. List methods: append, clear, copy, count, index, insert, pop, remove, reverse, sort. 3.2. Concept of Tuple 3.2.1. Operations on tuple: Declaring tuple, indexing tuple, changing tuple values, adding and removing data from tuple, 3.2.2. Use of tuple() method to create tuple, count() and index() methods. 3.3. Concept of Set 3.3.1. Declaring set, access set data 3.3.2. Set methods: add, clear, copy, discard, pop, remove, union, update. 3.4. Concept of Dictionary 3.4.1. Creating Dictionary, Adding, Accessing and Removing element. 3.4.2. Dictionary methods: get(),pop(), popitem(),clear(),copy()

	UNIT-4: Python Libraries 4.1. Introduction to Numpy and Pandas 4.1.1. Overview of numpy 4.1.1.1. Numpy methods: array(), arange(), linspace(), flatten(), reshape(),sum(), average(), min(), max() 4.1.1.2. Statistical methods: Mean, Median, Mode, Standard Deviation and Variance 4.1.1.3. Implementation of Numpy methods on numeric data set created using list. 4.1.2. Overview of Pandas 4.1.2.1. Pandas Dataframe and series 4.1.2.2. Creating dataframe using list 4.1.2.3. Creating dataframe using dict of equal length list 4.1.2.4. Reading data using csv file(read_csv()) 4.1.2.5. Retrieving rows and columns from dataframe using index 4.1.2.6. Retrieving rows and columns using loc and iloc functions.
Reference Books	1. Learning Python- MarkLutz: 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 Andrion (Illustrator),Elliott Hauser(Editor),Sue Blumenberg (Editor) 4. An Introduction to Python- by van Rossum Guido ISBN:9780954161767, 0954161769 5. Core Pyhton Application Programming–by Wesley J Chun Prentice Hall
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	Internal Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks External Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. - Practical exam, viva-voce, Journal 50% External assessment. - Written Theory exam - Practical Exam, viva-voce

Course Code: 205
Course Title: Concepts of Relational Database Management System

[Subject code for Thoery-2411000902022001] **[Subject code for Practical-2411000902022002]**

Course Code	205
Course Title	Concepts of Relational Database Management System
NCrF Credit level	4.5
Course Type	Major
Course Subtype	Skill Development
Subject Type	Discipline Specific
Level of Course	200-299(Intermediate Level)
Credits	4 Credits - Theory : 2 hrs + Practical: 4 hrs = Total : 6 Hrs
Minimum weeks per Semester	15(Including class work, examination, preparation etc.)
Review/Revision	2025-2026
Implementation Year:	A.Y.2026-2027
Purpose of Course	- Imparting fundamental knowledge of Relational Database. - This course also includes SQL & fundamentals of PL/SQL.
Course Objective	1. To make students understand about RDBMS architecture 2. Have edge over Control and Iterative statements of PL/SQL 3. Understanding advanced SQL and various complex queries. 4. To make students aware of cursors and Exception Handling.
Pre-requisite	Basic knowledge of Database Management.
Course Outcomes	**CO1**: Students will learn Fundamental Knowledge of Relational database model. **CO2**: Explain and demonstrate advance and various complex queries using SQL. **CO3**: Student will learn about concept of PL/SQL and concept of logic development in PL/SQL through conditional statement. **CO4**: To understand and impart knowledge in order to have edge over Control and iterative statement of PL/SQL in order to improve the applied concept using coding and implement of coding to solve PL/SQL problems. **CO5**: To explain student about cursors and exception handling and demonstrate the concept by implementing to solve the problems. **CO6**: To understand concepts of data storage, retrieval and administration of the data in Relational Models using SQL and PL/SQL.

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

	PSO 1	PSO2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8
CO1	■	■	■	■	■			
CO2	■	■		■	■			
CO3	■	■		■	■	■		
CO4	■	■		■	■	■		
CO5		■	■	■	■		■	
CO6		■	■		■		■	■

Course Content	**Unit-1. Introduction of Relational model** 1.1. Codd's Rules 1.2. Relational operations Algebra (select, project, union, intersection, rename) 1.3. Transaction control language: commit, savepoint, rollback 1.4. Data Control language: Grant, Revoke **Unit-2 Advanced SQL** 2.1. Data types(NUMBER, CHAR, VARCHAR, VARCHAR2, CLOB, NCLOB, LONG, DATE, RAW, LONGROW) 2.2. ROWID pseudo column & DUAL table 2.3. DATE Functions (SYSDATE, SYSTIMESTAMP, TO_CHAR, TRUNC, ROUND, NEXT_DAY, LAST_DAY, MONTHS_BETWEEN, ADD_MONTHS)
	2.4. Concepts of Index (Create, drop) 2.5. Join Queries 2.5.1. Inner Join 2.5.2. Outer Join(Left, Right, Full) 2.5.3. Cross Join 2.6. Sub Queries with(Insert, update and Delete) 2.7. Nested queries **Unit-3: PL/SQL and conditional and Iterative Statements** 3.1. Introduction to PL/SQL(Definition & Block Structure) 3.2. Variables, Constants and Data Type 3.3. Assigning Values to Variables 3.4. User Defined Record 3.5. Conditional Statements 3.5.1. IF…THEN statement 3.5.2. IF..Else statements 3.5.3. Multiple conditions 3.5.4. Nested IF statements 3.5.5. CASE statements 3.6. Iterative statements 3.6.1. Loop..End Loop 3.6.2. For..Loop 3.6.3. While Loop 3.6.4. EXIT Loop 3.6.5. Continue **Unit-4: Cursors and Exception Handling** 4.1. Concepts of Cursors 4.1.1. Types of cursors(Implicit & Explicit) 4.1.2. Declare, open, fetch and close cursors. 4.2. Cursor Attributes : (%FOUND, %NOTFOUND, %ISOPEN, %ROWCOUNT) 4.3. Exception Handling in PL/SQL 4.3.1. Types of Exceptions 4.3.1.1. Named System Exceptions 4.3.1.2. Unnamed System Exceptions 4.3.1.3. User-defined Exceptions 4.3.1.4. User Defined Exceptions

Reference Books	1. The Complete Reference, George Koch, Kevin Loney–Oracle Press 2. Database Management System, Oracle, SQL and PL/SQL,2nded., DasGupta & Radha Krishna, PHI 3. Oracle9 PL/SQL Programming, Scott Urman–Oracle Press 4. Oracle SQL: The Essential Reference, David C. Kreines – O'Reilly 5. SQL,PL/SQL: The Programming Language Of Oracle, Ivan Bayross–BPB 6. Oracle PL/SQL Programming–Feuerstein & Peribyl–SPD O'Reilly 7. Learning Oracle SQL and PL/SQL: A Simplified Guide, Rajeeb Chatterjee 8. Oracle PL/SQL Programming- Authors: Steven Feuerstein, Bill Pribyl ISBN:978- 0596009779 Publisher: O'Reilly Media 9. Oracle SQL Developer Handbook, Authors: Dan Hotka, Sue Harper ISBN: 978-0071484742 Publisher: McGraw-Hill Education 10. Oracle Database12c PL/SQL Programming, Authors: Michael McLaughlin, John Harper ISBN:978-0071812436 Publisher:McGraw-Hill Education
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	Internal Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks External Assessment :25 Marks Theory + 25 Marks Practical = 50 Marks 50% Internal assessment. - Attendance, Class and home Assignment, Unit tests. - Practical exam, viva-voce, Journal 50% External assessment. - Written Theory exam - Practical Exam, viva-voce

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

Course Code	206
Course Title	Skill Enhancement Course-II(SEC–02)
NCrF Credit level	4.5
Course Type	Skill Enhancement Course (SEC)
Course Subtype	Skill Development
Subject Type	Discipline Specific
Level of Course	100-199(Foundation/Introductory)
Credits	2Hrs (Any or Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review/ Revision	2025-2026
Implementation Year:	A.Y.2026-2027
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 behavior 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 students 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 (List of courses)	College can offer any one of the course from the following list: 206 01 Mastering SQl PLSQL 206-02 Designing and Publishing Website 206-03 Application of AI for Students [Detailed syllabus is available at the last]
Reference Books	As per the selection of the course

Teaching Methodology	Class Work/Discussion/Self-Study/Seminars/fieldworks/practical training/ Field work and/or Assignments.
Evaluation Method	Internal Assessment :25 Marks External Assessment :25 Marks

Course code: 207

Value Addition Course-II (VAC-02)

Course Title: Environment - I

[Subject code-2611000902077002**]**

Program Name	**Bachelor of Computer Application**
Semester	2nd
Course Code	207
Course Title	Environment - 1
NCrF Credit Level	4.5
Course Type	VAC
Course Subtype	Value Added Course
Subject Type	Intra-disciplinary
Level of Course	100-199 (Foundation/Introductory)
Course Duration	30 hours of Practical/Applied knowledge
Credit	Theory : 2 hrs
Purpose of Course	The purpose of this course is to develop awareness and understanding among students about environmental issues, natural resources, ecological balance, and sustainable development. The course aims to make students socially responsible citizens by understanding the relationship between humans and the environment, the impact of human activities on natural resources, and the need for conservation and environmental protection for future generations.
Course Objective	After completion of this course, students will be able to: 1. Understand the basic concepts of environment and environmental studies. 2. Explain the relationship between humans and the environment. 3. Identify environmental problems and their causes and effects. 4. Understand natural resources and their conservation methods. 5. Develop environmental awareness and responsibility towards society. 6. Analyze environmental issues related to water, forest, land, and food resources. 7. Develop critical thinking regarding environmental sustainability and resource management.
Pre-requisite	There are no specific prerequisites for this course. However, students should have: • Basic understanding of science and environment from school level. • Awareness about natural resources and environmental issues. • Interest in environmental conservation and sustainable development.
Course Outcomes	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)	<table><tr><th>CO / PSO</th><th>PSO 1</th><th>PSO 2</th><th>PSO 3</th><th>PSO 4</th><th>PSO 5</th><th>PSO 6</th><th>PSO 7</th><th>PSO 8</th></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><tr><td>CO4</td><td>✔</td><td></td><td>✔</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td><td>✔</td></tr></table>
Course Content	**UNIT: 1- Introduction to Environment and Environmental Studies** 1.1. Definition and Components of Environment 1.2. Relationship between the different components of Environment 1.3. Man and Environment relationship 1.4. Impact of technology on Environment 1.5. Environmental Degradation 1.6. Multidisciplinary nature of the Environment studies 1.7. Its scope and importance in the present day Education System **UNIT: 2-Natural Resources** 2.1. Renewable and Non-renewable resources, exploitation and conservation, Role of individual in conservation of natural resources. 2.2. Water resources: Water sources Surface and Ground water sources, 63 Indian and Global Scenario. 2.3. Land as a resource, social issues 2.4. Forest resources: Definition and Classification of Forests Ecological and Economic importance and benefits of forest, Indian scenario, Deforestation: causes and effects remedial measures. 2.5. 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, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. : - Attendance, Class and home Assignment, - Test (Theory / MCQ) 50% External assessment. : :(Theory / MCQ)

Course Code: 206-01
Course Title: Mastering SQL – PL/SQL

[Subject code-2411000902061003]

<table>
<tr><td>Course Code</td><td>206-01</td></tr>
<tr><td>Course Title</td><td>Mastering SQL – PL/SQL</td></tr>
<tr><td>Credits</td><td>2</td></tr>
<tr><td>Course Category</td><td>Skill Enhancement Course</td></tr>
<tr><td>Level of Course</td><td>100-199 (Foundation/Introductory)</td></tr>
<tr><td>Course Duration</td><td>30 hours of Practical/Applied knowledge</td></tr>
<tr><td>Purpose of Course</td><td>- The course is aim to give knowledge about Relational Database Management System, SQL and PL/SQL concepts.
- It also aims to understand concepts cursor, package, trigger, and exception handling.</td></tr>
<tr><td>Course Objective</td><td>1) To understand the concept of RDBMS
2) Data Storage and Management
3) To understand various concepts of SQL and PL/SQL.
4) Concepts of cursor, procedure and functions.
5) To understand the concepts of trigger and exception handling</td></tr>
<tr><td>Pre-requisite</td><td>Basic knowledge of database management system</td></tr>
<tr><td>Course Outcomes</td><td>CO1: Students will be able to understand the concepts RDBMS
CO2: Students will have knowledge of Data base management.
CO3: Working with PL/SQL
CO4: Knowledge of cursor, procedure and functions
CO5: Knowledge of trigger and exception handling</td></tr>
<tr><td>Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)</td><td>
<table>
<tr><th></th><th>PSO 1</th><th>PSO2</th><th>PSO3</th><th>PSO 4</th><th>PSO 5</th><th>PSO6</th><th>PSO7</th><th>PSO 8</th></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>
<tr><td>CO4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>CO5</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>Unit-1. Introduction of Relational Database
1.1 Data types (NUMBER, CHAR, VARCHAR, VARCHAR2, CLOB, NCLOB, LONG, DATE, RAW, LONGROW)
1.2 ROWID pseudo column & DUAL table
1.3 Join Queries
1.3.1 Inner Join
1.3.2 Outer Join (Left, Right, Full)
1.3.3 Cross Join
1.4 Sub Queries with (Insert, update and delete)
1.5 Nested queries

Unit-2: PL/SQL and conditional Statements:
2.1 Introduction to PL/SQL (Definition & Block Structure)
2.2 Variables, Constants and Data Type
2.3 Assigning Values to Variables
2.4 User Defined Record
2.5 Conditional Statements
2.5.1 IF…THEN statement
2.5.2 IF..Else statements
2.5.3 multiple conditions
2.5.4 Nested IF statements
2.5.5 CASE statements
2.6 Iterative statements:</td></tr>
</table>

	2.6.1 Loop..End Loop 2.6.2 For.. Loop 2.6.3 While Loop 2.6.4 EXIT Loop 2.6.5 Continue **Unit-3: Cursors and Exception Handling, Packages, Triggers** 3.1 Concepts of Cursors 3.1.1 Types of cursors (Implicit & Explicit) 3.1.2 Declare, open, fetch and close cursors. 3.2 Cursor Attributes (%FOUND, %NOTFOUND, %ISOPEN, %ROWCOUNT) 3.3 Exception Handling in PL/SQL 3.4 Stored Procedures, Stored Functions & Packages 3.5 Database Triggers
Reference Books	1. Database Management System, Oracle, SQL and PL/SQL (2nd ed.) by Das Gupta and Radha Krishna. ISBN: 978-8120343597. Publisher: PHI Learning Pvt. Ltd. 2. Oracle 9i PL/SQL Programming by Scott Urman. ISBN: 978-0072130655. Publisher: Oracle Press (McGraw-Hill). 3. Oracle SQL: The Essential Reference by David C. Kreines. ISBN: 978-0596000462. Publisher: O'Reilly Media. 4. SQL, PL/SQL: The Programming Language of Oracle by Ivan Bayross. ISBN: 978-8176563581. Publisher: BPB Publications. 5. Oracle PL/SQL Programming by Steven Feuerstein and Bill Pribyl. ISBN: 978-0596009779. Publisher: O'Reilly Media (SPD O'Reilly India edition available). 6. Learning Oracle SQL and PL/SQL: A Simplified Guide by Rajeeb Chatterjee. ISBN: 978-8120348639. Publisher: PHI Learning Pvt. Ltd. 7. Oracle PL/SQL Programming by Steven Feuerstein and Bill Pribyl. ISBN: 978-0596009779. Publisher: O'Reilly Media. 8. Oracle SQL Developer Handbook by Dan Hotka and Sue Harper. ISBN: 978-0071484742. Publisher: McGraw-Hill Education.
Teaching Methodology	Class Work, Discussion, Lab work, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. : - Attendance, Class and home Assignment, - Test (Theory /Practical / MCQ) 50% External assessment. :(Practical / MCQ)

Course Code: 206-02
Course Title: Designing and Publishing Website
[Subject code-2411000902061007]

<table>
<tr><td>Course Code</td><td>206-02</td></tr>
<tr><td>Course Title</td><td>Designing and Publishing Website</td></tr>
<tr><td>Credits</td><td>2</td></tr>
<tr><td>Course Category</td><td>Skill Enhancement Course (SEC)</td></tr>
<tr><td>Level of Course</td><td>100-199 (Foundation/Introductory)</td></tr>
<tr><td>Course Duration</td><td>30 hours of Practical/Applied knowledge</td></tr>
<tr><td>Purpose of Course</td><td>The purpose of this course is to provide students with a strong foundation in web technologies and enable them to design, develop, and publish static websites using modern tools and standards. The course focuses on building conceptual understanding and practical skills in HTML5 and CSS3 for creating structured, visually appealing, and user-friendly web pages.</td></tr>
<tr><td>Course Objective</td><td>(1) Provide Practical knowledge and practice of HTML and CSS
(2) Learn about Publishing Website on Server</td></tr>
<tr><td>Pre-requisite</td><td>Basic knowledge of Computer</td></tr>
<tr><td>Course Outcome</td><td>After successful completion of this course, students will be able to:
CO1: Understand the fundamentals of web technologies, WWW architecture, and differentiate between static and dynamic websites.
CO2: Design structured web pages using HTML5 elements, tags, attributes, hyperlinks, tables, and multimedia components.
CO3: Develop interactive web forms using HTML5 form elements, input types, attributes, and validation techniques.
CO4: Apply CSS3 concepts including selectors, styling methods, and inheritance to design visually appealing and well-structured web pages.
CO5: Create and design complete static websites by integrating HTML and CSS concepts for real-world applications such as blogs, portfolios, and e-commerce layouts.</td></tr>
<tr><td>Mapping Between COs and PSOs</td><td>
<table>
<tr><th>COs \ PSOs</th><th>PSO 1</th><th>PSO2</th><th>PSO3</th><th>PSO4</th><th>PSO5</th><th>PSO6</th><th>PSO7</th><th>PSO8</th></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>
<tr><td>CO4</td><td>✔</td><td>✔</td><td></td><td>✔</td><td>✔</td><td></td><td>✔</td><td></td></tr>
<tr><td>CO5</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>Unit 1: Basics of Web and HTML
1.1 Introduction to Website and Webpage
1.1.1 WWW architecture
1.1.2 Types of Website (static and Dynamic)
1.2 Introduction to HTML
1.2.1 HTML-5 Structure
1.2.2 HTML Tags, Elements and Attributes
1.3 Head tags (Title,Style,Script,Link)
1.4 Text Formatting Tags (b, i, strong, em, u, mark, p, h1..h6, big, sup, sub, ins, del, pre, center)
1.5 Block Tags (div, p, span)</td></tr>
</table>

	1.6 Non container Tags (br, hr, img) 1.7 Table in HTML 1.7.1 table tags (th, tr, td, head, body) 1.7.2 table height and width 1.7.3 table caption 1.7.4 cell padding, cell spacing 1.7.5 row span, column span 1.8 Hyperlink and Bookmark 1.9 iframe **Unit 2: Advanced HTML and HTML-5** 2.1 Form handling using HTML 5 2.1.1 What is form? 2.1.2 Form Attributes 2.1.3 Form Elements 2.1.4 Input Types 2.1.5 Input Attributes 2.1.6 Form Validation 2.2 Media Elements of HTML 5 2.2.1 Introduction to multimedia 2.2.2 <video> tag 2.2.3 <audio> tag 2.2.4 <embed> tag 2.2.5 Playing YouTube Videos **Unit 3: Designing Webpage using CSS-3** 3.1 Basics of CSS (What, Why, Need, Syntax, Simple Examples, CSS Version) 3.2 Methods to Apply Style to a Document 3.2.1 Inline - using the style attribute directly on an element 3.2.2 Document-wide - in the head element of the document 3.2.3 External - either by linking or importing 3.3 Document Structure and CSS Inheritance 3.4 Selectors 3.4.1 Common Selectors (element, id, Element-Specific Id, Class) 3.4.2 Contextual Selection 3.4.3 Direct Descendent Selector 3.4.4 Adjacent Sibling Selectors 3.4.5 General Sibling Selectors 3.4.6 Attribute Selectors 3.4.7 Multiple Attribute Selectors 3.4.8 Pseudo-Element Selectors **Unit 4: Basics of Web Publishing and Case Study** 4.1 Web Publishing 4.1.1 What is Domain name and Domain Space? 4.1.2 Types of web hosting 4.1.3 FTP Client 4.1.4 Web Servers and Hosting Providers 4.2 Case Study on Designing Website on one of the topic 4.2.1 Blogging Website 4.2.2 Online Shopping 4.2.3 Online Music / Video Store 4.2.4 Tours and Travel Website 4.2.5 Personal Portfolio
Reference Books	1. HTML Black Book, The Programmer's Complete HTML Reference

	Book, ISBN-9781932111309, Paraglyph, Incorporated, Author - Steve Holzner 2. The Complete Reference HTML and CSS, Fifth Edition, Thomos A Powel, Mc Graw Hill, ISBN - 978-0-07-174170-5 3. HTML and CSS Design and Build Websites, By Jon Duckett · 2011, Wiley, 9781118008188 4. Web Designing (HTML & CSS), Prof. Asheesh Pandey; Dr. Madhumita; Dr. Himani Jain, IIP Books, 2026, 978-93-7020-393-8 5. Web Technologies: HTML, CSS & JavaScript, Kogent Learning Solutions Inc., Dreamtech Press, 2011, 978-9350040881 6. Internet & World Wide Web: How to Program, H.M. Deitel; P.J. Deitel; A.B. Goldberg, Pearson India, 2012, 978-9332519206 7. Web Programming (Building Internet Applications), Chris Bates (Indian Edition), Wiley India, 2006, 978-8126506804 8. HTML 5 Black Book, Kogent Learning Solutions Inc., Dreamtech Press, 2016, 978-9351194736 9. The Zen of CSS Design, Dave Shea; Molly E. Holzschlag, Peachpit Press, 2005, 978-0321303479 10. Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics, Jennifer Niederst Robbins, O'Reilly Media, 2018, 978-1491960202
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. : - Attendance, Class and home Assignment - Test (Theory /Practical / MCQ) 50% External assessment. : : - Practical

Course Code: 206-03
Course Title: Application of AI for Students

<table>
<tr><td>Course Code</td><td>206 [Subject code-2611000902060249]</td></tr>
<tr><td>CourseTitle</td><td>Application of AI for Students</td></tr>
<tr><td>Credits</td><td>2</td></tr>
<tr><td>Course Category</td><td>Skill Enhancement Course (SEC)</td></tr>
<tr><td>Level of Course</td><td>100-199 (Foundation/Introductory)</td></tr>
<tr><td>Course Duration</td><td>30 hours of Practical/Applied knowledge</td></tr>
<tr><td>Purpose of Course</td><td>This course introduces students to the practical uses of generative AI tools. It helps students improve academic productivity, enhance business-related tasks, and develop skills for future career growth using tools like ChatGPT, Copilot, Gemini, and DeepSeek. It focuses on ethical AI use. It equips students with AI-powered solutions for tasks such as report writing, problem-solving, presentations, research, communication, and career development.</td></tr>
<tr><td>Course Objective</td><td>(1) Provide Practical knowledge and practice of ChatGPT, Copilot, Gemini, and DeepSeek
(2) Learn about report writing, problem-solving, presentations, research, communication</td></tr>
<tr><td>Pre-requisite</td><td>Basic knowledge of a blend of digital literacy, critical thinking, and basic technical foundations</td></tr>
<tr><td>Course Outcome</td><td>This course ensures students gain hands-on experience with AI tools for their academic and personal success, making learning more efficient and engaging. After successful completion of the course, students will be able to:
CO1: Understand the fundamentals capabilities and differences between AI tools likeGemini, and DeepSeek.
CO2: Demonstrate the ability to use AI ethically and effectively for assignment, drafting and research.
CO3: Apply techniques to enhance report writing including structure and data presentation.
CO4: Understand the practical limitations and accuracy of generative AI in an academic context.</td></tr>
<tr><td>Mapping Between COs and PSOs</td><td>
<table>
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</table>
</td></tr>
<tr><td>Course content</td><td>Unit 1: Iintroduction to Generative AI & Its Role in Learning
1.1 What is Generative AI? Basics & Real-Life Examples
1.2 AI in Business and Education: How It’s Changing Learning & Work.
1.3 Overview of AI Tools: Gamma, GPT, Copilot, Gemini, and DeepSeek.
1.4 Ethical & Responsible Use of AI for Students.

Unit 2: Exploring AI Tools for Academic & Productivity Tasks
2.1. GPT (ChatGPT, OpenAI): Writing essays, summarizing articles, and brainstorming ideas.
2.2. Copilot (Microsoft AI): Enhancing productivity in Word, Excel, and PowerPoint.
2.3. Gemini (Google AI): Research assistance, quick explanations, and</td></tr>
</table>

	data insights. 2.4. DeepSeek: AI for searching and analyzing academic and business trends. **Unit 3: Hands-On AI Applications for Student Life & Academics** 3.1. Assignment & Report Writing: Using AI to generate ideas, outlines, and improves writing. 3.2. Presentation Creation: AI tools for designing slides and structuring content. 3.3. Note-Taking & Study Help: AI for summarizing lectures and creating study guides. 3.4. Email & Communication: AI for writing professional emails and messages. 3.5. Event & Project Planning: AI for organizing group projects, schedules, and to-do lists. **Unit 4: AI for Career Growth & Future-Ready Skills** 4.1. Resume & Cover Letter Writing: Using AI to create professional resumes. 4.2. Interview Preparation: AI-generated mock interview questions and feedback. 4.3. Networking & Personal Branding: AI for writing LinkedIn posts and improving online presence. 4.4. Time Management & Productivity: AI tools for scheduling and tracking progress 4.5. Final Hands-On Activity: Use AI to complete a real-life academic or career-related task.
Reference Books	11. Introduction to Generative AI by Google Cloud Skills Boost. 12. *Generative AI for Beginners* by Microsoft Open Source. 13. Video: *The Best Real World Examples of Generative AI*. 14. Article: *Generative AI Examples* | Google Cloud. 15. Article: *20 Examples of Generative AI Applications Across Industries*. 16. Article: *Best 5 AI Tools: DeepSeek, OpenAI, Gemini, Grok and Copilot*.
Teaching Methodology	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. : - Attendance, Class and home Assignment - Test (Theory / MCQ) 50% External assessment. : : - Test (Theory / MCQ)

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 Application, 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 duringanyofthesesemesters.Thestudentisrequiredtoenrollandavailthese4-creditsandproducethe evidence in process to opt the multi-level exit option after successfully completion of first year (two semester) or second year (four semesters).

Guidelines for Question paper style

1) **Ideally each unit of the course should carry equal weightage of marks. However, it will vary upon the content of the units of the course.**
2) **Themajorandminorcourse'squestionpaperswillcarry50marksofexamwithduration as per the norms of university. Major courses will have ideally two components for the purpose of evaluation. : Theory and Practical.**
3) **The objective of the written/theory exams for all courses are to analyze the student's understanding about the course contents, assessing the conceptual knowledge about the course contents and ability to explain the concepts in written forms.**
4) **As the practical exams are conducted separately and viva-voce is also a part of the practical exam, the concepts and practical knowledge can be analyzed through the practical exams.**
5) **Since the subjects/courses are technical in nature, the major objective is to evaluate conceptual and technical knowledge for major and minor courses instead of expecting student's ability to write lengthy literature writing skills and abilities.**
6) **20% of questions are recommended to ask from objective/short questions types having weightage of 1 to 2 marks per question. Purpose of such question is to analyze precise understanding for the topics/points/concepts.**
7) **30% of questions are expected to ask from short questions to answer in few lines having weightage of 3 to 4 marks. Purpose of such questions is to analyze conceptual understanding for the topics/points/concepts that can be described in short.**
8) **50% of questions are expected to ask from long/descriptive/Short-notes questions to answer using charts/graphs/block diagrams/flowcharts/models having weightage of 5 to 7 marks. Purpose of such questions is to analyze the depth knowledge and ability to explain in detail emphasizing technical knowledge.**
9) **The evaluation by the examiner is expected to evaluate overall technical understanding of the student, ability to express the technical and conceptual knowledge, clarity of thoughts and understanding of the subject and concepts.**