श्रीचन्द्रशेखरेन्द्रसरस्वतीविश्वमहाविद्यालयः

SRI CHANDRASEKHARENDRA SARASWATHI VISWA MAHAVIDYALAYA

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SYLLABUS

DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS

BACHELOR OF SCIENCE IN CYBER SECURITY (B.SC. (CYBER SECURITY))

REGULATIONS EFFECTIVE FROM ACADEMIC YEAR 2024-2025 ONWARDS

SRI CHANDRASEKHARENDRA SARASWATHI VISWA MAHA VIDYALAYA

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

Bachelor of Science in Cyber Security

REGULATIONS

(Effective from the Academic Year 2024-2025)

The Department of Computer Science and Applications was established during 1996 with the vision of Empower every student to be innovative, creative and productive in the field of Computer Science by imparting quality education, developing skills and inculcating human values. The Department of Computer Science offers the following Programmes.

- B.Sc. in Computer Science
- BCA
- MCA

As per the NEP 2020 Policy, The Department offers the following UG 4-Year Honours Programmes with an exit option at the end of the 3rd year, 2nd year and 1st year from the year 2023-2024.

- B.Sc. in Computer Science
- BCA

As per the NEP 2020 Policy, The Department offers the following UG 4-Year Honours Programmes with an exit option at the end of the 3rd year, 2nd year and 1st year from the year 2024-2025.

- B.Sc. in Data Science
- B.Sc. in Cyber Security

In addition, the Department of Computer Science and Applications offers the following PG Programme.

- M.Sc. in Computer Science

SALIENT FEATURES OF FOUR YEARS UNDER GRADUATE PROGRAMMES

1. It is a Choice Based Credit System under Semester Scheme.
2. The Programmes comprise of about 50% Discipline Specific Core Courses as Major subjects, 20% Discipline Specific Core Courses / Multi-Discipline Specific Courses as Minor courses, and remaining 30% Ability

Enhancement Compulsory Courses, Skill Enhancement Courses along with Open Elective Courses.

3. The relative importance of Courses of the study is measured in terms of credits.
4. The declaration of result is based on Aggregate Percentage of marks obtained and Cumulative Grade Point Average (CGPA) earned.
5. The candidate has an option to exit after TWO, FOUR and SIX semesters of the Programme and shall be awarded Certificate, Diploma, and General Degree, respectively with a provision to reenter and complete the degree.

OBJECTIVES

The **B.Sc. in Cyber Security** course consists of a set of activities, projects, and initiatives, labs that supports the security framework of IT sectors. It is designed to educate students about different aspects of social science, security with concepts of Mathematics, data security, integrity and authentication. The program focuses on security principles which include design and systematic activities. It is intended to mould students into well prepared Security professionals and has been made with a good balance between technical & practical aspects, analytical and framework methods complemented by academic innovative research and industry best practices. In addition

- To enable the students to get solid basics in Mathematics, Programming, Computer Network, Network Security, Cyber Security fundamentals and advancements to solve technical problems.
- To enhance the students to have the capability to apply their knowledge and skills acquired to solve the issues in real world network and cyber security areas and to develop feasible and reliable systems to prevent and protect systems from security attack.
- To acquaint the students to have the potential to participate in life-long learning through the successful completion of advanced degrees, continuing education, certifications and/or other professional developments.
- To prepare the students to have the ability to apply the gained knowledge to improve the society ensuring ethical and moral values.

- To produce the students to have exposure to emerging cutting edge technologies and excellent training in the field of Computer network, Network security and Cyber security related issues.
- To produce outstanding Computer Scientists who can apply the theoretical knowledge into practice in the real world and develop standalone live projects themselves.
- To provide opportunity for the study of modern methods of information processing and its applications.
- To prepare students who wish to go on to further studies in computer science and related subjects.

PROGRAM OUTCOMES

- **Discipline knowledge:** Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity
- **Problem Solving:** Improved reasoning with strong mathematical ability to Identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
- **Design and Development of Solutions:** Ability to design and development of algorithmic solutions to real world problems.
- **Programming a computer:** Exhibiting strong skills required to program a computer for various issues and problems of day-to-day scientific applications.
- **Application Systems Knowledge:** Possessing a minimum knowledge to practice existing computer application software.
- **Communication:** Must have a reasonably good communication knowledge both in oral and writing.
- **Ethics on Profession, Environment and Society:** Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impacts due to computer-based solutions for problems.
- **Lifelong Learning:** Should become an independent learner. So, learn to learn ability.
- **Motivation to take up Higher Studies:** Inspiration to continue educations towards advanced studies on Computer Science.

PROGRAM SPECIFIC OUTCOMES FOR B.Sc. IN CYBER SECURITY

The four years **Bachelor of Science in Cyber Security** program enables students to attain the following additional attributes besides the afore-mentioned attributes:

- Develop knowledge in the field of cyber security courses necessary to qualify for the degree.
- Acquire a rich basket of value added courses and soft skill courses instilling self-confidence and moral values.
- Develop problem solving, decision making and communication skills.
- Demonstrate social responsibility through Ethics and values and Environmental Studies related activities in the campus and in the society.
- Strengthen the critical thinking skills and develop professionalism with the state of art ICT facilities.
- Quality for higher education, government services, industry needs and start up units through continuous practice of preparatory examinations.
- Gain inter-disciplinary, multi-disciplinary competence as value additions.

ELIGIBILITY FOR ADMISSION

Candidates for admission to the first year of the Degree of **B.Sc. in Cyber Security** shall be required to have passed the Higher Secondary Examination conducted by the Government of Tamil Nadu or an Examination accepted as equivalent thereof by the University authorities, with Mathematics / Business Mathematics / Statistics / Computer Science as one of the subjects in XII Std. The upper age limit to join the first year is 19.

For Lateral Entry to II year, Candidates for admission to the Second year of the Degree of **B.Sc. in Cyber Security** shall be required to have passed the Diploma in Computer Technology Examination conducted by the Government of Tamil Nadu, or an Examination accepted as equivalent thereof by the University authorities The upper age limit to join the second year is 21.

DURATION OF THE COURSE

The duration of the UG Programme is 4 years or 8 semesters. Students who desire to undergo a 3-year UG Programme will be allowed to exit after completion of the 3rdyear. If a student wants to leave after the completion of the

first or second year, the student will be given a UG Certificate or UG Diploma, respectively, provided they secure the prescribed number of credits. Students who exit with a UG certificate or UG diploma are permitted to re-enter within three years and complete the degree Programme.

Students may be permitted to take a break from the study during the period of study but the total duration for completing the Programme shall not exceed 7 years.

REGISTRATION OF COURSE

A newly admitted student will automatically be registered for all the courses prescribed for the first semester without option. Every student shall submit a completed registration form indicating the list of courses intended to be credited during the second to final semester. This registration will be done a week before the last working day of the current semester.

CHOICE BASED CREDIT SYSTEM

The University follows the '**Choice Based Credit System (CBCS)**' for all its Programmes. Each course is normally assigned one credit per lecture per week and one credit for two periods of tutorials or part thereof for laboratory or practical per week.

STRUCTURE OF THE COURSE AND EVALUATION PATTERN

Internal Marks: 40 - External Marks: 60

The duration of University examination for both theory and practical subjects shall be 3 hours. The maximum marks for each theory and practical course is 100. Continuous Internal Assessment (CIA) will be for 40. The university theory examination will be conducted for 100 marks, which will be then converted to 60 in order to add with continuous internal assessment to make 100 marks for the course. For the conduct of University examinations in practical, the question paper for the practical examination will be set by both internal and external examiners appointed by the University.

PROCEDURES FOR AWARDING MARKS FOR INTERNAL ASSESSMENT

The break-up of assessment and examination marks for theory subjects is as follows.

First Assessment (Test)	:	15	Marks
Second Assessment (Test)	:	15	Marks
Assignment & Attendance	:	10	Marks
Internal Assessment	:	40	Marks
University Examination	:	60	Marks
Total	:	100	Marks

The break-up of the assessment and examination marks for practical is as follows.

Observation	:	10	Marks
Model Examinations	:	20	Marks
Record Book	:	10	Marks
Internal Assessment	:	40	Marks
University Examination	:	60	Marks
Total	:	100	Marks

The break-up of assessment (**Internal Assessment Only**) for the subjects Indian Culture, Yoga/Sports, Principles of Environmental Science, Fundamentals of Cyber Security and Soft Skills is as follows:

Assignment	:	10	Marks
First Internal Test	:	30	Marks
Second Internal Test	:	30	Marks
Seminar	:	10	Marks
Quiz/Objective type test	:	10	Marks
Attendance	:	10	Marks
Total	:	100	Marks

REQUIREMENTS FOR THE COMPLETION OF THE SEMESTER

The candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirements for the completion of the semester.

1. He/ She secures not less than 80% of overall attendance in that semester taking into account the total number of periods in all courses put together attended by the candidate as against the total number of periods in all courses offered during that semester.
2. Condonation of attendance up to 10% is permitted on medical grounds. Relaxation in attendance is permitted up to 10% for the student who represents the university in sports and games. The above two relaxation cannot be taken concurrently.

3. Candidates with 69% - 40% attendance will not be permitted to write the examination (including practical) in the current semester **(Sem-Carry)** and he / she can write the same on the subsequent semester.
4. Candidates with less that 40% attendance will not be permitted to write the end semester examination (including practical) and are not permitted to go for the next semester **(Detained)**. Such candidate required to repeat the incomplete semester in the next academic year, after paying the fee for the break of study as prescribed by the University from time to time.

REQUIREMENTS FOR PROCEEDING TO SUBSEQUENT SEMESTER

1. Candidates shall register their name for the First Semester Examination after the admission in the U.G. course.
2. Candidates shall be permitted to proceed from the First Semester up to Final Semester irrespective of their failure in any of the Semester examinations subject to the condition that the candidates should register for all the arrear subjects of earlier semesters along with current (subsequent) semester subjects.
3. Candidates shall be eligible to go to subsequent semester, only if they earn sufficient attendance as prescribed thereof by the University from time to time.

STUDENT MENTOR

To help the students in planning their course of study and for general advice on the academic programme, the Head of the Department will attach a certain number of students to a member of the faculty who shall function as student Mentor for those students throughout their period of study. Such student Mentor shall advise the students, give preliminary approval for the courses to be taken by the students during each semester and obtain the final approval of the Head of the Department.

CLASS COMMITTEE

The composition of the class committees will be as follows.

- Course coordinators of the courses, if any, who shall be appointed by the Head of the Department and the staff members teaching the course.
- Teaching staff of other individual courses.
- One professor, preferably not teaching the concerned class, appointed by the Head of the Department.
- The Head of the Department may opt to be a member or the Chairman.
- All student of the class, and the Head of the Department (if not already a member) or any staff member nominated by the Head of the Department may optto be special invitees.
- The class committee shall meet three times during the semester.
- The first meeting will be held within a week after the completion of the first assessment to review the performance and for follow-up action.
- The second meeting will be held within a week after the completion of the second assessment to review the performance and for follow-up action.
- The third meeting will be held after all the assessments are completed for all the courses, and at least one week before the commencement of the examinations. During this meeting the assessment on a maximum of 40 marks will be finalized for every student and tabulated and submitted to the head of the department.

WITHDRAWAL FROM A COURSE

A student can withdraw from a course at any time with the approval of the Dean and the recommendation of the Head of the Department.

DISCIPLINE

Every student is required to observe disciplined and decorous behavior both inside and outside the college. They do not indulge in any activity which will tend to bring down the prestige of the University. Boys should wear decent dresses. No casual wear like T – shirts or Jeans pant is permitted. Girls shall wear decent dresses like Chudidhar with Dupatta or Saree.

REVISION OF REGULATION AND CURRICULUM

The university may revise, amend or change the Regulations, Scheme of Examination and Syllabus as found necessary.

AUTHORITY OF BOARD OF STUDIES

The Board of Studies has the full authority to change the syllabus any time according to IT trend and industry needs.

SUBSTITUTE ASSESSMENT:

A student who has missed one or more of assessment tests of a course other than the examinations for genuine reasons as accepted by the Head of the Department may take a substitute assessment for any one of the missed assessment. A student who wishes to have a substitute assessment for missed assessment must apply to the Head of the Department within two week from the date of the missed assessment.

EXAMINATIONS

1. The end semester examinations will ordinarily be conducted during November to December in the odd semesters and during April to May in the even semesters. For all the theory courses, question papers will be set by external examiners and valued by external and/or internal examiners.
2. All practical examinations including software development lab will be conducted by Internal & External examiners appointed by the University

PASSING AND DECLARATION OF EXAMINATION RESULTS:

PASSING MINIMUM

1. A candidate shall be declared to have passed in each paper / practical if he / she secures not less than 40% of marks (the continuous internal assessment (CIA) and the University examinations (External) put together), provided a minimum of 35% of marks secured in the University examination.
2. If a candidate fails to secure a pass in a particular course, it is mandatory that he/she shall register and reappear for the examination in that course during the next semester. He / She should continue to register and reappear for the examination till he/she secures a pass. However, the internal assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.
3. Assessments of all the courses on absolute marks will be considered and passed by the Results – Passing- Board in accordance with the rules of the University. Thereafter, the Controller of Examinations shall convert the marks of each course to the corresponding letter grade as stated below. In addition the grade point average and the cumulative grade point average calculated. Based on these, the grade cards will be prepared.

Marks	Letter Grade	Grade Point
100	O (Outstanding)	10
90-99	A+ (Excellent)	9
80-89	A (Very good)	8
70-79	B+ (Good)	7
60-69	B (Above average)	6
50-59	C (Average)	5
40-49	P (Pass)	4
	F (Fail)	0
	Ab (Absent)	0

4. A Student who obtains less than 40 marks out of 100 in the examination will be awarded the "**F**" grade and absent for the examination will be awarded the **"Ab"** grade. A Student who earns a grade of "**O**", "**A+", "A", "B+", "B", "C" or "P"** in a course is declared to have successfully completed that course and earned the respective credits for that course. Such a course cannot be repeated by the student.

5. A Student who obtains a letter grade **"F"** or **"Ab"** in a course is to reappear for the examinations in that course.
6. The following grade points are associated with each letter grade for calculating the grade point average and cumulative grade point average.

"**O**" – 10;	**"B+" –** 07;	**"P" – 0**4;
"**A+" –** 09;	**"B" –** 06;	"**F" - 0;**
"A" – 08;	**"C" –** 05;	**"Ab" - 0;**

7. A Student can apply for revaluation of one or more of her/his examination answer papers within a week from the date of display of the result on payment of the prescribed fee. The application must be made to the Controller of Examinations with the recommendation of the Head of the Department.
8. After the results are declared, grade cards will be issued to the student. The grade cards will contain the list of courses registered during the year/ semester, the grades scored and the grade point average (GPA) for the year/ semester.
9. GPA is the sum of the products of the number of credits of a course with the grade point scored in that course, taken over all the course for the year/semester, divided by the sum of the number of credits for all courses taken in that year/semester. CGPA is similarly calculated by considering all the courses taken from the time of admission.
10. After successful completion of the programme, the degree will be awarded with the following classification based on CGPA.
    a) **First class with Distinction** will be awarded, if the student passed all the courses in the first attempt and obtained a minimum CGPA 0f 8.25.
    b) **First class** will be awarded, if the student earned a minimum CGPA of 6.5 within five years for **B.Sc. (HONOURS)**, four years for **B.Sc.**, three years for **Diploma** and two years for **Certificate course** from the time of admission.
    c) **Second Class** will be awarded, if the student completed the course beyond the above said period of the respective course.
        - The total credits for **Bachelor of Science (HONOURS) in Cyber Security** course are 178.

- ❖ The total credits for **Bachelor of Science in Cyber Security** course are 136.
- ❖ The total credits for **Diploma in Cyber Security** course are 88.
- ❖ The total credits for **Certificate course on Basics of Cyber Security** are 46.

ELIGIBILITY FOR THE AWARD OF THE DEGREE

1. The candidate shall be declared to be eligible for the award of Degree of **Bachelor of Science (HONOURS) in Cyber Security,** if He / She has successfully completed the course requirements and has passed all the prescribed examinations in all the eight semesters with a minimum of 178 credits within a maximum period of seven years reckoned from the commencement of the first semester to which the candidate was admitted.
2. The candidate shall be declared to be eligible for the award of Degree of **Bachelor of Science in Cyber Security,** if He / She exits at the end of third year and has successfully completed the course requirements and has passed all the prescribed examinations in all the six semesters with a minimum of 136 credits within a maximum period of five years reckoned from the commencement of the first semester to which the candidate was admitted.
3. The candidate shall be declared to be eligible for the award of **Diploma in Cyber Security,** if He / She exits at the end of second year and has successfully completed the course requirements and has passed all the prescribed examinations in all the four semesters with a minimum of 88 credits within a maximum period of four years reckoned from the commencement of the first semester to which the candidate was admitted.
4. The candidate shall be declared to be eligible for the award of **Certificate Course on Basics of Cyber Security,** if He / She exits at the end of first year and has successfully completed the course requirements and has passed all the prescribed examinations in all the two semesters with a minimum of 46 credits within a maximum period of two years reckoned from the commencement of the first semester to which the candidate was admitted.

PATTERN OF QUESTION PAPER (THEORY)

Time : 3 hours **Max Marks :** 100

Part – A (10 * 2 = 20 Marks)

(2 Question from each unit) Theory

Part – B (5 * 16 = 80 Marks)

(1 Set from each Unit (Either or Pattern))

Marks secured by the candidate will be converted to 60 to make the aggregate 100, while adding with Continuous Internal Assessment 40.

PATTERN OF QUESTION PAPER (PRACTICAL)

Time : 3 Hours **Max** : 60 Marks.

One compulsory lab exercise (may contain sub divisions) should be solved within 3 hours. The External Examiner will set a question paper on the spot with the help of the question bank or list of exercise. The evaluation pattern as follows

Program and output	- 40 Marks
Record	- 10 Marks
Viva- Voce	- 10 Marks.

No more than threecandidates should get the same question in a batch.

STRUCTURE OF THE COURSE

The course of the **B.Sc. in Cyber Security** Degree shall consist of the following subjects.

1. Foundation Courses: The course shall comprise the study of,
    a) Part-I Tamil / Sanskrit /Hindi
    b) Part-II English
2. Core Courses:
    a) Main Subject
    b) Allied Subjects
    c) Application Oriented subjects related to the main subject of study and practical etc.

Curriculum and Credits

Sem	Course Code	Category	Paper	Hrs	L	T	P	Total Credits
I	BCY231LT01 / BCY231LH01 / BCY231LS01	Multidisciplinary	Tamil - I / Hindi - I / Sanskrit - I	4	3	1	0	3
	BCY231E02	AEC-1	English - I	4	3	1	0	3
	BCY231T03	Major-1	Object Oriented Programming with C++	5	3	2	0	4
	BCY231T04	Major-2	Cryptography and Network security	5	3	2	0	4
	BCY231A05	Minor-1	Allied Mathematics -I	4	3	1	0	4
	BCY231P06	SEC-1	Object Oriented Programming Lab	5	0	0	5	2
	BCY231V07	VAC-1	Indian Culture	1	0	1	0	1
	BCY231V08	VAC-2	Principles of Environmental Science	2	0	2	0	2
			Total	**30**	**15**	**10**	**5**	**23**
II	BCY232LT01 / BCY232LH01 / BCY232LS01	Multidisciplinary	Tamil - II / Hindi - II / Sanskrit - II	4	3	1	0	3
	BCY232E02	AEC-2	English - II	4	3	1	0	3
	BCY232T03	Major-3	Firewall and Internet Security	5	3	2	0	4
	BCY232T04	Major-4	Data Structures and Algorithms	5	3	2	0	4
	BCY232A05	Minor-2	Allied Mathematics -II	4	3	1	0	4
	BCY232P06	SEC-2	Data Structures Lab	5	0	0	5	2
	BCY232V07	VAC-3	Yoga	1	0	1	0	1
	BCY232V08	VAC-4	Fundamentals of Human Rights	2	0	2	0	2
			Total	**30**	**15**	**10**	**5**	**23**
III	BCY233LT01 / BCY233LH01 / BCY233LS01	Multidisciplinary	Tamil - III / Hindi - III / Sanskrit - III	4	3	1	0	3
	BCY233E02	AEC-3	English - III	4	3	1	0	3
	BCY233T03	Major-5	Java Programming	5	3	2	0	4
	BCY233T04	Major-6	Ethical Hacking	5	3	2	0	4
	BCY233A05	Minor-3	Applied Physics-I	5	3	2	0	4
	BCY233P06	SEC-3	Java Programming Lab	6	0	0	6	2
	BCY233V07	VAC-5	Soft Skills - I	1	0	1	0	1
			Total	**30**	**15**	**9**	**6**	**21**

Sem	Course Code	Category	Paper	Hrs	L	T	P	Total Credits
IV	BCY234LT01 / BCY234LH01 / BCY234LS01	Multidisciplinary	Tamil - IV / Hindi - IV / Sanskrit - IV	4	3	1	0	3
	BCY234E02	AEC-4	English - IV	4	3	1	0	3
	BCY234T03	Major-7	Data Communication and Networking	5	3	2	0	4
	BCY234T04	Major-8	Operating system and security	5	3	2	0	4
	BCY234A05	Minor-4	Applied Physics-II	5	3	2	0	4
	BCY234P06	SEC-4	Communication Network Lab	6	0	0	6	2
	BCY234V07	VAC-6	Soft Skills - II	1	0	1	0	1
			Total	**30**	**15**	**9**	**6**	**21**
V	BCY235T01	Major-9	Internet of Things (IoT)	4	3	1	0	4
	BCY235T02	Major-10	Cyber security	5	3	2	0	4
	BCY235T03	Major-11	Cyber Crime Investigation and Digital Forensics	5	3	2	0	4
		Major-12	**Major Elective-1**	4	3	1	0	4
	BCY235TE04A		A. Software Project Management & Quality Assurance					
	BCY235TE04B		B. Software Engineering					
		Minor-5	**Minor Elective - 1**	4	3	1	0	4
	BCY235TE05A		A. Human Resource management					
	BCY235TE05B		B. Management Information System					
	BCY235P06	SEC-5	Cyber security Lab	4	0	0	4	2
	BCY235P07	SEC-6	Cyber Crime Investigation and Digital Forensics Lab	4	0	0	4	2
			Total	**30**	**15**	**7**	**8**	**24**
VI	BCY236T01	Major-13	Programming with Python	5	3	2	0	4
	BCY236T02	Major-14	Machine Learning	5	3	2	0	4
	BCY236T03	Major-15	Intrusion Detection and Prevention System	4	3	1	0	4
		Major-16	**Major Elective-2**	4	3	1	0	4
	BCY236TE04A		A. Biometric Security					
	BCY236TE04B		B. Artificial Intelligence					
		Minor-6	**Minor Elective-2**	4	3	1	0	4
	BCY236AE05A		A.Organization Behaviour					
	BCY236AE05B		B. Digital Marketing					
	BCY236P06	SEC-7	Python Lab	4	0	0	4	2
	BCY236P07	SEC-8	Software Development Lab	4	0	0	4	2
			Total	**30**	**15**	**7**	**8**	**24**

Sem	Course Code	Category	Paper	Hrs	L	T	P	Total Credits
VII	BDS237T01	Major-17	Information Retrieval Techniques	5	3	2	0	4
		Major-18	**Major Elective-3**	5	3	2	0	4
	BDS237TE02A		A. Health Analytics					
	BDS237TE02B		B. No SQL Databases					
		Major-19	**Major Elective-4**	5	3	2	0	4
	BDS237TE03A		A. Data Security and Privacy					
	BDS237TE03B		B. Techniques and Tools for Data Science					
		Major-20	**Major Elective-5**	5	3	2	0	4
	BDS237TE04A		A. Internet of Things (IoT)					
	BDS237TE04B		B. Business Analytics					
		Minor-7	**Minor Elective-3**	4	3	1	0	4
	BDS237AE05A		A. Statistical Inference For Data Science					
	BDS237AE05B		B. Operations Research					
	BDS237P06	IAPC - 1	Mini Project	6	0	0	6	2
Total				**30**	**15**	**9**	**6**	**22**
VIII	BDS238T01	Major-21	Deep Learning	5	3	2	0	4
		Minor-8	**Minor Elective-4**	4	3	1	0	4
	BDS238AE02A		A. Human Values and Professional Ethics					
	BDS238AE02B		B. Ethical Hacking					
	BDS238P03	IAPC - 2	Project	21	0	0	21	12
Total				**30**	**6**	**3**	**21**	**20**
				Overall Total				**178**

S.No	Course Category	Total Credits	
		III Year	IV Year
1	Multidisciplinary	**12**	**12**
2	Ability Enhancement Course (AEC)	**12**	**12**
3	Minor	**24**	**32**
4	Major	**64**	**84**
5	Skills Enhancement Course (SEC)	**16**	**16**
6	Research Project / Dissertation (IAPC)	**-**	**14**
7	Value Added Course	**8**	**8**
Overall Credits		**136**	**178**

BCY231LT01	LANGUAGE –I (TAMIL - I)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

நோக்கம்:

- தற்கால இலக்கியப் போக்குகளையும், இலக்கணங்களையும் மாணவர்கள் அறியுமாறு செய்து அவர்களின் படைப்பாற்றலைத் தூண்டுதல்.
- பாரதியார் காலம் தொட்டு தற்கால புதுக்கவிதைகள் வரை கவிதை இலக்கியம் அறிமுகப்படுத்தப்படுவதால் படைப்பாற்றல் திறன் பெறுதல்.
- மொழி அறிவோடு சிந்தனை திறன் அதிகரித்தல்.
- தமிழ் மொழியை பிழையின்றி எழுதவும் புதிய கலைச் சொற்களை உருவாக்கவும் அறிந்து கொள்ளுதல்.
- புதுக்கவிதையின்மூலம் வாழ்வியல் விழுமியங்களை உணர்த்துதல்
- இலக்கணமும் மொழித் திறனும் மொழியை பிழையின்றி பேச எழுத கற்க தேவையான தமிழ் இலக்கணத்தின் இன்றியமையாமையை உணர்த்துதல்
- பக்தி இலக்கியங்கள் வழி சமயச் சான்றோர்களின் கருத்துக்களை உணர்த்துதல்
- மாணவர்களின் வாசிப்பு திறனையும் படைப்புத் திறனையும் மேம்படுத்த சமூகப் பிரச்சனைகளை அறிய வைத்தல்
- மொழியினைப் பிழையின்றி கற்பதற்கும் பிறத்துரைச் சார்ந்த கலைச் சொற்களையும் அறிய வைத்தல்

பயன் : -

- புதுக்கவிதையின் மூலம் வாழ்வியல் விழுமியங்களை உணர்ந்து கொள்ளுதல்
- இலக்கணமும் மொழித்திறனும் மொழியை பிழையின்றிப் பேச எழுத கற்கத் தேவையான தமிழ் இலக்கணத்தின் இன்றியமையாமையை உணர்ந்து கொள்ளுதல்
- பக்தி இலக்கியங்கள் வழி பக்தி நெறிகளை உணர்ந்து கொள்ளுதல்
- மாணவர்களின் வாசிப்பு திறனையும் படைப்புத்திறனையும் மேம்படுத்த சமூகப் பிரச்சனைகளை அறிந்து கொள்ளுதல்
- மொழியினை பிழையின்றி கற்பதற்கும் பிற துறைச் சார்ந்த கலைச் சொற்களையும் அறிந்து கொள்ளுதல்

பாடத்திட்டங்கள்

அலகு - I இக்கால இலக்கியம்

தமிழ்த் தாய் வாழ்த்து- மனோன்மணியம் சுந்தரனார் போகின்ற பாரதமும் வருகின்ற பாரதம், பாரதியார் வருகின்ற பாரதத்தை வாழ்த்துதல் தமிழின் இனிமை- பாரதிதாசன், ஒரு கிராமத்து நதி- சிற்பி பாலசுப்ரமணியம்,அனுபவம்-கண்ணதாசன்,வண்ணத்துப்பூச்சி-நாமுத்துக்குமார்- சென்னிமலை கிளியோ பாத்ரா ஈரோடு தமிழன்பன்- தொழில் பாடல்கள் - கொண்டாட்டப் பாடல்கள் - வழிபாட்டு பாடல்கள்

12

அலகு - II இலக்கணம்

எழுத்தின் விளக்கம் - எழுத்தின் வகைகள் - வினா எழுத்துக்கள் – சுட்டெழுத்துக்கள் - வல்லினம் மிகும் இடங்கள் - வல்லினம் மிகா இடங்கள் - ஒலிப்பு மாறுபாடுகளும் பொருள் வேறுபாடுகளும்.

12

அலகு - III பக்தி இலக்கியம்

விநாயகர் - தத்துவமயமான விநாயகர் - பக்தி - பக்தி செய்வது எதற்காக - ஸ்ரீராமன்- அம்மா - குரு பரம்பரை - சரணாகதியே முக்கியம்- மகான்கள் காட்டும் குரு பக்தி - விநாயகர் துணை- ஸ்ரீ மகா பெரியவர்

12

அலகு - IV சிறுகதைமற்றும் நாவல்

செவ்வாழை- அறிஞர் அண்ணா, குலத்தங்கரை அரசமரம்- வ.வே.சு ஐயர், வாடாமல்லி – புதுமைப்பித்தன், தனிமை - ராஜம் கிருஷ்ணன் ,நரிப்பில்- இறையன்பு - பார்வதி பிஏ பேரறிஞர் அண்ணா

12

அலகு - **V** மொழிப் பயிற்சி

பொருந்திய சொல்லைத் தேர்வு செய்தல் மரபுத்தொடர் நேர்காணல் கலைச்சொல் பிறமொழிச் சொற்களை நீக்கி எழுதுதல்

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TOTAL : 60

பாடநூல் :-

1. பாரதியார் கவிதைகள் 2007 எட்டாம் பதிப்பு தென்றல் நிலையம்
2. சு சக்திவேல் நாட்டுப்புறவியல் ஆய்வு மணிவாசகர் பதிப்பகம் சிதம்பரம்
3. ரா வள்ளிக்கண்ணன் 1999 புதுக்கவிதையில் தோற்றமும் வளர்ச்சியும் நான்காம் பதிப்பு அகரம் வெளியீடு கும்பகோணம்
4. தெய்வத்தின் குரல் தொகுப்பாசிரியர் ரா கணபதி வானதி பதிப்பகம் சென்னை -17
5. தமிழர் நாட்டுப் பாடல்கள் நியூ செஞ்சுரி புத்தக நிறுவனம்.

பார்வை நூல் :-

1. வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு நியூ செஞ்சுரி புக் ஹவுஸ் சென்னை
2. நாட்டுப்புறவியல் ஆய்வுவானமாமலை
3. சு சக்திவேல் மணிவாசகர் பதிப்பகம் பாரிமுனை சென்னை 108
4. சிற்பி பாலசுப்ரமணியம் இருபதாம் நூற்றாண்டு தமிழ் கவிதைகள்
5. பாரதிதாசன் பாடல்கள் பாவை பப்ளிகேஷன்ஸ் சென்னை
6. அற இலக்கியத்தில் வாழ்வியல் விழுமியங்கள் செம்முதாய்பதிப்பகம் சென்னை.

BCY231LH01	LANGUAGE –I (HINDI - I)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

UNIT –I REFLECTION ON HINDI LANGUAGE:

a) Importance of Hindi learning & the place of Hindi as National language.
b) Cultural contexts of Hindi : an introduction &Various functional forms of Hindi
c) Hindi Phonetics – Vowels and Consonants
d) Barahkhadi & Dwitvakshar and Samyuktakshar
e) Often wrong spelt words and correction

UNIT –II HINDI VOCABULORY: made easy

a) Greetings and Introductory words
b) Basic words for daily usage – spoken purpose in particular.
c) Introduction to parts of speech in Hindi
d) Adjective noun agreements, Oblique and expressions of possession (APNA)

UNIT – III HINDIGRAMMAR: for Syntax Understanding

a) Gender and Number
b) Infinitive Verbs : commands and requests
c) Partsof speech - sentence making
d) Verb usage variations
e) Karakchihn – Introduction

UNIT –IV WRITINGAND READING SKILLS OF HINDI

a) Application of case-endings in sentences
b) Sentence formation (Gender specified)
c) Sentence formation (Number specified)
d) Changing the sentence according to the instructions (using '*Be* form')
e) Hindi – reading and writing exercises (Short stories, paragraphs etc.)

UNIT – V THE FOUNDATION FOR HINDI SPEAKING

a) Introduction of Tenses
b) Present Tense and it's variations
c) Future Tense and it's variations
d) Transcription of Paragraph
e) OVER ALL REVIEW OF WHAT WE LEARNED SO FAR

TEXT BOOKS:

1. **HINDI SOURABH,** Prepared by Department of Hindi, SCSVMV

REFERENCES:

1. "Come Let us Learn Hindi" : Dr. Alok Pandey, Published by Milind Prakashan, Hyderabad 2013
2. Pankhudiyan 1&2: Dr. Madhu Dhawan, Lekhan Prakashan, New Delhi 2011
3. SABARI HINDI BODHINI, Published by Shabari Prakasan, Selam, 2012

BCY231LS01	LANGUAGE –I (SANSKRIT - I)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

Unit - I भागः - क

1. Vowels & Consonants
2. Words begin with vowels
3. Words begin with क to ण
4. Words begin with त to ह

Unit - II भागः - ख

1. Words begin with क to झ with the combination of Vowels.
2. Words begin with ट to न with the combination of Vowels.
3. Words begin with प to ह with the combination of Vowels.
4. Combined Letters.
5. Simple Sentences.

Unit - III भागः - ग

1. Lessons from text book 1-6.

Unit - IV भागः – घ

1. Lessons from text book 7-12.

Unit - V भागः - ङ

1.शब्दरूपाणि

1. देवः	6. छात्रा	11. वनम्	16. इदम्
2. मुनिः	7. मतिः	12. अस्मद्	17. किम
3. गुरुः	8. गौरी	13. युष्मद्	
4. पितृ	9. धेनुः	14. तद्	
5. गो	10. मातृ	15. एतद्	

2. धातुरूपाणि (Present tense, Past tense and Future tense) परस्मैपद-आत्मनेपदधातवः

1.भू धातुः
2. पठ् धातुः
3. गम् धातुः

Text Books –

1. Samskrita Siksha - Part I & II, Published by Department of Sanskrit and Indian culture, SCSVMV University (Deemed University), Enathur, Kanchipuram.

BCY231E02	ENGLISH -I	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES

- To get inspiration from the life history of great scientists
- To get exposed to the genre of poetry
- To provide students with basic grammar of English
- To understand grammatically correct sentences and make use of it
- To groom the students to become a successful personality

COURSE OUTCOMES

- Read and interpret the text in English language
- Appreciate the poetic language.
- Comprehend the Basic English grammar and its usage.
- Write sentences without errors.
- Develop an integrated sense of personal identity, a positive sense of self, and a personal code of ethics.

SYLLABUS

UNIT – I BIOGRAPHY

1. Sir C.V. Raman
2. Srinivasa Ramanujan
3. APJ. Abdul Kalam

12

UNIT – II POETRY

1. Edgar Allan Poe : Sonnet –To Science
2. Walt Whitman : When I heard the Learn'd Astronomer
3. Rudyard Kipling : The Secret of machine

12

UNIT – III BASIC GRAMMAR – I

1. Articles
2. Pronouns –Personal & Impersonal
3. Adjectives Synonyms & Antonyms
4. Sentence Structure

12

UNIT – IV BASIC GRAMMAR – II

1. Tense forms
2. Idioms &Phrases
3. Suitability & Verbs
4. E-Mail
5. Patterns of Greeting

12

UNIT – V PERSONALITY DEVELOPMENT

1. Know your personality
2. Leadership qualities
3. Enhance your effectiveness
4. Career planning
5. Time management

12

TOTAL: 60

TEXT BOOKS:

1. Rajiv K. Mishra. *Personality Development*. Delhi: Rupa Publications, 2004

BCY231T03	OBJECT ORIENTED PROGRAMMING WITH C++	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES:

- To introduce the basic concepts of Object Oriented Programming.
- To acquire knowledge on C++ functions.
- To become aware of significant classes and Objects.
- To impart knowledge on inheritance and polymorphism concepts in C++.
- To explore various file I/O Operations.

COURSE OUTCOMES:

- Understand the basic concepts and need of Object oriented programming.
- Explain the various keywords and Tokens in C++.
- Describe the various class concepts in C++.
- Explain the basic principles of inheritance and polymorphism
- Examine the various file I/O operations.

SYLLABUS

UNIT - I

Introduction to C++ - Principles Of Object Oriented Programming (OOP) – Basic Concepts of OOP - Benefits of OOP – Applications of OOP – Tokens – Keywords – Identifiers – Variables – Operators – Manipulators - Expressions.

12

UNIT - II

Decision Making Statements – Looping Statements - Functions - Main Function - Function Prototyping – Passing Parameters to Functions - Values Return by Functions – Inline Functions - Friend Functions.

12

UNIT - III

Classes and Objects - Constructors and Destructors - Types of Constructor - Inheritance – Types of Inheritance – Function Overloading - Operator Overloading.

12

UNIT - IV

Pointers - Virtual Functions and Polymorphism - Managing Console I/O operations - Templates Introduction – Function templates

12

UNIT – V

Working with Files – Classes for File Stream Operations – Opening and Closing of a File – Updating a File - End of File Deduction.

12

TOTAL: 60

TEXT BOOKS:

1. Herbert Schildt(2017), "C++ Complete Reference", Fourth edition, TMH,
2. Bjarne Stroustrup, (2013)"The C++ programming language", Addison Wesley,
3. Balaguruswamy, "Programming in C++", 5th Edition, Tata McGraw Hill Education Private Limited, 2011.

REFERENCE BOOKS:

1. Paul J.Deitel , Harvey M.Deitel, "C++: How To Program", Prentice Hall, 2010
2. Robert Lafore, "Object Oriented programming Using C++". Waite's Group, 1999.

BCY231T04	CRYPTOGRAPHY AND NETWORK SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES

- To understand basics of Cryptography and Network Security.
- To understand the concept of public key cryptography.
- To understand the various Security Applications.
- To apply methods for authentication, access control, intrusion detection and prevention.
- Identify and mitigate software security vulnerabilities in existing systems.

COURSE OUTCOMES

- Understand various Cryptographic Techniques.
- Apply various public key cryptography techniques.
- Implement Hashing and Digital Signature techniques.
- Implement system level security applications.
- Describe the principles of the most widely used Internet security solutions.

SYLLABUS

UNIT – I INTRODUCTION

Services, Mechanisms and attacks-the OSI security architecture-Network security model-Classical Encryption techniques.

12

UNIT – II BLOCK CIPHERS & PUBLIC KEY CRYPTOGRAPHY

Data Encryption Standard-Advanced Encryption Standard (AES)-Triple DES-Blowfish-RC5 algorithm. Public key cryptography-The RSA algorithm-Key management.

12

UNIT – III HASH FUNCTIONS & MACS

Message Authentication and Hash Function: Authentication requirements - authentication functions message authentication code - hash functions - birthday attacks.

12

UNIT – IV SECURITY PRACTICE & SYSTEM SECURITY

Authentication Applications : Kerberos X.509 Authentication services - Internet Firewalls for Trusted System: Roles of Firewalls - Types of Firewalls - Firewall designs.

12

UNIT – V E-MAIL & WEB SECURITY

E-mail Security: Security Services for E-mail-attacks-Pretty Good Privacy-S/MIME- Web Security: Secure socket layer and transport layer security - secure electronic transaction (SET).

12

TOTAL: 60

TEXT BOOK:

1. BehrouzA.Foruzan," Cryptography and Network Security", Tata McGraw Hill, 2007.
2. Charlie Kaufman, Radia Perlman, and Mike Speciner," Network Security: PRIVATE Communication in a PUBLIC World", Prentice Hall, ISBN 0-13-046019-2.

REFERENCES:

1. Douglas Stinson, "Cryptography Theory and Practice", Chapman & Hall/CRC, 2nd Edition.

BCY231A05	ALLIED MATHEMATICS – I	L	T	P	C
		3	1	0	4

(For Students admitted from 2025 onwards)
Common to B.Sc. (Computer Science, Data Science and Cyber Security)

Pre-requisite:
Basic knowledge on Matrices, Trigonometry, Differentiation and Integration.

Course objectives:

- To gain knowledge on eigen values and eigen vectors
- To understand expansions of trigonometric functions
- To know the differentiation of hyperbolic functions and successive differentiation
- To understand partial differentiation and apply Eulers theorem
- To acquire knowledge about solving algebraic and transcendental equations numerically
- To classify type of integral and evaluate

Unit-I Matrices

Introduction to Matrix-Matrix operations- Symmetric and Skew-Symmetric matrices - Orthogonal and Unitary matrices - Rank of a matrix -Test for Consistency of linear equations -Characteristic Equation of a matrix- Characteristic vectors of a matrix - Cayley-Hamilton theorem (without proof)- Simple problems and applications

Unit-II Trigonometry

Introduction to Trigonometry-Expansions: Expansions of sin x, cos x, tan x in terms of x ; hyperbolic functions: hyperbolic functions and inverse hyperbolic functions.

Unit-III Numerical Solution of Equations

Solution of Numerical algebraic and transcendental equation:Bisection Method- Method of false position- Newton – Raphson method-Solution of simultaneous linear algebraic equations: Direct Methods: Gauss elimination method- Gauss Jordon method; Iterative Methods: Gauss Seidel method.

Unit-IV Successive Differentiation and Partial Differentiation

Successive Differentiation- n^{th} order derivatives of standard functions- Leibnitz theorem (without proof)-simple problems- Partial differentiation- Partial derivative-Higher derivatives-Homogeneous functions-Euler's theorem on Homogeneous functions-Problems on Euler's theorem

Unit-V Indefinite Integrals and Definite Integrals

Definite integrals: Properties of Definite integrals (Statement only)-Evaluation of definite integrals and indefinite integrals of types $\int \frac{1}{a+b\cos x}dx$, $\int \frac{1}{a+b\sin x}dx$, $\int \frac{lx+m}{ax^2+bx+c}dx$, $\int \frac{lx+m}{\sqrt{ax^2+bx+c}}dx$, $\int \frac{1}{a+b\cos x+b\sin x}dx$, $\int \frac{1}{ax+b\sqrt{lx^2+mx+n}}dx$, $\int_0^{\frac{\pi}{2}} sin^n x dx$, $\int_0^{\frac{\pi}{2}} cos^n x dx$ Simple

problems

Course Outcome:

At the end of the course, the students will be able to

CO:1. Compute eigen values and eigen vectors

CO:2. To expand trigonometric functions

CO:3. To solve algebraic and transcendental equations using numerical methods

CO:4. To find nth order derivative of functions

CO:5. To apply Eulers theorem on partial differentiation

CO:6. To evaluate definite and indefinite integrals

Text Books:

1. P.R.Vittal, "Allied Mathematics", Fourth Edition, 2009, Margham Publications chennai. Unit I: Chapter 5, Unit II: Chapter 14,Unit IV: Chapter 8, Chapter 9,Unit V: Chapter 15
2. P.Kandasamy, Dr.K.Thilagavathy, Dr.K.Gunavathi, "Numerical Methods", S.Chand and Company Ltd., Third Revised Edition,2013, New Delhi. Chapter 3(3.1-3.4),Chapter 4 (4.1,4.2,4.9)

Reference books:

1. Numerical Methods, Problems and Solutions: M.K.Jain, S.r.K Iyengar, R.K.Jain (2003)
2. Calculus. S.Narayanan and T.K.Manicavachagom Pillay (2004). S.Viswanathan Printers & Publishers Pvt. Ltd. Chennai.

BCY231P06	OBJECT ORIENTED PROGRAMMING LAB	L	T	P	C
		0	0	5	2

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES

- To be able to get trained in programming skills using C++
- To help the students to write the programs using Inheritance and friend functions.
- To learn and write the programs for operator overloading .
- To learn and write the programs for String concepts in C++.
- To impart the knowledge to write the program for Friend class.

COURSE OUTCOMES

- Ability to implement application programs using C++ Language
- Able to implement Inheritance and Friend functions concepts
- Understand and implement Array operations.
- Knowledge on implementing This pointer Techniques.
- Knowledge on implementing Friend class.

LIST OF EXERCISES

1. Program to display Employee details Using Classes and Object.
2. Program to find the Mean Value Using Friend Function.
3. Program to Implement Inline Function.
4. Program to Implement Arrays.
5. Program to implement Multiple Inheritance.
6. Program To Implement This Pointer.
7. Program to Implement Friend class.
8. Program to Implement Function overloading.
9. Program to Implement Operator Overloading.
10. Program to Implement String concepts.

BCY231V07	INDIAN CULTURE	L	T	P	C
		0	1	0	1

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

Unit I:

Introduction to Vedic Cultures; significance & how it is different from the other cultures. why we have to follow? Important features.

Unit II:

Literary Heritage of India – significance of Indian Literature; Chronology of Indian literature;Literature in Sanskrit and other Indian languages;

Unit III:

Early Indian Education – significance & advantages. Gurukulas and Guru-sishya parampara. Learning methods. Evolution of script and languages; important early scripts and writing materials; important early educational centers (ghattikas, universities) & their unique features. Important personalities and their Contribution – Devarishies, Maharishies, Rishies, Seers and contribution of their institutions to protect the cultural heritage.

Unit IV:

Scientific thoughts of Early Indian Sages;

Unit V

Importance and significance of Upavedas – Ayurveda, Dhanurveda, Gandhravaveda, stapatya &Arthasastra.

TEXT BOOKS:

1. Joshi,K. The Veda and Indian Culture. Rastriya Veda Vidya Pratishthana, New Delhi, 1992(rp).
2. Kangle, R.P.. The Kautilya Arthasastra. Delhi. 1992 (rp).
3. Kulkarni, R.P. Geometry according to Sulba Sutra. Samsodhana Mandal. Pune. 1983.
4. Majumdar, R.C. Ancient India. Motilal Banarsidas Publishers. Delhi. 1994 (rp).
5. Patel, I.S. (ed) Science and the Vedas. Bombay. 1984.

REFERENCE:

1. Majumdar, R.C. The History and Culture of the Indian People. Vol I-IV. Bharatriya Vidya
   Bhavan. Mumbai, 1996 (ed) (rp).
2. Radhakrishna, S. Indian Philosophy. Vol I & II. Oxford University Press. Delhi, 1993(rp).
3. Sri Chandrasekarendra Sarasvati Swamihi. The Guru Tradition. Bharatiya Vidya Bhavan. Bombay, 1991.
4. Sri Jayendra Saraswatiji Maharaj. The Vedas and Vedangas. Prakashan Kendra. Lucknow, 1951.

5. Winternize, M. 1996(rp). History of Indian Literature. Delhi.

BDS231V08	PRINCIPLES OF ENVIRONMENTAL SCIENCE	L	T	P	C
		0	2	0	2

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES

- To understand the basic concepts about environment.
- To be familiar with the components and nature of environment.
- To create awareness about the technological and scientific crisis faced by the world community.
- To understand the effects and remediation of various pollutions.
- To expose the students to the real-life ecological issues faced by different parts of the society

COURSE OUTCOMES

- Understanding the importance of the environment.
- Realizing the place of human in the environment and act eco-centrically.
- Inculcate the importance and benefits of biodiversity and natural resources.
- Exemplify the effects of pollution and over utilization of resources.
- Moulding the student as an environmentally responsible citizen.

UNIT-I INTRODUCTION TO ENVIRONMENT AND ENVIRONMENTAL STUDIES:

1.1 Introduction to environment – components – nature of environment - need of awareness –reasons for environmental problems – anthropocentric and eco centric views.

1.2 Environmental studies - multidisciplinary nature – scope and aim – sustainable development- principles – RRR concept-Indian environmental movements – environmental calendar.

UNIT – II ECOSYSTEM AND BIODIVERSITY:

2.1 Ecosystem – structure – functions – simplified ecosystem models (food chain and food webs and their types, energy flow) - forest – grassland – pond –ecosystems – ecological succession - ecological pyramids – Bio-geochemical cycles of water – oxygen-carbon-phosphorous and sulphur.

2.2. Biodiversity – definition – types – species – genetic and ecosystem diversities- values of biodiversity – threats to biodiversity – conservation of biodiversity – endemism – biodiversity hotspots – Indian biodiversity– endemic species of India – IUCN lists -red-green and blue data books.

UNIT – 3 NATURAL RESOURCES:

3.1 Natural resources – definition – types – forest resources – uses –deforestation- reasons - effects –water resources – dams – effects of dams - food resources – modern agriculture– ill effects -energy resources- types – hydel –nuclear – solar –wind and biomass energy - world scenario – Indian scenario.

3.2 Population and environment – reasons for over exploitation of resources – population – demography – population curves – population explosion – effects – consumerism – effects – urbanization – reasons and effects- role of an individual.

UNIT – 4 ENVIRONMENTAL POLLUTION:

4.1 Pollution – definition – types – air pollution – causes and effects – effects of CO_2 – CO – NOx –SOx – particulates – control of air pollution – water pollution – causes – effects – remedies – soil pollution – solid waste management – e waste – ill effects of e-waste – proper recycling- Noise pollution – reasons – effects – control – nuclear pollution – cases – effects and control –thermal pollution causes – effects and remedies.

4.2 Legal provisions for protecting environment – article 48 A – 51 A (g) – Environment act 1986 – Air act 1981 – Water act 1974 – wild life protection act – Forest act 1980- problems in implementation–reasons.

UNIT – 5: SOCIAL ISSUES AND ENVIRONMENTAL ETHICS

5.1 Present environmental scenario – greenhouse effect – climate change – The Kyoto Protocol – ozone layer depletion-The Montreal Protocol - acid rain – causes – effects - disparity among the nations – The Copenhagen UNFCCC summit – carbon currency- virtual water- genetically modified organisms, Disaster management.

5.2 Environmental ethics – introduction – people getting affected - resettlement and rehabilitation – issues involved –Sardhar Sarovar project – Tawa Matsya sang - Melting icebergs of Arctic.

TEXT BOOK:

1. Anubha Kaushik and C.P. Kaushik, ”Prospects of Environmental Science”, New Age International publishers, 2013.

REFERENCES:

1. Environmental Studies, N. Nandini, N. Sunitha and Sucharita Tandon, Sapna Book House, 2007.
2. Textbook of Environmental Science, Ragavan Nambiar, Scitech Publications, 2009.
3. Textbook of Environmental Chemistry and Pollution Control, S.S.Dara, S.Chand and Co., 2002.
4. Environmental Chemistry, Colin Baird, W.H.Freeman and company, New York, 1999.
5. Environmental Chemistry, Gary W. VanLoon and Stephen J.Duffy, Oxford University Press, 2000.

BCY232LT01	LANGUAGE -II (TAMIL - II)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

நோக்கம்:

- அற இலக்கியங்களையும் இலக்கணங்களையும் அறிவியல் தமிழ் மற்றும் கணித் தமிழ் குறித்து மாணவர்கள் அறியுமாறு செய்து அவர்களின் படைப்பாற்றலை தூண்டுதல்
- வாழ்வை மேம்படுத்தும் அற சிந்தனைகளை நீதி இலக்கியம் வழி உணர்த்துதல்
- அற இலக்கியங்களான திருக்குறள் நாலடியார் கொன்றைவேந்தன் ஆசாரக்கோவை போன்ற நீதி நூல்கள் வாயிலாக மாணவர்கள் அறவழியிலும் ஒழுக்க நெறியிலும் வாழ்க்கையை வாழ கற்றுக்கொடுத்தல்
- மொழி அறிவோடு சிந்தனைத் திறன் அதிகரித்தல்
- மாணவர்களை அறிவியல் தமிழ் மற்றும் கனித்தமிழ் குறித்த அறிவை வளர்த்துக் கொள்ள செய்தல்
- வாழ்வை மேம்படுத்தும் அர சிந்தனைகளை நீதி இலக்கியம் வழி உணர்த்துதல்
- இலக்கணமும் மொழித்திறனும் மொழியை பிழையின்றி பேச எழுத கற்க தேவையான தமிழ் இலக்கணத்தின் இன்றியமையாமையை உணர்த்துதல்
- பக்தி இலக்கியங்கள் வழி சமயச் சான்றோர்களையும் அறிந்து கொள்ளும் நோக்கில் இலக்கியங்களை அணுகுதல்
- மாணவர்கள் அறிவியல் தமிழ் மற்றும் கணித்தமிழ் குறித்த அறிவையும் இணை கல்வி குறித்து அறிவினை பெறுதல்
- மொழியினை பிழையின்றி கற்பதற்கும் எழுதுவதற்கும் உறுதுணை செய்தல்

பயன்:

- அற இலக்கியங்கள் வழி ஒழுக்கங்களை கற்றுக் கொள்ளுதல்
- மொழிகளை பிழையின்றி எழுத இலக்கணங்களை கற்றுக் கொள்ளுதல்
- பக்தி இலக்கியங்கள் வழி பக்தி நெறிகளை உணர்த்துதல்
- மாணவர்கள் அறிவியல் தமிழ் மற்றும் தனித்தமிழ் குறித்த அறிவையும் இணைய கல்வி குறித்து அறிவினையும் பெறுதல்
- மொழியினைப் பிழையின்றி கற்பதற்கும் எழுதுவதற்கும் கற்றுக் கொள்ளுதல்

பாடத்திட்டங்கள்

அலகு - I அற இலக்கியம்

திருக்குறள் - நட்பு, கூடா நட்பு ,உழவு, மருந்து,

நாலடியார் - 1 ,29, 100, 125, 139

கொன்றைவேந்தன் - முதல் 20 பாடல்களுக்கு கதை எழுதுதல்

ஆசாரக்கோவை-10, 25

12

அலகு - II இலக்கணம்

சொல் - இலக்கணம் வகைகள்- பெயர்ச்சொல் - வினைச்சொல் – இடைச்சொல் - உரிச்சொல்

12

அலகு - III பக்தி இலக்கியம்

சுவாமிநாதன் ஜனனம் - குருவிடம் சரணம் - 13 வயதில் பிடாதிபதி- எளியவரிடம் இரக்கம் - பைரவனின் பக்தி- பெருமாளே சாட்சி - அமுதமாகும் மோர் - அன்னதான சிவன்- அகிம்சை முறையில் தயாரிக்கப்பட்டு - அம்பாளின் வஸ்திரம் – கனகாபிஷேகம்.

12

அலகு - IV அறிவியல் தமிழ் மற்றும் கனித்தமிழ்

அறிவியல் தமிழின் வளர்ச்சி - தனித்தமிழ் வளர்ச்சி -தமிழ் நூல்களை மின் பதிப்பு செய்தல்- தமிழ் மென்பொருட்களை உருவாக்கும்- தமிழ் இணைய கல்விக் கழகம் - தமிழ் மின் நூலகம்- இணையத்தில் தமிழ் அகராதிகள் -சொற்குவைத் திட்டம்

12

அலகு - V மொழிப் பயிற்சி

இலக்கண குறிப்புகள் ஒரு பொருள் குறித்த பல சொற்கள் பல பொருள் குறித்த ஒரு சொல் அகர வரிசைப்படுத்துதல் ஒருமை பன்மை மயக்கம்

12

TOTAL: 60

பாடநூல் :-

1. பதினெண் கீழ்க்கணக்கு முல்லை நிலையம் 2009 பதிப்புசென்னை
2. ஸ்ரீ பெரியவாளின் ஆன்மீக அனுபவங்கள் கங்கா ராமமூர்த்தி அல்லயன்ஸ் கம்பெனி மைலாப்பூர் சென்னை -4
3. கணினி தமிழ் முனைவர் இல சுந்தரம் விகடன் பிரசுரம்
4. வகைமை நோக்கி இலக்கிய வரலாறு நியூ செஞ்சுரி புக் ஹவுஸ் சென்னை

பார்வை நூல் :-

1. க. த. திருநாவுக்கரசு திருக்குறள் நீதி இலக்கியம் சென்னை பல்கலைக்கழகம் வெளியீடு
2. தமிழ் இலக்கிய வரலாறு ஜெயம் ஜனகா பதிப்பகம்
3. அற இலக்கியத்தில் வாழ்வியல் விழுமியங்கள் செம்முதாய்பதிப்பகம் சென்னை

BCY232LH01	LANGUAGE –II (HINDI - II)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

UNIT –I INTRODUCTION TO HINDI GRAMMAR:

- **a)** Identification of different Tenses
- **b)** Differences of *Sakarmak* & *Akarmak* sentences
- **c)** Correction of Sentences pertaining to different tenses
- **d)** Past Tense with special context to *Ne Pratyay*
- **e)** Future Tense with examples

UNIT – II SPEAKING *Right* HINDI:

a) Conversations at different places and contexts
b) Topics related to different tenses and making sentences
c) Usage of Sentences according to the direction
d) Usage of complex sentences and different styles of expression

UNIT – III LANGUAGE WRITING IN HINDI:

a) Paragraph setting
b) Comprehensive paragraph
c) Paragraph writing
d) Simple translation of sentences

UNIT – IV HINDI LITERATURE – INTRODUCTION TO OLD POETRY:

a) Tulasi Das ke Dohe – Kanthasth evam Vyakhya bhag
b) Rahim ke Dohe- Kanthasth evam Vyakhya bhag
c) Tatparya and Kanthasthikaran
d) Summary and annotation part

UNIT – V HINDI LITERATURE-INTRODUCTION TO POETRY and PROSE:

a) Bharat ki Ekataa : Ramdhari Singh Dinkar
b) "Hum Honge Kamiyab" by Girija Kumar Mathur

TEXT BOOK:

1. **HINDI SOURABH,** (Prepared by Department of Hindi, SCSVMV)

REFERENCES:

1. "Come Let us Learn Hindi" : Dr. Alok Pandey, Published by Milind Prakashan, Hyderabad 2013
2. Pankhudiyan 1&2 : Dr. Madhu Dhawan, Lekhan Prakashan, New Delhi 2011
3. Sabari Hindi Bodhini – Shabari Prakashan, Selam, Tamil Nadu, 2012.

BCY232LS01	LANGUAGE -II (SANSKRIT - II)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

Unit - I भागः - क

Poetry: सुभाषितमाला I - 1 to 6 Slokas

Prose: Lessons 1 to 3 (From Sanskrit Pravesika)

Unit - II भागः - ख

Poetry: सुभाषितमाला II - 1 to 8 Slokas

Prose: Lessons 4 to 6 (From Sanskrit Pravesika)

Unit - III भागः - ग

Grammar:

1. 1.अच्सन्धिः
2. 2.हल्सन्धिः

Unit - IV भागः - घ

Essays:

1.अस्माकं देशः

2.दीपावली महोत्सवः

3.संस्कृतप्रचारस्य आवश्यकता

Unit - V भागः - ङ

Slokas (Verses):

1. Sowndaryalahari (10 Slokas)

TEXT BOOKS:

1. **Subhashitamala**, Prepared by Dept. of Sanskrit and Indian Culture, SCSVMV University.
2. **Sowndaryalahari**

BCY232E02	ENGLISH -II	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES

- To encourage the students to read English essays and appreciate it
- To get inspiration from the great speeches by elite personalities
- To enhance the language skills through literature
- To be familiar with English grammar and its usage
- To get the ability to construct grammatically correct and meaningful sentences

COURSE OUTCOMES

- Read and appreciate the text in English language
- Present the ideas in their own words
- Comprehend the significance of literature in learning language
- Understand that grammar and vocabulary can create different meanings.
- Write and speak with proper usage of grammar.

SYLLABUS

UNIT – I PROSE

1. Stephen Leacock : My Lost Dollar
2. O.Henry : The Last Leaf
3. G.K.Chesterton : On Running after One's Hat

12

UNIT – II GREAT SPEECHES

1. Steve Jobs : Stanford Commencement Address
2. Albert Einstein: The Common language of Science
3. Bill Gates : The Future of Innovation

12

UNIT – III ONE ACT PLAY

1. Rabindranath Tagore : Chitra (A Play in One Act)

12

UNIT – IV GRAMMAR – I

1. Relative pronouns
2. Adverbs
3. Prepositions
4. Phrasal verbs
5. Idioms

12

UNIT – V GRAMMAR – II

1. Active Voice & Passive Voice
2. Infinitives & Gerunds
3. Conditionals
4. Collocations
5. American and British words

12

TOTAL: 60

TEXT BOOKS:

1. Aggarwala, N. K. *A senior English Grammar & Composition*. New Delhi: Goyal Brothers. 1995.
2. http://www.theatrehistory.com/plays/chitra001.html

BCY232T03	FIREWALL AND INTERNET SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To learn the basic concept of Firewalls, fundamentals of internet security and security architecture, the different kinds of security threats in networks.
- To impart the knowledge on internet security.
- To learn the concept of controls against program threat and to find the vulnerabilities in programs.
- To impart the security requirements and multilevel database.
- To study the concept of Intrusion detection systems and virtual private networks.

COURSE OUTCOMES:

- Able to differentiate malicious and non-malicious code.
- Understand and explain various type of threats in networks.
- Able to describe file protection mechanism and authentication.
- Able to expose the proposals for multilevel security.
- Ability to expose about types of disclosures and wireless security.

SYLLABUS

UNIT – I FIREWALLS AND SECURITY MECHANISM

Introduction – Types of Firewalls – Packet filters – Application gate ways – Limitations of firewalls -Internet Security - Email security – PGP - S/MIME - IP security – Overview – IP Security Architecture- Web security - SSL, TLS, SET.

12

UNIT – II PROGRAM SECURITY

Secure programs – Non-malicious Program Errors – Viruses – Targeted Malicious code – Controls against Program Threat – Control of Access to General Objects – User Authentication

12

UNIT – III OPERATING SYSTEM SECURITY

Protected objects and methods of protection- Memory address protection- File protection mechanism-Authentication: Authentication basics- Password- Challenge response- Biometrics

12

UNIT – IV SECURITY IN DATABASES

Security requirements of database systems – Reliability and Integrity in databases – Two Phase Update– Redundancy/Internal Consistency – Recovery – Concurrency/Consistency – Monitors.

12

UNIT – V SECURITY IN NETWORKS

Virtual Private Networks – PKI – SSH – SSL – IPSec – Wireless Security – Honeypots – Traffic Flow Security – Firewalls –Intrusion Detection Systems – Secure e-mail.

12

TOTAL: 60

TEXT BOOKS:

1. Charles P. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", Fourth Edition, Pearson Education, 2007.
2. Matt Bishop, "Computer Security: Art and Science", Pearson Education, 2003.
3. William Stallings, "Cryptography and Network Security: Principles and Practices", Fifth Edition, Prentice Hall, 2010.

REFERENCES:

1. Michael Howard, David LeBlanc, John Viega, "24 Deadly Sins of Software Security: Programming Flaws and How to Fix Them", First Edition, Mc Graw Hill Osborne Media, 2009.
2. Kaufman, Perlman, Speciner, "Network Security", Prentice Hall, 2nd Edition, 2003.
3. Eric Maiwald, "Network Security: A Beginner's Guide", TMH, 1999.
4. Macro Pistoia, Java Network Security, Pearson Education, 2nd Edition, 1999.
5. Whitman, Mattord, Principles of Information Security, Thomson, 2nd Edition, 2005.

BCY232T04	DATA STRUCTURES AND ALGORITHMS	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES:

- To gain knowledge in designing algorithms to solve problems.
- To understand the concept of linear and nonlinear data structures.
- To know the concept of various sorting and searching techniques.
- To apprehend the tree traversal and searching
- To acquire knowledge in graph traversal and searching.

COURSE OUTCOMES:

- Compute and Analyze algorithms for efficiency using asymptotic notations.
- Develop knowledge about basic data structures like arrays, linked list, trees.
- Solve problems by applying suitable data structure.
- Define graph and illustrate graph traversal.
- Design and develop projects requiring implementation of the data structure.

SYLLABUS

UNIT – I

Definition of a Data structure - primitive and composite Data Types- Asymptotic notations. Arrays - Operations on Arrays.

12

UNIT – II

Sorting - Bubble sort - Insertion sort - Selection sort - Quick sort - Merge sort - Searching - Linear search - Binary search..

12

UNIT – III

Stacks – Operations on Stack-Applications of Stack - Infix to Postfix Conversion -recursion - Queues - Operations on Queues, Circular Queue.

12

UNIT – IV

Introduction to single and double Linked lists - Representation – operations on single linked list - Linked stacks and queues.

12

UNIT – V

Trees - Binary Trees - Memory representation - Traversal algorithms - Binary search trees - Graph - Definition, Types of Graphs, Graph Traversal – BFS and DFS.

12

TOTAL: 60

TEXT BOOKS:

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Third Edition, Pearson Education, 2017.
2. Seymour Lipsuschutz Theory and Problems of Data Structures, Tata Mc.Graw Hill First Edition, Reprint 2013
3. Jean-Paul Tremblay, Paul G. Sorenson, 'An Introduction to Data Structures with Application', TMH, 2017.

REFERENCE BOOKS:

1. E.Horowitz and S. Shani Fundamentals of Data Structures in C++, Galgotia Pub. 1999, E- book 2012.
2. R. Kruse C.L. Tondo and B. Leung, Data Structures and Program design in C, PHI, 2nd Edition, 1997.

BCY232A05	ALLIED MATHEMATICS – II	L	T	P	C
		3	1	0	4

(For Students admitted from 2025 onwards)
Common to B.Sc. (Computer Science, Data Science and Cyber Security)

Pre-requisite:
Basic knowledge on differential equation and integration.

Course objectives:

- To understand partial fractions and infinite series.
- To solve ordinary differential equations analytically and numerically.
- To apply multiple integrals and special functions.
- To study about finite differences, interpolation and numerical integration

Unit-I Partial Fractions
Introduction to Partial Fractions, Binomial Series, Exponential Series and logarithmic Series (without Proof) -Simple problems.

Unit- II Solution of ODE
Differential equations of first order and higher degree: Equations solvable for p, Equations solvable for y and Equations solvable for x - Second order linear differential equations with constant coefficients: Linear Operator, Solution for non - homogeneous differential equations, Methods of obtaining the particular integral of e^{ax} , e^{-ax} , $sinax$, $cosax$, x^k and $e^{ax}.v$ where v is any function of x.

Unit-III Multiple Integrals and Beta & Gamma Functions
Double Integral: Definite Integral, Double Integral (Cartesian Co-ordinates only), simple problems -Triple Integral: Triple integral (Cartesian Co-ordinates only), simple problems - Beta and Gamma functions and their properties (without proof) – simple problems.

Unit-IV Interpolation and Numerical Integration
Finite differences - Interpolation (For Equal Intervals): Gregory-Newton's forward difference formula, Gregory-Newton's backward difference formula. Interpolation (For Unequal Intervals): Divided Differences, Newton's divided difference formula, Lagrange's interpolation formula - Numerical integration: Trapezoidal rule- Simpson's 1/3rd rule- Simpson's 3/8th rule .

Unit-V Numerical solution of ODE
Numerical solution of ordinary differential equations: Taylor's Method - Euler's Method - Modified Euler's method - Runge Kutta Method.

Course Outcome:
At the end of the course, the students will be able to

- CO1: Simplify expressions using partial fractions and series.

- CO2: Solve ordinary differential equations using analytical and numerical methods.
- CO3: Evaluate multiple integrals and apply beta and gamma functions.
- CO4: Use interpolation and numerical integration methods.
- CO5: Apply numerical solutions to ODEs using Taylor, Euler, and Runge-Kutta methods.

Text Books:

1. P.R.Vittal, "Allied Mathematics", Third Edition, 2012 , Margham Publications chennai.
Unit I- Chapter (1-4)
Unit II - Chapter 22 – (Pg. No. 22.1- 22.10), Chapter 23
Unit III - Chapter 20, 30
2. P.Kandasamy, Dr.K.Thilagavathy, Dr.K.Gunavathi, "Numerical Methods", S.Chand and Company Ltd., Third Revised Edition,2013, New Delhi.
Unit IV: 5.1, 5.2, 6.1-6.3 8.1,8,2,8.5, 8.7, 9.7, 9.9, 9.13, 9.14
Unit V: 11.5, 11.9, 11.11, 11.12, 11.13

BCY232P06	DATA STRUCTURES LAB	L	T	P	C
		0	0	5	2

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES

- To be able to get trained in programming skills using C++.
- To help the students to write the programs for Array operations.
- To learn and write the programs for Stack and Queue operations.
- To learn and write the programs for Sorting Techniques.
- To impart the knowledge to write the program for Binary Search

COURSE OUTCOMES

- Ability to implement application programs using C++ Language
- Able to implement Array operations.
- Understand and implement Stack and Queue operations.
- Knowledge on implementing the Sorting Techniques.
- Knowledge on implementing Binary Search

LIST OF EXERCISES

1. Program for Implementation of Stack using Array
2. Program for Implementation of Queue using Array
3. Program to Implement Circular Queue.
4. Program to Implement Linked list.
5. Program to Implement Doubly Linked list.
6. Program to Arrange the list of numbers in ascending order using Bubble Sort
7. Program to arrange the list of numbers in ascending order using Insertion Sort.
8. Program to Implement Quick sort.
9. Program to Implement Linear search.
10. Program to implement Binary Search

BCY232V07	YOGA	L	T	P	C
		0	1	0	1

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES

- To impart the students with basic concepts of Yoga for health and wellness.
- To familiarize the students with health-related Exercise and Yoga for Overall growth and development
- To create a foundation for the professionals in Physical Education and Yoga.
- To impart the basic knowledge and skills to teach Yoga activities.

COURSE OUTCOMES

- Students will be able to understand the basic principles and practices of Yoga.
- Students will be able to instruct Yoga practices for Healthy Living.
- To develop professionalism among students to conduct, organize Yoga events at schools and community level.

SYLLABUS

Introduction to Yoga

1. Basic Principles of Yogic practices
2. Word meaning and definitions of Yoga
3. Different schools of Yoga
4. Mithahara, Pathya Apatyha in Yogabhyasa.
5. Ashtanga Yoga
6. Shitalikarna Vyayama/Physical Cultural Exercises
7. Introduction to Pranayama
8. Yoga to enhance memory and concentration.

Practical demonstration of Yoga

1. Shitalikarna Vyayama/Physical Cultural Exercises
2. Suryanamaskara
3. Standing Asanas- Ardhachakrasana, Padahasthasana, Ardhakatichakrasana, Trikonasana.
4. Sitting Asanas – Paschimottasana, Bhadrasana, Vakrasana, Vajrasana.
5. Prone posture Asanas – Makarasana, Bhujangasana, Shalabhasana, Dhanurasana.
6. Supine posture Asanas – Ardha pavana Mukthasana, Purna Pavana Mukthasana, Sethubhandasana, Uttanapadasana.
7. Pranayama- Nadishodhana Pranayama, Bhastrika Pranayama, Bramari Pranayama.
8. Dhyana – Shavasana.

Total: 20

TEXT BOOKS:

1. Dr Nagendra H. R. & Dr Nagarathna R., Samagra Yoga Chikitse. Swami Vivekananda Yoga Prakasana, Bengaluru, 2002.
2. Dr Nagendra H. R. & Dr Nagarathna R. Integrated approach of Yoga Therapy for Positive Health, Swami Vivekananda Yoga Prakasana, Bengaluru, 2006.

REFERENCES:

1. Kumar, Ajith, Yoga Pravesha. Bengaluru: Rashtrothanna Prakashana., 1984.
2. D.M Jyoti, Yoga and Physical Activities, lulu.com3101, Hills borough, NC27609, United State, 2015.

BCY232V08	FUNDAMENTALS OF HUMAN RIGHTS	L	T	P	C
		0	2	0	2

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To sensitize the students to various aspects of Human Rights.
- To learn the concepts of Moral and Legal Rights.
- To learn the concepts of Civil and Political Rights.
- To learn the concepts of Theories of Human Rights.
- To learn the concepts of UN Laws.

COURSE OUTCOMES:

- Acquire the basic knowledge of human rights.
- Able to implement Moral and Legal Rights in Human life.
- Understand and implements Civil and Political Rights in Human life.
- Acquire the knowledge on Theories of Human Rights in Human life.
- Understand the concepts of UN Laws in Human life.

SYLLABUS

UNIT I

Human Rights – Meaning, origin and Development. Notion and classification of Rights – Natural, Moral and Legal Rights. Civil and Political Rights, Economic, Social and Cultural Rights; collective / Solidarity Rights.

12

UNIT II

Evolution of the concept of Human Rights Magana carta – Geneva convention of 1864. Universal Declaration of Human Rights, 1948. Theories of Human Rights.

12

UNIT III

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance.

12

UNIT IV

Human Rights in India – Constitutional Provisions / Guarantees.

12

UNIT V

Human Rights of Disadvantaged People – Women, Children, Displaced persons and Disabilityd persons, including Aged and HIV Infected People. Implementation of Human Rights – National and State Human Rights Commission – Judiciary – Role of NGO's, Media, Educational Institutions, Social Movements.

12

TOTAL: 60

TEXT BOOK:

1. Kapoor S.K., "Human Rights under International law and Indian Laws", Central Law Agency, Allahabad, 2014.

REFERENCES:

1. Chandra U., "Human Rights", Allahabad Law Agency, Allahabad, 2014.
2. Upendra Baxi, The Future of Human Rights, Oxford University Press, New Delhi

BCY233LT01	LANGUAGE –III (TAMIL –III)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

நோக்கம்:

- காப்பிய இலக்கியங்களையும் அறிவியல் நோக்கில் பார்வையிடலும் பக்தி இலக்கியங்களின் வழி சமயச் சான்றோர்களை அறிதல் மற்றும் படைப்பிலக்கிய பயிற்சி அளித்தல்
- காப்பிய இலக்கியங்களை அறிவியல் தொழில்நுட்பத்தின் வழி கற்றுக் கொடுத்தல்
- கைவினைப் பொருட்கள் குறித்த தொழில்நுட்பத்தைக் கற்றுக்கொடுத்தல்மாணவர்களுக்கு மன அழுத்தம் நீங்கவும் உற்சாகத்தை பெரும் நோக்குடன் கலைகள் மற்றும் விளையாட்டுகள் கற்றுத் தரப்படுகிறது
- பக்தி இலக்கியத்தின் வாயிலாக சமயச் சான்றோர்களையும் மானிடர்களின் துயர் நீக்கும் பதிகங்களையும் மகான்களையும் அறிமுகம் செய்தல்
- தமிழ் புலவர்கள் இயற்றிய இலக்கியங்களின் வழி கணித அறிவியல் சார்ந்த செய்திகளை கற்றுக் கொடுத்தல்
- ஐந்து மாணவர்கள் தங்களுக்குள் இருக்கும் திறமையை வெளிப்படுத்தும் விதமாக அவர்களின் தனித்திறன் ஊக்கப்படுத்த பயிற்சி அளிக்கப்படுதல்

பயன்:

- காப்பிய இலக்கியங்களில் அருவிகள் தொழில்நுட்பத்தை அறிந்து கொள்ளுதல் பக்தி இலக்கியங்களின் வழி பக்தி நெறிகளை உணர்ந்து கொள்ளுதல் சிறந்த படைப்பாளராக பயிற்சியில் தேர்ச்சி பெறுதல்
- காப்பிய இலக்கியங்களில் அறிவியல் தொழில்நுட்பத்தை அறிந்து கொள்ளுதல்
- மாணவர்கள் கைவினைப் பொருட்கள் உருவாக்கும் திறன் குறித்து அறிந்து கொள்ளுதலும் பயிற்சிப் பட்டறையின் வாயிலாக கைவினைப் பொருட்களை உருவாக்குதல். விளையாட்டு,கலைகள் மூலம் மாணவர்கள் உற்சாகம் பெறுகின்றனர். நமது பழமையை பாரம்பரியத்தை அறிய உறுதுணை புரிகின்றது விளையாட்டுக்களினால் வெற்றி தோல்வியை ஏற்றுக்கொள்ளும் மனப்பக்குவமும் உடல் ஆரோக்கியத்தையும் பெறுகின்றனர்.
- பக்தி இலக்கியத்தின் வழி வாழ்வியல் விழுமியங்கள் ஆன்மீகம் சார்ந்த செய்திகளை கற்றுக் கொள்ளுதலும் துன்பங்களை போக்கும் பாடல்களை அறிந்து கொள்ளுதல்.
- தமிழ் இலக்கியங்களின் ஊடாக கணித அறிஞர்களின் சூத்திரங்களையும் பயன்பாட்டையும் தமிழ் புலவர்களின் பாடல்கள் வழி கற்றுக் கொள்ளுதல்

பாடத்திட்டங்கள்

அலகு - I காப்பியம்

சிலப்பதிகாரம் - வஞ்சி காண்டம், சீவக சிந்தாமணி - நாமகள் இளம்பகம், கம்ப ராமாயணம்- யுத்த காண்டம் மீட்சி படலம் ,சீறாப்புராணம்- திருநின்ற சருக்கம், தேம்பாவணி -பாயிரம்

12

அலகு - II கலைகள்மற்றும் விளையாட்டுகள்

மண்பாண்டங்கள் -மூங்கில் குடைகள் வனைதல் - பாய் முடைதல் - பட்டு நெசவு செய்தல் - மண் பொம்மைகள் செய்தல் - கூடை பின்னுதல் - கலைஞர்கள் அணியும் அணிகலன் செய்தல் திட்டம்- தெருக்கூத்து- கரகாட்டம் - வில்லுப்பாட்டு -கணியான் கூத்து - ஒயிலாட்டம் - தோல்பாவை கூத்து- சிலம்பாட்டம் –வளரி -புலியாட்டம் - தமிழர்களின் விளையாட்டு(PROJECT)

12

அலகு - III பக்தி இலக்கியம்

சைவ சமயம் – திருஞானசம்பந்தர்- கோளாறு பதிகம், திருநாவுக்கரசர் -சொல் துணை வேதியன்- நமச்சிவாய பதிகம், மாணிக்கவாசகர்- திருவாசகம் -போற்றி திரு அகவல், திருக்குறிப்புத் தொண்ட நாயனார்- வைணவ சமயம் –பொய்யாழ்வார், சாக்கம் - காஞ்சி காமாட்சி அம்மன்- ஆதிசங்கரரும் காமாட்சி அம்மன்

12

அலகு - IV இலக்கியமும் கணித அறிவியலும்

போதையனார் கர்ணம் கண்டறிதல் - குறுக்கையூர் காரி நாயனார் கணக்கதிகாரம் - என் அறிதல் - நில வளம்அறிதல் - நுட்ப அறிதல் - களஞ்சியறிதல் - எடை அறிதல்- நாழிகை அறிதல்- அகவை அறிதல் -தேவகாலம் அறிதல்- வெற்றிலை கணக்கு- நெல் விற்பனை கணக்கு- பால் கணக்கு- முத்து கணக்கு -ரத்தின வாணிபக் கணக்கு -வெள்ளரிக்காய் கணக்கு- கற்பூர கணக்கு

12

அலகு - V படைப்பிலக்கிய பயிற்சி

கவிதை,சிறுகதை, நூல் மதிப்பீட்டு பயிற்சி ஏதேனும் ஒரு கருவை கொடுத்து கதை கவிதை எழுதச் செய்தல்

12

TOTAL: 60

பாடநூல் :-

1. சிலப்பதிகாரம் புலியூர் தேசிகன் பாரிநிலையம் சென்னை-108
2. மணிமேகலைபுலியூர் தேசிகன் பாரிநிலையம் சென்னை-108
3. சீவக சிந்தாமணிபுலியூர் தேசிகன் பாரிநிலையம் சென்னை-108
4. சீறாப்புராணம்புலியூர் தேசிகன் பாரிநிலையம் சென்னை-108
5. கவின்மிகு கைவினைப் பொருட்கள் செய்முறையும் விளக்கமும் நர்மதா பதிப்பகம்
6. கணக்கு அதிகாரம் கொறுக்கையூர் காரி நாயனார் திருநெல்வேலி தென்னிந்திய சைவ சித்தாந்த நூல் பதிப்பு கழகம் திருநெல்வேலி
7. பெரிய புராணம்புலியூர் தேசிகன் பாரிநிலையம் சென்னை-108

பார்வை நூல் :-

1. தமிழ் இலக்கியங்களில் வாழ்வியல் சிந்தனைகள் பல்லவி பதிப்பகம் ஈரோடு-11
2. வகைமை நோக்கி தமிழ் இலக்கிய வரலாறு,பாக்கிய மேரி,நியூ செஞ்சுரி புக் ஹவுஸ் சென்னை

BCY233LH01	LANGUAGE –III (HINDI –III)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

UNIT –I INTRODUCTION TO VOCABULARY:

a) Sabd Rachana and Sabd Vichar
b) Prefix and Suffix practices
c) Correction of Sentences pertaining to NE pratyay
d) *Chahiye* and *Apna* Usage

UNIT – II HINDI LITERATURE – OLD POETRY:

a) Kabir ke Dohe
b) Vrind Ke Dohe
c) Kanthasthikaran aur Vyakhya bhag

UNIT – III HINDI LITERATURE – MODERN POETRY:

a) "Jhanda ooncha rahe Hamara" by Shyam lal Parshad
b) Selected 2 poems from Famous Hindi poets (Nirala and Dinkar)

UNIT – IV HINDI LITERATURE- PROSE:

a) Mundan : Harishankar parsaayee
b) Teen kahaaniyaan (Bhoot, Galib and others)

UNIT – V HINDI Grammar:

a) Translation of Sentences
b) Different Usage of tense
c) Tense Changing
d) Sentence changing as per given direction (Ling and Vachan)

TEXT BOOKS:

1. **HINDI SOURABH** (Prepared by Department of Hindi, SCSVMV)

REFERENCES:

1. Dinkar ka Kavya : Jagmohan sharma, Rashtriya Hindi Sahitya Parishad, New Delhi 2016
2. Hindi Kavya me Rashtriya Ekatha : Krishna Bhavuk, Hindi Sahitya Parishad, New Delhi 2016
3. Rashtriyatha aur Hindi Cinema : Kumar Bhaskar, Hindi Sahitya parishad, New Delhi

BCY233LS01	LANGUAGE –III (SANSKRIT–III)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

Unit - I भागः - क

Eloquence of Mahabharata 1-15 Verses

Unit - II भागः - ख

Eloquence of Mahabharata 16-30 Verses

Unit - III भागः - ग

Hitopadesa - Prologue

Stories - 1. Old Tiger and Traveller
2. Cat and Vulture

Unit - IV भागः - घ

Hitopadesa - Stories - 1. Pair of Crows
2. Pair of Tittibhas
3. Rabbits and Elephant

Unit - V भागः - ङ

Hitopadesa - Stories - 1. Jackal
2. Crane and Crab
3. Camel

Text Books:

1. **Eloquence of Mahabharata**, Prepared by Dept. of Sanskrit and Indian Culture, SCSVMV University.
2. **Hitopadesa** - Complied by Dept. of Sanskrit and Indian Culture, SCSVMV University.

BCY233E02	ENGLISH -III	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES

- To use listening strategies to identify the main ideas from different sources.
- To identify the characteristics of effective speaking and to express the ideas with proper vocabulary and sentence formation.
- To activate and reinforce the basic skills – grammar, vocabulary, pronunciation and writing.
- To use the required writing conventions when creating a paragraph or any type of writing.
- To apply LSRW skills in regular practice.

COURSE OUTCOME

- Use cohesion mechanism to distinguish different ideas
- Speak with a reasonable degree of fluency and accuracy.
- Understand and use proper vocabulary, grammar and make use of language resources (e.g dictionary and thesaurus)
- Describe, analyze and present the information clearly, concisely and logically.
- Comprehend and use the strategies of LSRW in real time.

SYLLABUS

UNIT – I LISTENING

Introduction to listening – Listen for gist and respond – Listen for details and key words to understand specific meaning – Listen and respond to questions and requests for personal information – Listen to simple conversations in everyday contexts and respond – Listen to lectures, presentations and other suitable listening materials from electronic media, and take notes – Listen to telephone calls and respond; keep notes while listening – Listening to announcements (railway/bus stations/airport/stadium announcement, etc.) – Listening to radio and TV – Common barriers to the listening process.

12

UNIT – II SPEAKING

Use conversation starters: Introducing oneself, introducing others, small talk about family, friends, hobbies, profession, studies, etc. – Use of a dictionary for pronunciation practice – Summarize academic readings and lectures, and make presentations – Describe graphs, tables, and charts – Describe machines and their functions, e.g. computers and hardware – Describing processes, e.g. how to download apps in mobile handsets – Ask for and give permission, seek clarification, offer and respond to offers – Ask questions and respond to questions politely – Congratulate people on their success, apologize.

12

UNIT – III READING

Reading comprehension – Four modes of reading (oral reading to an audience, oral reading to oneself, silent reading, silent reading while listening) – Pre-/during-/post-reading activities – Reading to enrich vocabulary – Skimming through reading texts and determine two or more main ideas or themes – Scanning through reading texts to understand and explain how key details support the – main ideas or themes.

12

UNIT – IV WRITING

Basic paragraph structure: main idea, supporting sentences, use of examples, conclusion – Use basic sentence structures to write a paragraph; use cohesive devices to connect sentences in a paragraph – Use transitional devices for cohesion and for contrast paragraph internally and between paragraphs (The above structures and devices to be consciously used in all writing tasks) – Understand and use text structures in paragraphs: - sequencing, comparing and contrasting, relating cause and effect, problems and problem solving – Write informal letters, applications, and official letters of request and denial – Write official e-mails, memos and notices.

12

UNIT – V ACTIVITIES ON LSRW

Teacher and student made activities on Listening, Speaking, Reading and Writing

12

TOTAL: 60

TEXT BOOKS:

1. Ramesh, M.S. Business Communication. New Delhi: R. Chand & Co. 2003
2. FitzGerald, Helen.Cross Cultural Communication. Melbourne: Hospitality Press. 2002

BCY234T03	JAVA PROGRAMMING	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Cyber Security)

COURSE OBJECTIVES:

- To identify Java language components and how they work together in applications
- To learn the fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries.
- To learn how to extend Java classes with inheritance and dynamic binding and how to use exception handling in Java applications
- To understand how to design applications with threads in Java
- To understand how to use Java APIs for program development

COURSE OUTCOMES:

- Able to realize the concept of Object Oriented Programming and Java Programming Constructs
- Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords
- Apply the concept of exception handling and Input/ Output operations
- Able to design the applications of Java & Java applet
- Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit

SYLLABUS

UNIT – I JAVA BASICS

The History and Evolution of Java - Overview of Java – Program Structure -Data Types, Variables, Arrays, Operators -Control Statements- Classes - Objects – Methods - Constructors- this keyword – finalize() method -- Method Overloading - Constructor Overloading.

12

UNIT – II INHERITANCE, PACKAGES AND INTERFACE

Inheritance: Member Access and Inheritance – Multilevel Hierarchy - Method Overriding – Dynamic Method Dispatch - Keywords: Abstract – Super - Final – Static - **Packages:** Defining a Package - Access Protection - Importing Packages. **Interfaces:** Defining an Interface - Implementing Interfaces.

12

UNIT – III EXCEPTION HANDLING AND STRING HANDLING

Exception Handling – Concepts of exception handling, Exception types, uncaught exceptions, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes.

String Handling – Special String operations, Character Extraction, String Comparison,

Modifying a string and String Buffer.

12

UNIT – IV MULTI THREADING AND I/O PACKAGES:

Multithreading – Java thread model, creating threads, creating multiple threads, inter-thread communication Thread Priorities – Synchronization – Deadlock

Java I/O Streams – Stream classes, Byte Streams, Character Streams, and Exploring Java.io. package - Java Scanner Class, Wrapper Classes.

12

UNIT – V APPLETS AND EVENT HANDLING

Applets – Applet Basics, Applet architecture, Applet skeleton, Applet initialization and termination, simple applet display methods, simple banner applet, creating applets, passing parameters to applets. AWT – Working with Windows, Graphics and Text – Using AWT Controls – Layout Managers.

Event Handling - Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, innerclasses.

12

TOTAL: 60

TEXT BOOKS:

1. Java the complete reference, 7th edition, Herbert schildt, TMH.
2. Understanding OOP with Java, updated edition, T. Budd, Pearson education.

REFERENCES:

1. HerberSchildt "Java : A Beginner's Guide", 7th Edition, Oracle Press, Tata McGraw Hill, Education, 2017
2. Cay S.Horstmann, "Core java volume 1- Fundamentals", 10th Edition Prentice Hall, 2016.
3. RajkumarBuyya, ThamaraiSelvi S. and Xingchen Chu, "Object Oriented Programming with Java Essentials and Applications", Tata McGraw Hill Publishing Company, New Delhi, 2011.
4. HerberSchildt "The Complete Reference – Java 2", 11th Edition, Oracle press, Tata McGraw Hill,Education , 2019.
5. Somasundaram. K,"Programming in Java2", 10th Edition, Jaico Publishing House, Mumbai, 2010.

BCY233T04	ETHICAL HACKING	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA/B.Sc. (Data Science)/B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To know the theory and practices of finding the vulnerabilities.
- To find the different attacks and then defining the appropriate security policy.
- To take action to detect or prevent the attacks and thus reduce the damages.
- To understand the concept of Web Server Hacking.
- To understand the concept of Firewalls

COURSE OUTCOMES:

- To describe the basics of the ethical hacking.
- Ability to learn technical foundations of hacking.
- Able to perform the foot printing and scanning.
- Demonstrate the techniques for system hacking.
- Characterize the malware and their attacks.

SYLLABUS

UNIT – I INTRODUCTION TO ETHICAL HACKING

Security Fundamental - Security Testing - Hacker and Cracker – Descriptions - Test Plans-keeping it legal - Ethical and Legality- Process - The Ethical Hacker's Process.

12

UNIT – II FOOTPRINTING AND SCANNING

Information Gathering - Determining the Network Range - Finding Open Ports and Access Points - OS Fingerprinting Services - Mapping the Network Attack Surface.

12

UNIT – III MALWARE THREATS AND SESSION HIJACKING

Viruses and Worms- Trojans - Covert Communication - Keystroke Logging and Spyware – Malware Counter Measures- Sniffers - Session Hijacking - Denial of Service.

12

UNIT – IV WEB SERVER HACKING AND ATTACKS

Web Server Hacking - Web Application Hacking - Database Hacking - Wireless Technologies – Mobile Security and Attacks: Wireless Technologies – Wireless LANs.

12

UNIT – V CASE STUDY

Intrusion Detection Systems - Firewalls - Honeypots - Physical Security - Social Engineering – Case Studies: Intrusion detection Real Secure Tripwire Dragon Snort.

12

TOTAL: 60

TEXT BOOKS:

1. Michael Gregg, ”Certified Ethical Hacker”, Pearson IT Certification, 3rd Edition, 2019.
2. Roger Grimes ,”Hacking the Hacker” , Wiley, 1st Edition, 2017

REFERENCES:

1. Ankit Fadia, “The Unofficial Guide to Ethical Hacking”, Laxmi Publications, 2nd Edition, 2006.
2. Randy Weaver, Dawn Weaver, Dean Farwood, “Guide to Network Defense and Countermeasures”, Cengage Learning, Third edition, 2014.

BSC231A05	APPLIED PHYSICS – I (Theory Cum Lab)	L	T	P	C
		3	0	2	4

(For Students admitted from 2025 onwards)
Common to B.Sc. (Computer Science and Cyber Security)

COURSE OBJECTIVES

At the end of the course the student will acquire knowledge in

- Elastic behavior of materials, bending behavior of beams and analyzing expressions for Young's modulus
- Analyzing acoustics of buildings and production and basic properties of Ultrasonic waves by different methods
- Basic principle of laser and their characteristics and applications
- Basic concepts of light propagation in optical fibers and their application in communication
- Working of various semiconductor devices

COURSE OUTCOMES

At the end of the course the student should gain knowledge in

- Elastic behavior of materials, bending behavior of beams and analyzing expressions for Young's modulus
- Analyzing acoustics of buildings and production and basic properties of Ultrasonic waves by different methods
- Basic principle of laser and their characteristics and applications
- Basic concepts of light propagation in optical fibers and their application in communication
- Working of various semiconductor devices

SYLLABUS

UNIT I: PROPERTIES OF MATTER

Elasticity, Stress – Strain – Hooke's law -Moduli of elasticity, Poison's ratio – Elastic Behavior of Material – Factors affecting elasticity- Young's modulus by cantilever depression – Non- uniform bending. Torsional Pendulum – Couple per unit twist of a wire.

9

UNIT II: TECHNICAL ACOUSTICS

Acoustics of buildings – Reverberation, Reverberation time, echo, creep, focusing, standing waves – Principle to be observed in the acoustical design of auditorium– Noise pollution – Absorption coefficient -Ultrasonic waves - Properties - Generation – Piezoelectric method, Applications - NDT

9

UNIT III: LASER PHYSICS

Principle of laser, Properties of laser, spontaneous and stimulated emission, amplification of light by population inversion- Einstein's theory spontaneous and stimulated emission – different types of lasers: solid-state laser (Nd:YAG), gas lasers (CO2), applications –CD ROM

9

UNIT IV: FIBRE OPTICS

Optical fiber- structure – core and cladding - principle [TIR] – types of optical fibers –plastic-glass - step index – graded index – single mode – multimode fibers- Expression for acceptance angle and numerical aperture. Applications-Endoscope and optical fiber Communication.

9

UNIT V ELECTRONICS

Introduction to P-N junction and P-N junction diode -V-I characteristics, Zener diode –V-I characteristics, Zener diode as peak clipper, Field Effect Transistor – types – Junction Field Effect Transistors – Static and transfer characteristics.

9

REFERENCE BOOKS:

[1]. A. Ghatak and K. Thyagarajan, Lasers – Fundamentals and Applications, Macmillan Publishers, 2011.
[2]. D. S. Mathur, Properties of Matter, 2010.
[3]. A. Ghatak and K. Thyagarajan, Introduction to Fiber Optics, Cambridge University Press, New Delhi, 2017.
[4]. Brijlal and N. Subrahmanyam, Sound, 2018.
[5]. A. Ghatak and K. Thyagarajan, Fiber Optics and Lasers, Macmillan India, New Delhi, 2008.
[6] M. N. Avadhanulu, Engineering Physics, 2018.

TEXT BOOKS:

[1]. K.Venkatramanan, R.Raja, M.Sundarrajan, "Applied Physics for Engineers", SCITECH Publishers, 2011 [Unit – I – IV].
[2]. V.K.Mehta, "Principles of Electronics", S Chand & Co, 2014 [unit –V]

LIST OF EXPERIMENTS
(ANY 8)

1. Torsional pendulum
2. Young's modulus – non uniform bending
3. Ultrasonic Interferometer
4. Determine wavelength of LASER source
5. Determine particle size - LASER
6. Optical Fibre – Numerical aperture & acceptance angle
7. P-N junction diode – V-I Characteristics
8. Zener diode - V-I Characteristics
9. Zener diode as peak clipper
10. Field Effect Transistors
11. Study of CRO

BCY234P06	JAVA PROGRAMMING LAB	L	T	P	C
		0	0	6	2

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Cyber Security)

COURSE OBJECTIVES:

- To develop programs using core java.
- To develop programs using Inheritance and Interfaces.
- To develop programs using exception handling.
- To implement the Thread concepts.
- To develop a web application using Applet.

COURSE OUTCOMES:

- Implement the basic java programming concept and OOPs concept like Encapsulation, Polymorphism and inheritance.
- Applying an interface, exception and user define packages.
- Implement the String and String buffer classes.
- Implement the Interthread concept using an Applet.
- Develop a web application using an Applet and Events.

LIST OF EXERCISES

1. Program to illustrate the concept of Class and Objects.
2. Program to illustrate the concept of Method overloading.
3. Program to illustrate the concept of Constructor overloading.
4. Program to illustrate the concept of Multiple Inheritance using interface.
5. Program to illustrate the concept of Exception handling.
6. Program to illustrate the concept of Packages.
7. Program to illustrate the concept of Multithreading.
8. Program to illustrate the concept of String and String Buffer.
9. Program to illustrate the concept of Graphic function using an Applet.
10. Program to perform the basic arithmetic operation using Event handling in an Applet.

BCY233V07	SOFT SKILLS – I	L	T	P	C
		0	1	0	1

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA/B.Sc. (Data Science)/B.Sc. (Cyber security)

COURSE OBJECTIVES

- To understand the basic English Grammar usage and Vocabulary.
- To sensitize students the significance of nonverbal communication and academic writing.
- To improve students ability to speak fluently and interactively.
- To learn basic concepts of number system
- To understand basic idea about general aptitude

COURSE OUTCOMES

- Use basic grammar in both short conversation and writing.
- Convey information and thoughts in a good manner
- Communicate fluently.
- Able to solve number problems
- Able to understand and solve different quantitative problems

SYLLABUS

UNIT – I GRAMMAR-I:

Parts of Speech-Tenses-Modal Verbs-Vocabulary – One word substitution, Homophones and Homonyms, phrasal verbs

UNIT – II WRITING AND COMMUNICATION:

Forms of Non-Verbal Communication – Kinesics, Proxemics, chronemics and effective use of Body language -Effective use of Audio-visual aides and modes of presentation-Note-making, Precise writing, structure of paragraph, Review a book/journal

UNIT – III SPEAKING:

Introducing Oneself -Greetings and Introduction-Short Group Conversations-Extempore speech – Practice

UNIT – IV APTITUDE SKILLS – I:

Numbers – H.C.F & L.C.M – Decimal Fractions – Simplifications – Square root & Cube roots

UNIT – V APTITUDE SKILLS – II:

Problems on Ages – Percentage – Surds & Indices – Profit & Loss – Ratio & Proportion

TEXT BOOKS:

1. Greenbaum, Sidney, “The Oxford English Grammar”, Clarendon Press, 1996.
2. Hartley and Bruckmann, “Business Communication”, Routledge, 2006.
3. R S Aggarwal, “Quantitative Aptitude for Competitive Examinations”, S.Chand Publications,2017

REFERENCES:

1. R S Aggarwal,”A Modern Approach to Non-Verbal Reasoning”, S.Chand Publications,2017.

BCY234LT01	LANGUAGE -IV (TAMIL -IV)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

நோக்கம்:

- சங்க இலக்கியத்தின் வாயிலாக அகப்புறக் கோட்பாடுகளை அறிதல்- பக்தி இலக்கியங்களின் வாயிலாக பண்பாட்டுக் கலாச்சாரம் போன்ற வாழ்வியல் விழுமியங்களை கற்று அறிதல்- உரைநடை இலக்கியங்களின் வழியாக மாணவர்களுக்கு வாசித்து திறனை ஊக்குவித்தல்- மாணவர்களுக்கு படைப்பாற்றலைத் தூண்டுதல்
- தமிழர்களின் அகப்புற கோட்பாடுகளை சங்க இலக்கியத்தின் வாயிலாக கற்றுக் கொடுத்தல். தமிழர்களின் வீரம் கொடை அறம் சார்ந்த நிகழ்வுகளை ஊடகங்கள் வழி பதிவு செய்தல்
- உரைநடை இலக்கியத்தின் வாயிலாக மாணவர்களின் வாசிப்புத்திறனை மேம்படுத்துதல்
- சமயச் சான்றோர்களையும் அவர்களின் பாடல்களையும் கற்றுக் கொடுத்தல்
- பயண நூல்களில் வாயிலாக ஒரு ஊரின் முக்கிய சிறப்புகளையும் முக்கிய இடங்களையும் தலைவர்களையும் எடுத்துரைத்ததல்
- தனி மனிதன் உரிமைகள் பற்றிய மாணவர்களை அறியச் செய்தல் பெண்ணுரிமை பற்றியும் மனிதர்களுக்கான ஒவ்வொரு உரிமைகளை தெரிந்து கொள்ளுதல் நோக்கமாகும்

பயன்:

- சங்க இலக்கியத்தின் வழி அகப்புறக் கோட்பாடுகளை அறிந்து கொள்ளுதல்- பக்தி இலக்கியங்களின் வழி பண்பாடு கலாச்சார விழுமியங்களை அறிந்து கொள்ளுதல், சிறந்த படைப்பாளராக பன்முகத்திறன் பயிற்சி பெற்று தேர்ச்சி பெறுதல்
- தமிழர்களின் அகப்புறக் கோட்பாடுகளை அறிந்து கொண்டு ஏதேனும் ஒரு ஊடகத்தின் வழி தான் கற்றவற்றை வெளிப்படுத்துதல்
- மாணவர்கள் தங்கள் வாசிப்பு திறனை மேம்படுத்தி தமிழினை தங்கு தடை இன்றி படித்தல்
- சமயச் சான்றோர்களின் பாடல்களைப் படித்து மனனம் செய்து தங்கள் வாழ்க்கையின் நிகழ்வுகளில் பயன்படுத்துதல்
- ஒரு ஊரின் முக்கிய சிறப்புகளையும் முக்கிய இடங்களையும் தலைவர்களையும் சிறப்பினை அறிந்து போற்றுதல்
- மனித உரிமை பற்றிய புரிதல் மனித உரிமை ஆணையம் குறித்து அறிதல் ஒவ்வொரு மனிதர்களும் தனக்கான உரிமையை அறிந்து கொள்ளுதல்

பாடத்திட்டங்கள்

அலகு - I சங்க இலக்கியம்

தமிழகத்தின் தாவரங்களுக்கும் விலங்குகளும், தொல்காப்பியம் மற்றும் சங்க இலக்கியத்தில் அகம் மற்றும் புறக் கோட்பாடுகள், தமிழர்கள் போற்றிய அறக்கோட்பாடு, சங்க காலத்தில் ஏற்றுமதி மற்றும் இறக்குமதி, சங்ககாலத்தில் தமிழர்களின் எழுத்தறிவும் கல்வியும், வீரம் கொடை அறம் சார்ந்த நிகழ்வுகளின் காட்சி பதிவு – திரைப்படம், தொலைக்காட்சி, வானொலி, இதழ்கள் திட்டம் (PROJECT)

12

அலகு - II உரைநடை

சங்க நெறிகள் முனைவர் வ.சு.ப மாணிக்கம் - தமிழர் பண்பாடு ஒரு விளக்கம் -டாக்டர் சோ. நா. கந்தசாமி விருந்தோம்பல் நேற்று இன்று நாளை சரளா ராஜ கோபாலன்

12

அலகு - III பக்தி இலக்கியம்

கௌமாரசமயம்- திருப்புகழ்- அருணகிரிநாதர்- கணா பத்தியம்- விநாயகர் அகவல்கள் - சரஸ்வதி அந்தாதி – கம்பர்

12

அலகு - IV பயண நூல் (வழி காட்டி)

காஞ்சிபுரம் ஒரு தரிசன வழிகாட்டி கோவில்கள் - மடங்கள் - புகழ் பெற்ற இடங்கள்

12

அலகு - V மனித உரிமைகள்

மனித உரிமை பற்றிய புரிதல் - மனித உரிமை வரலாறு பண்புகளும் அறிதல் - ஒவ்வொரு மனிதர்களும் உள்ள உரிமைகளைத் தெரிந்து கொள்ளுதல்- குழந்தைகளின் உரிமைகள் - கொத்தடிமைகள் - பெண் உரிமை

12

TOTAL: 60

பாடநூல் :-

1. தமிழக வரலாறு மக்கள் பண்பாடு கேகே பிள்ளை தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் கழகம்
2. வகைமை நோக்கி தமிழ் இலக்கிய வரலாறு, பாக்கிய மேரி,நியூ செஞ்சுரி புக் ஹவுஸ் சென்னை
3. சங்க இலக்கியம் பாரிநிலையும் சென்னை 108
4. காஞ்சிபுரம் ஒரு தரிசன வழிகாட்டி தங்கத்தாமரை பதிப்பகம் அடையாறு சென்னை 20
5. கீழடி வைகை நதிக்கரையில் சங்க கால நாகரிகம் தொல்லியல் துறை வெளியீடு
6. முனைவர் . ஜெ. தியாகராஜன் மனித உரிமைகள் நிர்மலா பதிப்பகம் மதுரை -1

பார்வை நூல் :-

1. தமிழ் இலக்கியங்களில் வாழ்வியல் சிந்தனைகள் பல்லவி பதிப்பகம் ஈரோடு-11

BCY234LH01	LANGUAGE –IV (HINDI –IV)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

UNIT –I INTRODUCTION TO FUNCTIONAL HINDI:

a) Raj Bhasha Rashtra Bhasha and Sampark Bhasha
b) Functional Hindi- Introduction

UNIT – II INTRODUCTION TO OFFICIAL LANGUAGE TERMINOLOGY:

a) Technical usage of Official Terminology
b) Introduction to Official Language – Glossary

UNIT – III HISTORY OF HINDI LITERATURE:

a) Introduction to History of Hindi Literature
b) The different periods of Hindi Literature – an Outlook
c) Pakshiyon se udnaa seekha : Abdul Kalam

UNIT – IV HISTORY OF HINDI LITERATURE- FAMOUS PERSONALITIES:

a) Famous Hindi Poets
b) Famous Hindi Prose Writers

UNIT – V LETTER WRITING:

a) Different models of Letters – Practice
b) Personal Letters- Practice
c) Official Letters - Practice

TEXT BOOKS:

1. **HINDI SOURABH** (Prepared by Department of Hindi, SCSVMV) & material of Translation prepared by Department of Hindi.

REFERENCES:

1. Hindi Sahitya ka naya Ithihas : Dr. Ramkumar Varma, Rajkamal Prakashan 1997.
2. Pramukh Kala Jayi Hindi kavi : KrishnaDev Jhari, Hindi Sahitya Parishad, New Delhi 2016.
3. Aadhunik Hindi Kavitha : Dr. Jagadish Chandra Sharma, Hindi Sahitya parishad, New Delhi 2016.

BCY234LS01	LANGUAGE –IV (SANSKRIT –IV)	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

Unit - I भागः - क

Ramodantam - Balakanda 1-20 Verses

Unit - II भागः - ख

Ramodantam - Balakanda 21-30 Verses

Unit - III भागः - ग

Vyasavacanabhagavatam (From Kathamukham to Putanavadha)

Unit - IV भागः - घ

Vyasavacanabhagavatam (From Sakatabhanga to Devendragarva Bhanga)

Unit - V भागः - ङ

Poets of Sanskrit - Kalidasa, Bharavi, Magha, Sriharsa.

Text Books:

1. **Ramodantam** - R.S. Vadhyar & Son, Palaghat.
2. **VyasavacanaBhagavatam** - K.Srinivasacari, The little flower & Co, Madras.
3. **History of Sanskrit literature.**

BCY234E02	ENGLISH -IV	L	T	P	C
		3	1	0	3

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

OBJECTIVES

- To comprehend the significance of communication and its purpose
- To listen actively, speak clearly and using proper language in telephone conversation.
- To apply effective communication skills in a variety of public and interpersonal settings
- To build the professional skills needed for career development and to present it effectually and ethically.
- To utilize the strategies of Verbal and Nonverbal communication in various facets of presentation

OUTCOME

- Understand the importance of communication and its techniques
- Use proper language and speak convincingly and pleasingly.
- Interact proficiently and ethically
- Present professional skills in an effectual way.
- Apply the essential components of a presentation.

SYLLABUS

UNIT – I COMMUNICATION

Communication: Meaning, Nature, Importance and Purpose of Communication - Types of Communication - Process of Communication – Communication Network in an Organization – Strategy for Effective Communication – Verbal and Non- Verbal Communication – Barriers to Communication – Essentials of Good Communication – Communication Techniques.

12

UNIT – II TELEPHONIC SKILLS

Basics of telephone communication – how to handle calls – telephone manners – leaving a message – making requests – greeting and leave taking over phone(etiquette) – asking for and giving information – giving instructions – listening for tone / mood and attitude at the other end handling the situations especially trouble shooting – teleconference handling – handling Tele interviews for Call Centres

12

UNIT – III EFFECTIVE COMMUNICATIONS

Making enquiry & requests – Answering general questions – railway enquiry – looking for accommodation – asking about a course – asking for / and giving directions.

12

UNIT – IV CAREER SKILLS

Applying for job – Cover letters – Resume and Effective Profiling – Interviews – Group discussions. Importance and Factors Involving Job Interview – Characteristics of Job Interview – Job Interview Process – Job Interview Techniques – Manners and etiquettes to be maintained during an interview – Sample Questions Commonly asked During Interview.

12

UNIT – V PRESENTATION SKILLS

Presentation Skills – Interviews – Public Speaking – Preparing a Speech – Organising the Speech – Special Occasion Speeches – self-introduction.

12

TOTAL: 60

TEXT BOOK:

1. Kavita Tyagi, Padma Misra. Professional Communication. New Delhi: PHI Learning Pvt. Ltd. 2011

BCY233T03	DATA COMMUNICATION AND NETWORKS	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To study about the physical arrangement of networks, types and modes of networks, data conversions and transmission medium.
- To study the detection and correction of errors, link control and link protocols of data link layer.
- Understanding the error checks and deduction methods in Data link layer.
- To study about the access method and implementation of different networks, types of Routing.
- To study the logic of link mechanisms used in networks and different layers of TCP/IP.

COURSE OUTCOMES:

- Describe the building blocks of Computer Networks.
- Describe the various signal and switching Techniques used in transmission.
- To implement the error checks and deduction methods in Data link layer.
- Determine the Logical addressing and various types of transmission protocol and services.
- Illustrate the generation of telecommunication systems in wireless networks.

SYLLABUS

UNIT – I DATA COMMUNICATION

Introduction: Networks – Components- Data Representation-Data Flow-Physical structures-Network Types-Switching-The Internet-Internet Standards and Administration-TCP/IP Protocol Suite-Addressing- The OSI Model.

12

UNIT – II PHYSICAL LAYER

Data and signals-Digital Signals-Transmission Impairment-Digital to Digital conversion-Analog to Digital Conversion- Multiplexing and De Multiplexing-Transmission media-Guided media-Unguided media-Circuit Switching-Message Switching-Packet Switching.

12

UNIT – III DATA LINK LAYER

Introduction-Link Layer Addressing-Error Detection and Correction-Cyclic codes-DLC Services-Data Link Layer protocols-HDLC-Point to point Protocol-Media Access control (MAC)-Channelization-Standard Ethernet-ATM-IEEE 802.11 Project-Bluetooth-WiMAX-Virtual LANS.

12

UNIT – IV NETWORK AND TRANSPORT LAYER

Introduction to Network Layer-Packet Switching-IPV4 Addresses-Internet Protocol-ICMPv4-Mobile IP-Routing Algorithms-Unicast and Multicast Routing-Transport Layer-Introduction-Transport layer Protocols-User Datagram Protocols-Transmission control Protocols-Services.

12

UNIT – V WIRELESS COMMUNICATION

Introduction - Spread Spectrum: Transmission. Medium Access Control: Motivational for a Specialized MAC - Space Division Multiple Access (SDMA) - Frequency Division Multiple Access (FDMA) - Time Division Multiple Access (TDMA) - Code Division Multiple Access (CDMA).Mobile Telecommunication Systems: GSM Architecture, Services and Protocols.

12

TOTAL: 60

TEXT BOOKS:

1. Behrouz A. Forouzan, "Data communication and Networking", Fifth Edition, Tata McGraw Hill publishing Company, New Delhi, 2018.

REFERENCES:

1. William Stallings. "Data and computer Communication", 8th Edition, Pearson Education, 2013 / PHI.
2. Andrew Tannenbaum.S. "Computer Networks", Pearson Education, 4th Edition, 2013 / PHI.
3. Schiller Jochen, "Mobile Communications", 2nd Edition, Pearson Education, New Delhi, 2012.

BCY234T04	OPERATING SYSTEM AND SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To understand the basic concepts of Operating Systems.
- To explore the process management concepts including scheduling, synchronization,• threads and deadlock.
- To understand the memory, file and I/O management activities of OS
- To understand the requirements of a trust model.
- To learn how security is implemented in various operating systems.

COURSE OUTCOMES:

- To gain understanding on the concepts of Operating Systems.
- To acquire knowledge on process management concepts including scheduling, synchronization, threads and deadlock.
- To have understanding on memory, file and I/O management activities of OS.
- To understand security issues in operating systems and appreciate the need for security models
- To gain exposure to the operating systems security models of WINDOWS and UNIX OS.

SYLLABUS

UNIT I OPERATING SYSTEM OVERVIEW

Computer-System Organization – Architecture – Operating-System Operations – Security and Protection – Distributed Systems – Kernel Data Structures – Operating-System Services – System Calls – System Services – Operating-System Structure .

12

UNIT II PROCESS MANAGEMENT

Process Concept – Process Scheduling – Inter-process Communication – Threads – Overview – Multithreading models – Threading issues; CPU Scheduling – Scheduling criteria, Scheduling algorithms; Process Synchronization – critical-section problem, Synchronization hardware, Deadlock – System model, Deadlock characterization, Deadlock prevention, Deadlock avoidance, Detection, Recovery.

12

UNIT III MEMORY MANAGEMENT AND FILE SYSTEMS

Main Memory – Background, Swapping, Contiguous Memory Allocation, Paging, Segmentation – Virtual Memory – Demand Paging, Page Replacement, Allocation, Thrashing. File concept, Access methods, Directory Structure, Sharing and Protection; File System Structure.

12

UNIT IV SECURE SYSTEMS AND VERIFIABLE SECURITY GOALS

Security Goals – Trust and Threat Model – Access Control Fundamentals – Protection System – Reference Monitor – Secure Operating System Definition – Assessment Criteria – Information Flow Secrecy Models.

12

UNIT V SECURITY IN OPERATING SYSTEMS

UNIX Security – UNIX Protection System – UNIX Authorization – UNIX Security Analysis – UNIX Vulnerabilities – Windows Security – Windows Protection System – Windows Authorization – Windows Vulnerabilities.

12

TOTAL: 60

TEXT BOOKS :

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, “Operating System Concepts”, John Wiley & Sons, Inc., 10th Edition, 2021.
2. Trent Jaeger, Operating System Security, Morgan & Claypool Publishers series, 2008.

REFERENCES:

1. Morrie Gasser, “Building A Secure Computer System”, Van Nostrand Reinhold, New York, 1988.
2. Charles Pfleeger, Shari Pfleeger, Jonathan Margulies, "Security in Computing", Fifth Edition, Prentice Hall, New Delhi, 2015.
3. William Stallings, “Operating Systems – Internals and Design Principles”, 9th Edition, Pearson, 2017.
4. Michael Palmer, “Guide to Operating Systems Security”, Course Technology – Cengage Learning, New Delhi, 2008.

BCY234A05	APPLIED PHYSICS – II (Theory Cum Lab)	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

Course Objectives

At the end of the course the student will acquire knowledge in

1. Synthesis and properties of nanomaterial with applications
2. Analyzing the origin of magnetic and dielectric properties and applications
3. Properties of shape memory alloys, bio materials and superconductors
4. Basic concepts of optoelectronic devices and their applications
5. Fabrication of integrated circuits, working of logic gates and their applications

Course Outcomes

At the end of the course the student should gain knowledge in

1. Synthesis and properties of nanomaterial with applications
2. Analyzing the origin of magnetic and dielectric properties and applications
3. Properties of shape memory alloys, bio materials and superconductors
4. Basic concepts of optoelectronic devices and their applications
5. Fabrication of integrated circuits, working of logic gates and their applications

SYLLABUS

Unit I – Nano Physics

Introduction to Nano materials - Quantum confinement – Properties of nano materials – Synthesis of nano materials – Top down and bottom up approach – Ball milling and thermal evaporation method-applications

9

UNIT II Magnetism & Dielectrics

Types of Magnetic materials (Dia, Para and Ferro)– properties – Application- Floppy Disc Dielectrics- Basic Definitions –Dielectric Breakdown – Dielectric loss – Internal field – Claussius- Mossotti relation, applications.

9

UNIT III Engineering Materials

Introduction and Properties of Shape memory alloys – Bio materials, Superconductors-Introduction – Meissner effect – Type I & Type II superconductors – High Tc Superconductors, applications

9

UNIT IV Optoelectronic Devices

Photomultiplier Tube – Photo conductive cells- P-N junction Photodiode – PIN Photodiode-Avalanche Photodiodes - Light Emitting Diode (LED).

9

UNIT V Integrated Circuits & Logic Gates

Introduction –Scale of Integration-Classification of IC's by Structure and function – Fabrication of IC Components – Logic Gates- OR, AND, NOT Gates – Symbols and Truth table for Logic Operations – Universal Gates – The NAND & NOR gates – Symbols and Truth Table for Logic operations

9

REFERENCES:

[1]. R.Murugesan, "Modern Physics", S. Chand, 2019

[2]. M.N.Avadhanulu, "Engineering Physics", S. Chand, 2018

[3]. P.K.Palanisamy, "Engineering Physics", SciTech Publications, 2010 [4]. B.L Thereja, "Basic Electronics (Solid State)", S. Chand, 2007

TEXT BOOKS:

[1]. K.Venkatramanan, R. Raja, M. Sundarrajan, "Applied Physics for Engineers", SCITECH, 2011 [Unit – I, II &III]

[2]. V.K.Mehta, "Principles of Electronics", S Chand & Co, 2014 [units –IV & V]

LIST OF EXPERIMENTS:
(ANY 8)

1. Comparison of magnetic moments – Tan A & Tan B – Equidistance method
2. Comparison of magnetic moments – Tan A & Tan B – Null deflection method
3. Dielectric constant
4. Basic Logic gates
5. NAND – Universal building block
6. NOR – Universal building block
7. Half Adder using NAND & NOR gate
8. Half Subtractor using NAND & NOR gate
9. De-Morgan's theorem
10. Lissajous figures - CRO

BCY233P06	COMMUNICATION NETWORK LAB	L	T	P	C
		0	0	6	2

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES

- The student learns to work with various Redundancy Check Algorithms.
- To learn socket Programming in communication.
- To learn Sliding Window Protocol.
- To learn Routing Algorithm.
- To learn Subnetting Procedures.

COURSE OUTCOMES:

- The students illustrate the various Redundancy Check Algorithms.
- To implement socket Programming in Network communication.
- To Illustrate the Sliding Window Protocol Technique.
- To Illustrate the Routing Algorithms.
- To Illustrate the Subnetting Procedures.

LIST OF EXERCISES

1. To detect Errors using Vertical Redundancy Check (VRC).
2. To detect Errors using Longitudinal Redundancy Check (LRC).
3. To detect Errors using Cyclic Redundancy Check (CRC).
4. Socket programming to implement Asynchronous Communication.
5. Socket programming to implement synchronous Communication.
6. To implement Stop & Wait Protocol
7. To implement Sliding Window Protocol.
8. To implement the Shortest Path Routing using Dijkstra algorithm.
9. Socket Programming to Perform file transfer from Server to the Client.
10. To implement Remote Procedure call under Client / Server Environment.
11. Code simulating PING and TRACEROUTE commands
12. Implementation of Subnet.

BCY234V07	SOFT SKILLS – II	L	T	P	C
		0	1	0	1

(For Students admitted from 2023 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES

- To familiarize students the importance and appropriate usage of grammatical structures.
- To impart knowledge on various interpersonal, intrapersonal communication and the qualities of leadership.
- To introduce students to various technologies that influence our communication conduct in order to achieve targeted communication goals and objectives.
- Effort has been made to accommodate fundamental, mathematical aspects to instil confidence among students
- To demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions

COURSE OUTCOMES

- Use grammatical structures in extended conversations and discussions
- Comprehend the significance of various types of communication and its application.
- Interact effectively and uprightly.
- Use their logical thinking and analytical thinking to solve quantitative questions
- Enhance the aptitude round clearing ability in interview process

SYLLABUS

UNIT – I REMEDIAL ENGLISH GRAMMAR AND USAGE:

Prepositions and words followed by prepositions-Concord (Agreement of the Verb with the Subject) - Error Analysis (Correction of Errors in a given sentence - errors in the use of words -Errors of Indianisms - use of slang - errors in punctuation)-Words commonly misspelt-Often confused words

UNIT – II SOFT SKILLS FOR LEADERSHIP AND TEAM MANAGEMENT:

Qualities of a Good Leader - Decision Making- Intrapersonal skills - Interpersonal skills Problem solving - Critical thinking - Negotiation skills

UNIT – III ELECTRONIC COMMUNICATION:

Internet, e-mail - Video conferencing - Blogging and Websites - Phone calls and Voice messages - Text Messages

UNIT – IV APTITUDE SKILLS – III:

Problems on Numbers – Partnership – Time & Work – Time & Distance – Problems on Trains

UNIT – V APTITUDE SKILLS – IV:

Permutation & Combination – Probability – True Discounts – Banker's Discount – Odd Man out & Series

TEXT BOOKS:

1. Raman Meenakshi and Prakash Singh, "Business Communication", 2nd Edition, Oxford Press, 2012.
2. Simon Sweeney, "English for Business Communication", Cambridge University Press, 2003.
3. R S Aggarwal, "Quantitative Aptitude for Competitive Examinations", S.Chand Publications, 2017

REFERENCES:

1. Jaggan Saneja, "Quantitative Aptitude Simplified", 1st Edition, Notion Press, 2017.

BCY235T01	INTERNET OF THINGS (IoT)	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To understand the concepts of Internet of Things
- To identify the various elements of an IoT System.
- To understand the various means of communication from Node / Gateway to Cloud Platforms.
- To transfer data from IoT devices to various cloud providers.
- To make students aware of various domain specific applications and challenges while implementing IoT solutions.

COURSE OUTCOMES:

- Understand general concepts of Internet of Things (IoT)
- Recognize various devices, sensors and applications
- Apply design concept as IoT solutions
- Analyze various M2M and IoT architectures
- Evaluate design issues in IoT applications

SYLLABUS

UNIT–I INTRODUCTION TO IoT

Introduction to IoT, Current technological trends and future prospects- Evolution of IoT - IoT Devices - IoT Devices vs.Computers - Trends in the Adoption of IoT - Societal Benefits of IoT.

12

UNIT–II ELEMENTS OF IoT

Application Sensors & Actuators - Edge Networking (WSN) Gateways - IoT Communication Model WPAN &LPWA,Overview of IoT supported Hardware platforms such as: Raspberry pi, ARM Cortex

12

UNIT – III COMMUNICATION AND CONNECTIVE TECHNOLOGIES

IoT Communication Model - Wireless medium access issues - Data aggregation & dissemination. Communication technologies, Long-range Wireless Protocols:LoRa WAN, Ingenu

12

UNIT – IV IoT AND CLOUD

Interoperability in IoT - Introduction to Arduino Programming - Integration of Sensors and Actuators with Arduino – Cloud computing in IoT, IoT in cloud architecture.

12

UNIT – V DOMAIN SPECIFIC APPLICATIONS OF IoT

Home automation, Industry applications, Surveillance applications, Other IoT applications - Introduction to different IoT tools, developing applications through IoT tools

12

TOTAL: 60

TEXT BOOKS

1. Boswarthick,OmarElloumi., The Internet of Things: Applications and Protocols, Wiley publications., 2012
2. Dieter Uckelmann, Mark Harrison, Florian Michahelles., Architecting the Internet of Things, Springerpublications.2011.

REFERENCES

1. Marco Schwatrz Internet of Things with Arduino Cookbook, Packt Publications.
2. Peter Waher, “Learning Internet of Things”, PACKT publishing, Birmingham, Mumbai, 2005.

BCY235T02	CYBER SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES

- To introduce the basic concepts of cyber security
- To acquire knowledge on cyber threats and attacks
- To become aware of significant security technologies and tools
- To impart knowledge on cipher methods and cryptographic algorithms
- To explore various protocols for establishing secured communication

COURSE OUTCOMES

- Understand the basic concepts, need, approaches, principles and components of security.
- Explain the various cyber threats and attacks.
- Describe the various Security Technologies and Tools.
- Explain the basic principles of cryptography and algorithms.
- Examine the various protocols for secure communication.

SYLLABUS

UNIT – I INTRODUCTION TO CYBERSECURITY

Introduction – Need for Security – Principles of Security – Components– Software Development Life Cycle – Security Systems Development Life Cycle.

12

UNIT – II CYBERSECURITY – THREATS & ATTACKS

Threats: Intellectual Property - Software Attacks – Missing, inadequate or incomplete controls – Theft – Hardware Failures – Software Failures Attacks: Malicious Code – Hoaxes – Back Doors.

12

UNIT – III SECURITY TOOLS & TECHNOLOGIES

Firewall and VPNs – Intrusion Detection and Prevention Systems – Other Security Tools - Access Control – Firewalls – Honeypots, Honeynets , Security Tools: Comodo, OpenVAS, Nexpose, Nikto, Burp Suite, Snort, N-Stalker ,GMER etc.

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12

UNIT – IV CYRPTOGRAPHY

Cryptology Terminology - Cipher methods – Cryptographic Algorithms – Cryptographic tools –Attacks on cryptosystems - Physical Security.

12

UNIT – V PROTOCOLS FOR SECURE COMMUNICATION

Basic Concepts – SHTTP, SSL & SET – S/MIME, PEM & PGP – WEP, WPA & WPA2.

12

TOTAL : 60

TEXT BOOKS:

1. Michael E. Whitman, Herbert J. Mattord," Principles of Information Security", CENGAGE Learning, 4th Edition.
2. William Stallings," Cryptography and Network Security – Principles and Practice", Pearson Education, 7th Edition.

REFERENCES:

1. Atul Kahate," Cryptography and Network Security", Mc Graw Hill, 4th Edition.
2. Nina Godbole, Sumit Belapure, "Cyber Security", Willey, 4th Edition.

BCY235T03	CYBER CRIME INVESTIGATION AND DIGITAL FORENSICS	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To understand the basic concepts of cybercrime and forensics,
- To understand the basic concepts of Computer Crime
- To create the awareness through simple practical tips and tricks.
- The students to learn how to avoid becoming victims of cybercrimes.
- They have familiar with forensics tools and learn to analyze and validate forensics data.

COURSE OUTCOMES:

- Understand the types of cybercrime and fundamentals.
- Illustrate the concepts of Internet theft.
- Describe the types of cybercrime offenses and attacks.
- Design an approach to prevent cybercrime offenses.
- Assess the methods and tools used in digital forensics.

SYLLABUS

UNIT – I INTRODUCTION TO CYBERCRIME

Introduction-Classifications of Cybercrimes: E-Mail Spoofing-Spamming-Cyber defamation-Internet Time Theft-Newsgroup Spam-Crimes from Usenet Newsgroup-Industrial Spying.

12

UNIT – II CYBER OFFENSES

Cyber offenses: How Criminals Plan that attack-Categories of Cybercrime, Passive Attack, Active AttacksScanning/Scrutinizing gathered Information-Attack on Gaining and Maintaining the System Access.

12

UNIT – III INTRODUCTION TO COMPUTER FORENSICS

Introduction to Traditional Computer Crime, Traditional problems associated with Computer Crime. Introduction to Identity Theft & Identity Fraud. Types of CF techniques – Incident and incident response methodology.

12

UNIT – IV DIGITAL FORENSICS

Introduction to Digital Forensics - Forensic Software and Hardware - Analysis and Advanced Tools - Forensic Technology and Practices - Forensic Ballistics and Photography - Face, Iris and Fingerprint Recognition - Audio Video Analysis.

12

UNIT – V LAWS AND CASE STUDY

Laws and Ethics - Digital Evidence Controls - Evidence Handling Procedures - Basics of Indian Evidence ACT IPC and CrPC- Electronic Communication Privacy ACT - Legal Policies.

12

TOTAL: 60

TEXT BOOKS:

1. Nina Godbole, SunitBelapur, "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley India Publications, April, 2011.
2. James Graham, RicharHoward,Ryan Olson, "Cyber Security Essentials", CRC Press, Tailor and Francis Group, 2011.
3. Robert Jones, "Internet Forensics: Using Digital Evidence to Solve Computer Crime", O'Reilly Media, October, 2005.

REFERENCES:

1. Chad Steel, "Windows Forensics: The field guide for conducting corporate computer investigations", Wiley India Publications, December, 2006.
2. Nelson Phillips and EnfingerSteuart, "Computer Forensics and Investigations", Cengage Learning, New Delhi, 2009.

BCY235TE04A	SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To understand the fundamental principles of software project management
- To estimate the cost associated with a project
- To learn various software process models
- To study software effort estimation techniques
- To learn the fundamental concepts of software quality assurance

COURSE OUTCOMES:

- Apply project management concepts and techniques to an IT project
- Able to analyze cost benefits techniques and risk evaluation methods
- Able to know and apply various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance in software processes
- Interpret and apply various software cost estimation techniques
- Discuss the role of software quality assurance in improving the software development process

SYLLABUS

UNIT – I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT

Why is Software Project Management Important? – Project-Software Projects Vs Other types of Project – Activities Covered by Software Project Management – Plans, Methods and Methodologies – Some ways of Categorizing Software Projects – Management and Management Control – Traditional Vs Modern Project Management Practices

12

UNIT – II PROJECT EVALUATION AND PROGRAMME MANAGEMENT

Introduction – Evaluation of Individual Projects – Cost Benefit Evaluation Techniques – Risk Evaluation – Creating a Programme - Aids to Programme Management – Benefits Management

12

UNIT – III PROJECT PLANNING AND SELECTION OF AN APPROPRIATE PROJECT APPROACH

Overview of Project Planning – Build or Buy – Choosing Methodologies and Technologies – Software Process Models: Waterfall Model, Prototype Model, Spiral Model, Incremental Model, RAD Model, Win Win Model, Agile Model

12

UNIT – IV SOFTWARE EFFORT ESTIMATION AND ACTIVITY PLANNING

Introduction – Where are Estimates done? – Basis for Software Estimating – Software Effort Estimation Techniques: Bottom Up Estimating, Top Down Approach and Parametric Models, Expert Judgment, Function Point Mark II, COCOMO II- Project Schedules – CPM – PERT

12

UNIT – V SOFTWARE QUALITY

Introduction – The Place of Software Quality in Project Planning – Importance of Software Quality – ISO 9126 – Product and Process Metrics – Process Capability Models: CMM, ISO 15504 Process Assessment

12

TOTAL: 60

TEXT BOOKS:

1. Bob Huges, Mike Cotterell and Rajib Mall, "Software Project Management", 5th Edition, 2011, Tata McGraw Hill Education Pvt Ltd.

REFERENCES:

1. Sanjay Mohapatra, "Software Project Management", 2011, Cengage Learning.
2. Pankaj Jalote, "Software Project Manangement in Practive", Pearson Education, 2002

BCY235TE04B	SOFTWARE ENGINEERING	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber security)

COURSE OBJECTIVES

- To provide an insight into the process of software development life cycle
- To gain basic knowledge about pre-requisites for planning a software product
- To learn how to design software
- To study about basic idea about architectural design
- To gain knowledge about software testing strategies

COURSE OUTCOMES

- Understand and apply various phases of software development life cycle for a given problem
- Analyze the requirements systematically and develop the model
- Ability to design and implement software projects
- Skill to design and develop software architecture
- Develop and apply various software testing strategies

SYLLABUS

UNIT – I SOFTWARE AND SOFTWARE ENGINEERING

Introduction – The Nature of Software – Software Process – Software Engineering Practice – Software Myths - Software Process Models: Waterfall Model, Prototype Model, Increment Model, Spiral Model, RAD model, Win-Win model, Agile Model

12

UNIT – II UNDERSTANDING REQUIREMENTS AND REQUIREMENTS MODELING

Requirements engineering, Requirement Elicitation Techniques - Software Requirement Specification – Data Modeling Concepts - Flow Oriented modeling – Creating a Behavioral Model.

12

UNIT – III DESIGN ENGINEERING

Design within the context of software engineering – Design Process and Design Quality - Design Concepts – The Design Model

12

UNIT – IV CREATING AN ARCHITECTURAL DESIGN

Software Architecture – Data Design – Architectural Styles and Patterns – Architectural Design – Transform Flow Mapping – Transaction Flow Mapping.

12

UNIT – V SOFTWARE TESTING

Software Testing fundamentals, White box testing - Black box testing - A Strategic Approach to Software Testing - System Testing.

12

TOTAL: 60

TEXT BOOKS:

1. Roger S.Pressman, "Software Engineering: A Practitioners Approach", 7th Edition, Tata McGraw Hill, 2010.

REFERENCES:

1. Richard Fairley, Software Engineering Concepts – Tata McGraw Hill, 2010.
2. Wamans Jawadekar, Software Engineering Principles & Practices, Tata McGraw Hill, 2010.

BCY235TE05A	HUMAN RESOURCE MANAGEMENT	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To acquire fundamental knowledge about human resource management and system at various levels in general and in certain specific industries or organizations
- To understand structure and functions of job design and empowerment
- To develop relevant skills with respect to recruitment process
- To provide knowledge about training and development methods
- To enable the students to integrate and understanding the importance of compensation in order to take correct business decisions.

COURSE OUTCOMES:

- Ability to handle employee issues and evaluate the new trends in HRM
- To develop necessary skill set for application of various HR issues.
- Ability to plan human resources and implement techniques of job design
- Competency to recruit, train, and appraise the performance of employees
- Rational design of compensation and salary administration

SYLLABUS

UNIT – I FROM PERSONAL MANAGEMENT TO HUMAN RESOURCES MANAGEMENT

Evolution of Human Resources Management - Principles underlying Human Resources Management - Similarities between Personal Management and Human Resources Management- Human Resources in the Changing Environment - Changing Work Design- Human Resources Development Department and its Functions

12

UNIT – II JOB DESIGN AND EMPOWERMENT

Job Enrichment-Job Rotation-Shorter Work Week - Flexi time or Flexible Working Hours – Types of Empowerment – Importance of Empowerment

12

UNIT – III RECRUITMENT AND SELECTION

Man Power Recruitment Process-Recruitment and Selection-Man Power Selection Process – Selection Procedure

12

UNIT – IV TRAINING AND DEVELOPMENT

Needs of Training and Development – Induction Training and Levels of Training – Methods of Training – Training Programme – Management Development Programme – Employee Appraisal

12

UNIT – V COMPENSATION ADMINISTRATION

General Compensation – Executive Compensation – Job Evaluation – Pricing Evaluated Jobs – Role of Merit Rating in a Wage Program

12

TOTAL: 60

TEXT BOOKS:

1. Biswanath Ghosh, "Human Resource Management", Vikas Publishing House Pvt Ltd, 2010.

REFERENCES:

1. K.Aswathappa, "Human Resource Management", 5th Edition, Tata McGraw Hill Publishing Company Ltd, 2008
2. David A.Decenzo and Stephen P.Robbins, "Personnel/Human Resource Management", 3rd Edition, Prentice Hall of India Pvt Ltd, 1991

BCY235TE05B	MANAGEMENT INFORMATION SYSTEM	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To describe the role of information technology and decision support systems in business.
- To introduce the fundamental principles of computer-based information systems analysis.
- To enable the students to understand the various knowledge representation methods.
- To enable the students to use information to assess the impact of the Internet and Internet technology on electronic commerce
- To provide the theoretical models used in database management systems to answer business questions.

COURSE OUTCOMES:

- Relate the basic concepts and technologies used in the field of management information systems;
- Compare the processes of developing and implementing information systems.
- Outline the role of the ethical, social, and security issues of information systems.
- Translate the role of information systems in organizations, the strategic management processes, with the implications for the management.
- Apply the understanding of how various information systems like DBMS work together to accomplish the information objectives of an organization.

SYLLABUS

Unit- I

Introduction: Definition of key terms – Management Information, System – Nature and Scope of MIS - Kinds of System; Systems Approach – Classification of MIS

12

Unit- II

Organization for MIS: Structure for Management; Information requirements at various levels of Management; Manual vs. computerized information system; Data Bank Concept; Types of Computer-Based /applications

12

Unit- III

Data Base Management: Meaning of Data-Base; Electronic Data-Base; DBMS – Objectives – Technical Overview – Data Aggregates – Physical and Logical Structures; System Security

12

Unit-IV

System Development Stages: Investigation, Analysis Design, Construction, Testing, Implementation, Maintenance

12

Unit-V

MIS in functional areas of Management: MIS for Marketing, Human Resource, Operations, Finance, General Management – Decision Making.

12

TOTAL: 60

TEXT BOOKS

1. Goyal, Management Information Systems, Managerial Perspectives, Macmillan India Limited, New Delhi, 2014.
2. Jawadekar, W.S., "Management Information Systems", Tata McGraw Hill Private Limited, New Delhi, 2009.
3. Kenneth C. Laudon and Jane P. Laudon: "Management Information Systems" 9/e, Pearson Education, New Delhi.

REFERENCE BOOKS

1. Mahadeo Jaiswal, Monika Mital: "Management Information System", Oxford University Press, New Delhi, 2008.
2. Murthy C.S.V.: "Management Information System", Himalaya Publications, New Delhi, 2008.
3. Panneerselvam R.: "Database Management System", PHI Private Limited, New Delhi, 2008.

BCY235P06	CYBER SECURITY LAB	L	T	P	C
		0	0	4	2

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- This course is used to understand the principles of encryption algorithms.
- This course is used to understand the conventional and public key cryptography.
- To learn to perform database operations.
- To learn to perform intrusion detection system (ids) using Snort .
- To learn to perform N-Stalker, a Vulnerability Assessment Tool.

COURSE OUTCOMES:

- To implement the principles of encryption algorithms.
- To implement the principles of conventional and public key cryptography.
- Implement database operations.
- To implement intrusion detection system (ids) using Snort.
- To implement N-Stalker, a Vulnerability Assessment Tool.

LIST OF EXERCISES

1. Perform encryption, decryption using the following substitution techniques
   - Ceaser cipher
   - Playfair cipher
   - Hill Cipher
   - Vigenere cipher

2. Perform encryption and decryption using following transposition techniques
   - Rail fence
   - Row & Column Transformation
3. Apply DES algorithm for practical applications.
4. Apply AES algorithm for practical applications.
5. Implement RSA Algorithm using HTML and JavaScript
6. Implement the Diffie-Hellman Key Exchange algorithm for a given problem.
7. Calculate the message digest of a text using the SHA-1 algorithm.
8. Implement the SIGNATURE SCHEME - Digital Signature Standard
9. Demonstrate intrusion detection system (ids) using any tool eg. Snort
10. Automated Attack and Penetration Tools Exploring N-Stalker, a Vulnerability Assessment Tool
11. CC Defeating Malware
    - Building Trojans
    - Rootkit Hunter

BCY235P07	CYBER CRIME AND DIGITAL FORENSICS LAB	L	T	P	C
		0	0	4	2

COURSE OBJECTIVES:

- This Course provides basic insight of Computer Forensics Analysis
- To Learn E-Mail Investigations.
- To get deep Knowledge in various Computer Forensic Tools.
- To do Survey of Latest developments in Cyber Forensics.
- To Locate Image (JPEG) files with altered extensions

COURSE OUTCOMES:

- To Implement Computer Forensics Analysis tools.
- To perform E-Mail Investigations.
- To implement various Computer Forensic Tools.
- To implement Latest developments in Cyber Forensics.
- To Extract Image (JPEG) files with altered extensions

LIST OF EXERCISES

1. Computer Hacking & Network Intrusion.
2. Survey of Latest developments in Cyber Forensics.
3. Registry Editing and Viewing using native tools of OS.
4. Hex analysis using Hex Editors.
5. Bit level Forensic Analysis of evidential image using FTK, Encase and ProDiscover Tools.
6. Hash code generation, comparison of files using tools like Hash Calcetc.
7. File analysis using Sleuthkitetc and Graphical File analysis and Image Analysis.
8. Email Analysis involving Header check, tracing route.
9. Performing a check on Spam mail and Non- Spam mail.
10. Create a file on a USB drive and calculate its hash value like FTK Image.
11. Extracting of files that have been deleted.
12. Locate and extract Image (JPEG) files with altered extensions.

BCY236T01	PROGRAMMING WITH PYTHON	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Cyber Security)

COURSE OBJECTIVES:

- To learn the fundamentals of writing Python scripts
- To learn python control structures.
- To define python functions and other data structures.
- To do input / output with files in python
- To impart the knowledge on database operations.

COURSE OUTCOMES:

- Implement python control structures.
- Illustrate the concept of strings and its manipulation.
- Manipulate object oriented programming concepts in python
- Understand the various graphic methods to solve different problems.
- Demonstrate file and database operations.

SYLLABUS

UNIT – I

Python Basics: Data types – input to python program – Strings basics – Operators in Python – Functions : Basics of functions – Passing variables in a function call – function arguments – Modules in Python – Recursion **12**

UNIT – II

Control Statements, Arrays and Strings : if - if…else – if... elif...else – While Loop – for Loop – Range function – String : Creating, initializing and accessing elements of a string – Traversing a string – string operations – String functions versus string methods.

12

UNIT – III

List – Tuples – Dictionaries – Regular Expressions: File Operations : Basic of File operation - Reading and Writing a file – Python exception : Basic concepts of exceptions in Python – user defined exceptions – built-in exceptions **12**

UNIT – IV

Object Oriented Programming: Introduction to OOPS –OOPs concept related specifically related to Python – Inheritance and namespace – Basics of NumPy, SciPy and Pandas.

12

UNIT – V

Python Advances: Graphical User Interface : GUI in Python – Root Window – Fonts and Colors – Containers – Canvas – Frame – Widgets : Button, Label, Message, Text, Scrollbar, Check and Radio Button – Spin and List box – Menu – Python's Database Connectivity

12

TOTAL: 60

TEXT BOOKS:

1. NageswaraRao R.,"Core Python Programming",2nd Edition, Dreamtech Press, New Delhi, 2018.
2. J. Jose, Introduction to Computing and Problem Solving with Python, Khanna Publications,2019.

REFERENCES:

1. Kent D Lee (2010) Python Programming Fundamentals.
2. David M Beazley (2009) Python Essential Reference.
3. John V Guttag. Introduction to Computation and Programming Using Python, Prentice Hall of India.

BCY236T02	MACHINE LEARNING	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To understand the need of Machine learning.
- To acquire the knowledge of various classification techniques.
- To study the various algorithms related to supervised and unsupervised learning.
- To learn the theoretical and practical aspects of probabilistic graphical models.
- To expose the applications of machine learning.

COURSE OUTCOMES:

- Able to explain the need of machine learning and model building.
- Understand the concept to apply the supervised algorithms.
- Develop a skill to implement unsupervised algorithms for problem solving.
- Understand the concept of reassurance learning algorithms.
- Able to apply the learning algorithms in real world problem solving.

SYLLABUS

UNIT-I: INTRODUCTION TO MACHINE LEARNING

Introduction to Machine learning: Type of Learning and Examples, basic concepts in machine learning, Computational Learning theory, Introduction to Parametric Models – Non-Parametric Models Probability Basics.

12

UNIT-II: SUPERVISED LEARNING

Algorithms Supervised Machine Learning Algorithms, working of supervised machine learning algorithm, Naive Bayes algorithm, decision tree, Support Vector Machines, KNN, Random Forest algorithm.

12

UNIT-III: UNSUPERVISED LEARNING

Clustering- K-means -EM Algorithm- Mixtures of Gaussians - Dimensionality Reduction - Factor analysis – Feature Selection - Principal Component Analysis - Probabilistic PCA - Independent components analysis - Singular Value Decomposition.

12

UNIT-IV: REINFORCEMENT LEARNING

Reinforcement Learning Algorithms Reinforcement Machine Learning Algorithms, working of reinforcement machine learning algorithm, Finite Markov Decision Processes, Dynamic Programming, Monte Carlo Methods.

12

UNIT-V: INSTANCE BASED AND REINFORCEMENT LEARNING

K Nearest Neighbour Learning-Locally Weighted Regression Radial Basis Function Cased Based Reasoning Q Learning and Q Function.

12

TOTAL: 60

TEXT BOOKS

1. Ethem Alpaydın, Introduction to Machine Learning, The MIT Press Cambridge, Fourth Edition, MIT Press Hardcover,2020
2. Shai Shalev-Shwartz, Shai Ben-David, Understanding Machine Learning: From Theory to Algorithms, Cambridge University Press, 2014.

REFERENCES

1. V Kishore Ayyadevara, Pro Machine Learning Algorithms A Hands On Approach to Implementing Algorithms in Python and R, Apress, 2018.
2. Kevin P. Murphy, Probabilistic Machine Learning an Introduction. The MIT Press, 2022.

BCY236T03	INTRUSION DETECTION AND PREVENTION SYSTEMS	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- Understand when, where, how, and why to apply Intrusion Detection tools and techniques in order to improve the security posture of an enterprise.
- Analyze intrusion detection alerts and logs to distinguish attack types from false alarms
- To understand the concepts of Prior strong experience in operating system and prior hands-on experience.
- To prepare students to know regarding the common threats faced today and the necessity of intrusion detection systems for securing the systems.
- To understand the essential concepts of intrusion detection and prevention. Be familiar with principles and techniques used in intrusion detection and taxonomy of intrusion detection systems.

COURSE OUTCOMES:

- Apply knowledge of the fundamentals and history of Intrusion Detection in order to avoid common pitfalls in the creation and evaluation of new Intrusion Detection Systems
- Understand the physical location, the operational characteristics and the various functions performed by the intrusion detection and prevention system.
- Describe the detection approaches.
- Understand the taxonomy of the anomaly detections using fuzzy logic.
- How to detect network attacks and troubleshoot network problems.

SYLLABUS

UNIT – I INTRODUCTION

Understanding Intrusion Detection –Intrusion detection and prevention basics –IDS and IPS analysis schemes, Attacks, Detection approaches –Misuse detection – anamoly detection – specification-based detection – hybrid detection, Data loss prevention.

12

UNIT – II THEORETICAL FOUNDATIONS OF DETECTION

Taxonomy of anomaly detection system –fuzzy logic –Bayes theory –Artificial Neural networks Support vector machine –Evolutionary computation –Association rules –Clustering, Information security standards, ISO 27001.

12

UNIT – III ARCHITECTURE AND IMPLEMENTATION

Centralized – Distributed –Cooperative Intrusion Detection -Tiered architecture.

12

UNIT – IV JUSTIFYING INTRUSION DETECTION

Intrusion detection in security –Threat Briefing –Quantifying risk –Return on Investment (ROI)

12

UNIT – V CASE STUDY

Tool Selection and Acquisition Process - Bro Intrusion Detection – Prelude Intrusion Detection - Cisco Security IDS -Snorts Intrusion Detection –NFR security Legal Issues And Organizations Standards: Law Enforcement / Criminal Prosecutions –Standard of Due Care – Evidentiary Issues, Organizations and Standardizations.

12

TOTAL: 60

TEXT BOOKS:

1. Ali A. Ghorbani, Wei Lu, "Network Intrusion Detection and Prevention: Concepts and Techniques", Springer, 2010.
2. Carl Enrolf, Eugene Schultz, Jim Mellander, "Intrusion detection and Prevention", McGraw Hill, 2004.
3. Paul E. Proctor, "The Practical Intrusion Detection Handbook", Prentice Hall, 2001.

REFERENCES:

1. Ankit Fadia and Mnu Zacharia, "Intrusion Alert", Vikas Publishing house Pvt., Ltd, 2007.
2. Earl Carter, Jonathan Hogue, "Intrusion Prevention Fundamentals", Pearson Education, 2006.

BCY236TE04A	BIOMETRIC SECURITY	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To understand the concept of biometrics and brief functioning of biometric system.
- To know different types of biometrics and their benefits in identification system.
- To understand threats and increase the biometric system security.
- To understand the concept of Biometric attacks.
- To Learn the Legal Concerns Raised by Biometrics

COURSE OUTCOMES:

- Understand the basic Biometric and authentication system
- Study detailed face and human recognition methods.
- Analyze the different evaluation metrics of Biometric.
- Know the security and attacks of Biometric
- Understand privacy challenges in biometrics

SYLLABUS

UNIT – I FUNDAMENTALS AND ARCHITECHTURE

Biometric Fundamentals: Introduction – Different authentication system technologies – Benefits of biometrics over traditional authentication systems –Biometric architecture – Applications.

12

UNIT – II RECOGNITION METHODS

Biometric systems based on fingerprint recognition – Iris recognition – Face identification and localization in images – Retina recognition methods.

12

UNIT – III EVALUATION METRICES

Quantitative analysis on the biometrics – Performance evaluation in Biometrics – False acceptance rate – false rejection rate.

12

UNIT – IV SYSTEM SECURITY

Multimodal Biometric systems: Theory and applications – Biometric System Security: Biometric attacks / tampering – Solutions – Biometric encryption.

12

UNIT – V POLICY AND CASE STUDY

Privacy, Policy and Legal Concerns Raised by Biometrics – Case studies on physiological, behavioral and multifactor biometrics in identification systems

12

TOTAL : 60

TEXT BOOKS:

1. R. M. Bolle, J. H. Connell, S. Pankanti, N. K. Ratha, and A. W. Senior, "Guide to Biometrics", Springer, 2004.
2. Benjamin Muller, "Security, Risk and the Biometric State: Governing Borders and Bodies", Routledge, 1st Edition,2004.

REFERENCES:

1. Anil K jain, Patrick Flynn, Arun A. (Eds.), "Handbook of Biometrics", Springer, 2008.
2. John D. Woodward, Jr. Nicholas M. Orlans Peter T. Higgins, "Biometrics", Dreamtech,2008.
3. Samir Nanavathi, Michel Thieme, Raj Nanavathi," Biometrics -Identity verification in a network", Wiley Eastern,2014

BCY236TE04B	ARTIFICIAL INTELLIGENCE	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To understand the various characteristics of Intelligent agents
- To learn about the different search strategies in AI
- To learn the knowledge representation using Mapping issues, Function and predicates.
- To illustrate the logical representation, Semantic Network Representation, Frame Representation.
- To learn techniques for solving problems with complete and uncertain models.

COURSE OUTCOMES:

- Apply the basic principles of Artificial Intelligence (AI) in problem space and search programs.
- Demonstrate the various heuristic search techniques.
- Interpret the techniques to represent and manipulate the knowledge.
- Implement the knowledge representation techniques and structures.
- Explore techniques for solving problems with complete and uncertain models.

SYLLABUS

UNIT – I INTRODUCTION AND PROBLEM SPACES

Artificial Intelligence: AI Problems – Assumption – Technique – Model – Criteria – Problems – Problem Spaces and Search: Definition – Production Systems – Issues in the Design of Search Programs.

12

UNIT – II HEURISTIC SEARCH TECHNIQUES

Heuristic Search Techniques: Generate and Test – Hill Climbing – Best-First Search – Problem Reduction – Constraint Satisfaction – Means-Ends Analysis.

12

UNIT – III FUNDAMENTALS OF KNOWLEDGE REPRESENTATION

Knowledge Representation Issues: Representations and Mappings – Approaches – Issues – Frame Problem – Using Predicate Logic: Representing Simple Facts in Logic.

12

UNIT – IV KNOWLEDGE REPRESENTATION AND STRUCTURES

Representing Knowledge Using Rules: Procedural Versus Declarative Knowledge – Logic Programming – Reasoning – Weak Slot-and-Filler Structures.

12

UNIT – V REASONING

Symbolic Reasoning Under Uncertainty: Non monotonic Reasoning – Logics – Issues – Problem Solver – Implementation – DFS –BFS – Statistical Reasoning: Probability and Bayesian Theorem – Bayesian Networks –Introduction to Generative AI..

12

TOTAL: 60

TEXT BOOK:

1. Elaine Rich, Kevin Knight, Shivashankar B.Nair, "Artificial Intelligence", 3rd Edition, McGraw Hill Education Pvt. Ltd., 2018.

REFERENCES:

1. Russell Stuart, Norvig Peter, "Artificial Intelligence: A Modern Approach", 3rd Edition, Pearson Education, 2016.
2. Parag Kulkarni, Prachi Joshi, "Artificial Intelligence –Building Intelligent Systems", PHI Learning Private Ltd, 2015.

BCY236AE05A	ORGANIZATIONAL BEHAVIOR	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science)/B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To study the nature and scope of Organizational Behavior with different models
- To familiarize the concept of personality, perception and its significance
- To learn various theories of motivation and the formation of attitude.
- To identify the process used in developing communication and resolving conflicts.
- To understand the organizational structure and culture

COURSE OUTCOMES:

- Demonstrate the applicability of the concept of OB to analyze the behavior of people in the Organization.
- Able to understand the determinants and attributes influencing for personality and perception.
- Understand the need and importance of motivation and able to apply with different types of organization.
- To develop creative and innovative ideas that could positively shape the organizations and enhance communication skills.
- To accept and embrace in working with different people from different cultural and diverse background in the workplace.

SYLLABUS

UNIT – I ORGANIZATIONAL BEHAVIOR AND MODELS

Definition - Nature and Scope of Organizational Behavior- Factors Influencing Organizational Behavior – Managerial Implications of Learning Organizational Behavior – Importance of Models of Organizational Behavior - Model of Organizational Behavior (Autocratic, Custodial, Supportive and Collegial Model)

12

UNIT – II PERSONALITY AND PERCEPTION

Characteristics of Personality – Determinants of Personality – Theories of Personality – Personality Attributes Influencing Organizational Behavior – Characteristics of Perception – Perceptual Process – Factors Influencing Perception

12

UNIT – III MOTIVATION AND ATTITUDE

Motivation Process – Motivators – Theories of Motivation – Attitude Formation – Factors Influencing Formation of Attitudes

12

UNIT – IV COMMUNICATION BEHAVIOR

Definition – Communication Process – Functions of Communication – Classification of Communication – Barriers of Communication – Improving Understanding in Communication.

12

UNIT – V ORGANIZATIONAL STRUCTURE AND CULTURE:

Organizational Structure Meaning – Types of Organization Structure – Significance of Organizational Culture – Dimensions of Organizational Culture – Drivers of Organizational Culture.

12

TOTAL: 60

TEXT BOOKS:

1. Sarma V.S.Veluri – "Organisational Behaviour An Interactive Learning Approach Text and Cases", Jaico Publishing House, 2010

REFERENCES:

1. Fred Luthens, "Organizational Behavior-An Evidence Based Approach", McGraw Hill International Edition, 12th Edition 2011.
2. Stephen P.Robbins, "Essentials of Organizational Behaviour", Prentice Hall -6th Edition, 2000.

BCY236AE05B	DIGITAL MARKETING	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber security)

COURSE OBJECTIVES:

- To provide students with an overview and understanding of marketing with a specific emphasis on digital Marketing
- To learn the fundamental concept of internet marketing
- To understand basic idea about how to make an effective advertisements
- To study the need and importance of social media marketing
- To understand various emerging platforms in digital marketing

COURSE OUTCOMES:

- Able to identify the importance of the digital marketing for marketing success.
- Articulate innovative insights of internet marketing enabling a competitive edge
- Able to explain various search engine advertisements
- Gain knowledge on Social Media Marketing and Web Analytics
- Able to apply and analysis various emerging digital marketing tools for success of any business.

SYLLABUS

UNIT – I INTRODUCTION

Objectives – Evolution of Digital Marketing from Traditional to the Modern Era – Web Advertising – Current Trends – The Emergence of digital Marketing as a Tool – POEM Framework.

12

UNIT – II INTERNET MARKETING

Objectives – Internet Marketing – Digital Marketing Framework – Digital Marketing Mix - E mail Marketing – Online PR

12

UNIT – III SEARCH ENGINE ADVERTISING

Search Advertisements – Ad Placement – Ad Ranks – Display Marketing – Programmable Digital Marketing – You Tube Marketing

12

UNIT – IV SOCIAL MEDIA MARKETING

Social Media Strategies Cycle – Social Media Marketing Characteristics – Face Book Marketing – Importance of LinkedIn Marketing

12

UNIT – V EMERGING PLATFORMS

Instagram and Snapchat – Difference between Instagram and Snapchat – Digital Marketing Strategies through Instagram and Snapchat Marketing – Instagram Marketing.

12

TOTAL: 60

TEXT BOOK:

1. Rajan Gupta, Supriya Madan, "Digital Marketing", BPB Online, 2024

REFERENCES:

1. Seema Gupta, "Digital Marketing", McGraw Hill Education, 2020.
2. Puneet Bhatia, "Fundamentals of Digital Marketing", 2nd Edition, Pearson Education, 2019.

BCY236P06	PYTHON LAB	L	T	P	C
		0	0	4	2

(For Students admitted from 2024 onwards)
Common for B.Sc. (CS) / BCA / B.Sc. (Cyber Security)

COURSE OBJECTIVES:

- To learn python fundamentals and control structures..
- To learn to implement python functions to solve problems.
- To use python data structures – lists, tuples, dictionaries to represent complex data.
- To do input / output with files in python.
- To learn to perform database operations.

COURSE OUTCOMES:

- Implement python control structures and loops.
- Implement the concept of strings and its manipulation.
- Implement object oriented programming concepts in python.
- Implement the various graphic methods to solve different problems.
- Implement database operations.

LIST OF EXERCISES

1. Write a program to count the number of characters in the string and store them in a dictionary data structure
2. Write a program to use split and join methods in the string and trace a birthday with a dictionary data structure.
3. Write a program combine lists that combines these lists into a dictionary.
4. Write a program to print each line of a file in reverse order.
5. Write a program to compute the number of characters, words and lines in a file.
6. Write a program to perform addition of two square matrices
7. Write a program to perform multiplication of two square matrices
   a) Install packages requests, flask and explore them. using (pip)
   b) Write a script that imports requests and fetch content from the page. Eg. (Wiki)
   c) Write a simple script that serves a simple HTTP Response and a simple HTML Page.
8. Write a GUI for an Expression calculator using Tk
9. Write a program to implementing the following figures using Turtle.
10. Develop a python code to interact with Databases.

BCY236P07	SOFTWARE DEVELOPMENT LAB	L	T	P	C
		0	0	4	2

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To provide an idea of decomposing the given problem into Analysis, Design, Implementation, Testing and Maintenance phases.
- To provide an idea of using various process models in the software industry according to given circumstances.
- To understand basic knowledge about data dictionary, Data Flow Diagram, E-R Diagram and so on.
- To understand need and importance of modularity
- To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are conducted in a software project

COURSE OUTCOMES:

- Understand the software engineering methodologies involved in the phases for project development
- Discuss and Analyses how to develop software requirements specifications for a given problem.
- Students will be able to decompose the given project
- Able to apply latest programming techniques
- Ability to develop product-startups implementing software process models in software engineering methods

A Possible set of applications may be the following

1. Web Based Applications
2. Mobile Based Applications
3. Automation of Banking, Electricity Bill, Departmental Store and so on
4. Online Booking System
5. Security Based Applications
6. IoT /Cloud based/Machine Learning/Artificial Intelligence
7. Block Chain Technologies

BCY237T01	MOBILE AND WIRELESS SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To study the specifications and functionalities of various protocols/standards of mobile networks, to study about Wireless networks, protocol stack and standards.
- To Understand the Voice and Video Over IP and explore about, How they can be used, and how they can be extended.
- To Understand how SIP can be used to facilitate communications access for users with disabilities.
- To Explore about third generation network application and CDMA architecture.
- To Discuss about IEEE protocol standards and learn the uses of wireless LAN advantages.

COURSE OUTCOMES:

- Design and implement wireless network environment for any application using latest wireless protocols and standards.
- Implement different type of applications for smart phones and mobile devices with latest network strategies.
- Independently understand basic computer network technology
- Conversant with the latest 3G/4G and WiMAX networks and its architecture.
- Identifies the different types of network topologies and protocols, and explore about GSM architecture.

SYLLABUS

UNIT – I INTRODUCTION

Wireless The Beginning – Mobile Computing – Middleware and Gateways – Application and services- Developing Mobile computer Applications – security in mobile computing – Standards. Mobile Computting Architecture– Architecture for mobile computing – Three-tier architecture.

12

UNIT – II MOBILE COMPUTING THROUGH TELEPHONY

Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI.

12

UNIT – III WIRELESS TECHNOLOGIES

Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card. GSM : Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM.

12

UNIT – IV CDMA AND 3G

Spread spectrum technology – Is 95 – CDMA vs GSM – Wireless Data – Third generation networks –Applications on 3G WIRELESS LAN: Wireless LAN advantages – Mobile in Wireless LAN – Mobile adhoc networks and sensor networks –WiFi vs 3G.

12

UNIT – V VOIP SECURITY AND CASE STUDY

Streaming in 3rd generation mobile architecture, Voice and Video over IP (Media over IP), Session Initiation Protocol (SIP) and its use in Media Over IP, Skype as a case study.

12

TOTAL : 60

TEXT BOOKS:

1. Jochen Schiler, “Mobile Communication”, Addison Wesley, 2003..
2. B.A. Forouzan, "Cryptography & Network Security", Tata McGrawHill, 2007.
3. Honeyman P Huston L.B, “Communications and Consistency in Mobile FileSystems”, IEEE Personal communication 2(6), 1996.

REFERENCES:

1. Asoke K Talukder, Roopa R Yavagal , “Mobile Computing”, TMH, 2nd Edition, 2017.
2. Biplob k Sikdar, Sipra dasbit , “Mobile Computing”, Printice Hall India, 2009.

BCY237TE02A	CYBER LAW IN INDIA	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- The course intends to inculcate the significance of cyber space and to enlighten the various legal, social and international issues.
- To understand the various remedies available under the Information Technology Act for the breach and commission of offence in cyber space.
- The course also outlines international best techniques and the various legal mechanisms to control the various offences in the cyberspace.
- To introduce the cyber world and cyber law in general.
- Define and describe the nature and scope of cybercrime

COURSE OUTCOMES:

- To implement the scope of cybercrime.
- To implement cyber law in general.
- Develop knowledge of major incidents of cybercrime and their resulting impact.
- Analyze and discuss national and global digital law enforcement efforts.
- Critically consider specific laws and policies governing cybercrime detection and prosecution.

SYLLABUS

UNIT-I INTRODUCTION

Introduction to cyber space -UNCITRAL Model Law - Information Technology Act, 2000 with recent amendments - Jurisdictional issues - Digital signatures - regulation of - certifying authorities - Cyber Regulation Appellate Tribunal – Human Rights Issues.

12

UNIT - II ONLINE CONTRACTS

Formation of online contracts - E banking transactions, online payment options, online advertising - Electronic and digital signatures - Taxation issues in cyber space- indirect tax, tax evasion, double tax, international tax, permanent establishment - Protection of trade secrets and deceptive trade practices.

12

UNIT – III CYBER CRIMES

Understanding cybercrimes - Identifying Theft and Frauds - Types of crimes in the internet: Against person, against property, against government - Digital evidence- investigation and adjudication of cybercrimes in India- cyber arbitration, cyber conflict investigation- cyber Terrorism.

12

UNIT - IV INTELLECTUAL PROPERTY RIGHTS (IPR) AND CYBER SPACE

Copyright issues in the internet- protection of computer software, caching, international regime-OSS, DMCA, Data Protection Directive - Trademark issues in the internet – Domain Name Registration, Domain Name Registration, Domain Name Dispute, ICANN, UDRP policy, linking, framing, tagging -Database issues in the internet.

12

UNIT-V THE INDIAN EVIDENCE ACT OF 1872

Proof and Management of Electronic Records; Relevancy, Admissibility and Probative Value of E-Evidence, Proving Digital Signatures, Proof of Electronic Agreements, Proving Electronic Messages.

12

TOTAL: 60

TEXT BOOKS:

1. Karnika Seth, " Computers, Internet and New Technology Laws" ,Cyber Lawyer and Expert and is The Managing Partner of Seth Associates, Edition 2012.
2. S.K.Verma, Raman mittal , "Legal dimensions of cyber space" ,Indian Law Institute, New Delhi: Indian Institute,2004.

REFERENCES:

1. Law Relating to Computers Internet & E-commerce – "A Guide to Cyber laws & the Information Technology Act, Rules, Regulations and Notifications along with Latest Case Laws", 2012.
2. Jeff Kosseff , "Cyber security Law", Wiley Publications, 2017.
3. Ian. J. Lyod , "Information technology law" , Information Technology Act 2000, its amendment and IT Rules, 2014.
4. Yee fen Lim , "Cyber space law commentaries and Materials", second edition, Galexia Consulting Pty Ltd, Australia.

BCY237TE02B	RISK MANAGEMENT IN CYBER SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- Understand concepts with regards to Risk Management
- Understand concepts about establishing Information System Controls
- Understand terminologies used in risk management
- Be able to provide preliminary risk analysis
- Be able to use qualitative and quantitative risk measuring techniques for providing risk calculations to management

COURSE OUTCOMES:

- An organisational asset that has utility, and a value – which may be relative depending on the perspective taken, and therefore can be classified to reflect its importance to an organisation or individual.
- Clear understandability in the field of security threats, vulnerabilities, and consequences are essential in managing cyber security.
- Cyber security lifecycle and strategy for planning are key factors in enterprise security services.
- The security models and management concepts are taken as additional concepts in learning process of risk management in cyber security.
- Information risk management is a term referring to the process of documenting what information is at risk, type and level of risk realised; and the impact of realisation.

SYLLABUS

UNIT – I INTRODUCTION TO CYBER SECURITY

The Security Environment: Threats, vulnerabilities, and consequences - Advanced persistent threats - The state of security today. Principles of Cybersecurity: The interrelated components of the computing environment - Cybersecurity models - Variations on a theme: computer security, information security, and information assurance. Cybersecurity Management Concepts: Management models, roles, and functions. Enterprise Roles and Structures: Information security roles and positions.

12

UNIT – II STRATEGIC PLANNING AND SECURITY PLANS

Strategy and Strategic Planning: Strategy - Strategic planning and security strategy - The information security lifecycle - Architecting the enterprise. Security Plans and Policies: Levels of planning - Planning misalignment - The System Security Plan (SSP)- Policy development and implementation. Security Standards and Controls: Security standards and controls - Certification and accreditation (C&A).

12

UNIT – III RISK MANAGEMENT

Risk Management: Principles of risk - Types of risk - Risk strategies - The Risk Management Framework (RMF). Physical Security and Environmental Events: Physical and environmental threats - Physical and environmental controls. Contingency Planning: Developing a contingency plan - Understanding the different types of contingency plan - Responding to events.

12

UNIT – IV SECURITY AWARENESS

Security Education, Training, and Awareness: Human factors in security – Risk Assesment - Cross-domain training (IT and other security domains). The future of cyber security: Key future uncertainties - Possible future scenarios.

12

UNIT – V CASE STUDY

Case Study on Pune Citibank MphasiS Call Center Fraud – The Bank NSP Case – UTI Bank hooked in a phishing attack – Mumbai Police can now nail web offenders – Orkut: The new danger.

12

TOTAL : 60

TEXT BOOKS:

1. Rhodes-Ousley, Mark. "Information Security: The Complete Reference, Second Edition, Information Security Management: Concepts and Practice", New York, McGraw-Hill, 2013.
2. Whitman, Michael E. and Herbert J. Mattord, " Roadmap to Information Security for IT and Infosec Managers", Boston, MA: Course Technology, 2011.

REFERENCES:

1. Michael E. Whitman and Herbert J. Mattord, "Principles of Information Security", Course Technology, Cengage Learning, Fourth Edition, Nov, 2014.

BCY237TE03A	BIG DATA AND IOT SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To explore, design and implement basic concepts of big data & methodologies.
- To analyzing structured and unstructured data with emphasis on the relationship.
- To understand the fundamentals of Internet of Things with security.
- To understand the fundamental concepts of big data platform.
- To Learn the fundamental concepts like history and components of Hadoop.

COURSE OUTCOMES:

- To work with big data platform learn intelligent data analysis and compare old and modern data tool.
- Understand the framework of Visual data analysis techniques and interaction techniques.
- To explore on Big Data real time analytics platform applications.
- To extend the security and implement the data with internet.
- To assess the vision and introduction of IoT and IoT Security.

SYLLABUS

UNIT I INTRODUCTION TO BIG DATA Big data - Introduction to Big Data Platform - Big Data Skills and Sources - Big Data Adoption - Characteristics of Big Data - Key aspects of a Big Data Platform.

12

UNIT II BIG DATA COMPONENTS

Technical Details of Big Data Components - Text Analytics and Streams - Intelligent data analysis-Analytic Processes and Tools - Modern Data Analytic Tools - Cloud and Big Data .

12

UNIT III BIG DATA STREAMS

First steps with the Hadoop "ecosystem" – Introduction to Hadoop - Exercises - Hadoop components –Map Reduce/Pig/Hive/HBase - Loading data into Hadoop.

12

UNIT IV OVERVIEW OF IoT AND IoT SECURITY

IoT SecurityRequirements - IoT Privacy Preservation Issues - Cyber-Physical Object Security -Hardware Security -Front-end System Privacy Protection - Networking Function Security.

12

UNIT V ATTACKS AND SECURITY

Attack Models - Attacks to RFIDs in IoTs - Attacks to Network Functions - Attacks to Back-end Systems - Security in Front and back end Sensors and Equipment -Prevent Unauthorized Access to Sensor Data.

12

Total: 60

TEXT BOOKS:

1. Stephan Kudyba, “Big Data Mining and Analytics, Components of Strategic Decision Making”,Auerbach Publications, March 12, 2014.
2. Eliot P. Reznor, “Big Data: A Beginner’s Guideto using Data Science for Business”, 2017.

REFERENCES:

1. Fei HU, “Security and Privacy in Internet of Things (IoTs): Models, Algorithms, and Implementations”, CRC Press, 2016.
2. Dirk deRoos , “Hadoop for Dummies”, 2014.
3. Prajapati, “Big Data Analytics with R and Hadoop”, 2014.
4. Dawn E. Holmes, Big Data: A Very Short Introduction, 2017.
5. Ollie Whitehouse, “Security of Things: An Implementers' Guide to Cyber-Security for Internet of Things Devices and Beyond”, NCC Group, 2014.

BCY237TE03B	DATABASE SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To study the different models in database security and their applications in real time world.
- To protect the database and information associated with them.
- To understand various security Models.
- To learn a model for the Protection of Object-Oriented Data.
- To learn the concept of Database Watermarking

COURSE OUTCOMES:

- Identify the security issues and solve them using appropriate security models.
- Implement security mechanisms in a database system and provide a secured information flow.
- Design secured software using the methodological approach.
- Identify and discover security attacks through statistical inference and discovery methods.
- Prove that, only authorized user has access to the data and the data integrity is preserved

SYLLABUS

UNIT – I INTRODUCTION

Introduction to Databases Security -Problems in Databases Security- Controls & Conclusions t to Security Models – Introduction to Access Matrix Model -Take-Grant Model -Acten Model -PN Model for Distributed databases.

12

UNIT – II SECURITY MODELS

Bell and LaPadula's Model -Biba's Model -Dion's Model -Sea View Model -Jajodia and Sandhu's Model- the Lattice Model for the Flow Control -conclusion of Security Mechanisms.

12

UNIT – III SECURITY SOFTWARE DESIGN

Introduction -A Methodological Approach to Security Software Design -Secure Operating System Design -Secure DBMS Design -Security Packages in Database Security Design- Introduction to IDES System -RETISS System -ASES System Discovery.

12

UNIT – IV MODEL FOR THE PROTECTION OF NEW GENERATION DATABASE

Introduction -A Model for the Protection of Frame Based Systems -A Model for the Protection of Object Oriented Systems.

12

UNIT – V CASE STUDY

Database Watermarking – Basic Watermarking Process - Discrete Data, Multimedia, and Relational Data –Attacks on Watermarking.

12

TOTAL: 60

TEXT BOOKS:

1. Hassan A. Afyouni, "Database Security and Auditing", CENGAGE Learning, India Edition, 2009.
2. Castano ," Database Security" , Pearson Education, Second edition, 2002.
3. Alfred basta, melissa zgola, " Database security", CENGAGE learning, 2014

REFERENCES:

1. Michael Gertz and Sushil Jajodia, "Handbook of Database Security: Applications and Trends", Springer, 2010.
2. Osama S. Faragallah, El-Sayed M. El-Rabaie, Fathi E. Abd El-Samie, Ahmed I. Sallam, and Hala S. El-Sayed, "Multilevel Security for Relational Databases", ISBN 978-1-4822- 0539-8. CRC Press, 2014.

BCY237TE04A	TRENDS IN CYBER SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To understand the fundamentals of web application security
- To focus on wide aspects of secure development and deployment of web applications
- To learn how to build secure APIs
- To learn the basics of vulnerability assessment and penetration testing
- To get an insight about Hacking techniques and Tools

COURSE OUTCOMES:

- Understanding the basic concepts of web application security and the need for it
- Be acquainted with the process for secure development and deployment of web applications
- Acquire the skill to design Secure Web Applications that use Secure APIs .
- Be able to get the importance of carrying out vulnerability assessment and penetration testing .
- Acquire the skill to think like a hacker and to use hackers tool sets

SYLLABUS

UNIT I FUNDAMENTALS OF WEB APPLICATION SECURITY

The history of Software Security-Recognizing Web Application Security Threats, Web Application Security, Authentication and Authorization, Secure Socket layer, Transport layer Security, Session Management-Input Validation

12

UNIT II SECURE DEVELOPMENT AND DEPLOYMENT

Web Applications Security - Security Testing,The Microsoft Security Development Lifecycle (SDL), OWASP Comprehensive Lightweight Application Security Process (CLASP).

12

UNIT III SECURE API DEVELOPMENT

API Security- Session Cookies, Token Based Authentication, Securing Natter APIs: Addressing threats with Security Controls, Rate Limiting for Availability, Encryption, Audit logging, Securing service-to-service APIs: API Keys , OAuth2, Securing Micro service APIs: Service Mesh, Locking Down Network Connections, Securing Incoming Requests.

12

UNIT IV VULNERABILITY ASSESSMENT AND PENETRATION TESTING

Vulnerability Assessment Lifecycle, Vulnerability Assessment Tools: Cloud-based vulnerability scanners, Host-based vulnerability scanners, Network-based vulnerability scanners, Database-based vulnerability scanners, Types of Penetration Tests: External Testing, Web Application Testing, Internal Penetration Testing, SSID or Wireless Testing, Mobile Application Testing.

12

UNIT V HACKING TECHNIQUES AND TOOLS

Social Engineering, Injection, Cross-Site Scripting(XSS), Broken Authentication and Session Management, Cross-Site Request Forgery, Insecure Cryptographic Storage, Failure to Restrict URL Access, Tools: Comodo, OpenVAS, Nexpose, Nikto, Burp Suite, etc.

12

TOTAL: 60

TEXT BOOKS:

1. Andrew Hoffman, Web Application Security: Exploitation and Countermeasures for Modern Web Applications, First Edition, 2020, O'Reilly Media, Inc.
2. Bryan Sullivan, Vincent Liu, Web Application Security: A Beginners Guide, 2012, The McGraw-Hill Companies.
3. Neil Madden, API Security in Action, 2020, Manning Publications Co., NY, USA.

REFERENCES:

1. Michael Cross, Developer's Guide to Web Application Security, 2007, Syngress Publishing, Inc.
2. Ravi Das and Greg Johnson, Testing and Securing Web Applications, 2021, Taylor & Francis Group, LLC.

BCY237TE04B	CYBER THREAT AND MODEL	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To understands the basic concepts of cyber security threats and modeling.
- To learn about email threats, web threats and cyber threat management.
- To understand the concept of Security policies and Techniques
- To understand the concept of Security models.
- To learn the concept of Alert and Log files.

COURSE OUTCOMES:

- Gain the knowledge of the cyber threats like email threats, web threats.
- Analyze the fundamentals like Worms, Virus, and Spam's, Adware.
- Understand the concept of cyber security threat management.
- Gain experience of security elements and threat analysis.
- Understand the concepts of Security Requirements Specifications.

SYLLABUS

UNIT – I INTRODUCTION

Security threats - Sources of security threats- Motives - Target Assets and vulnerabilities – Consequences of threats- E-mail threats - Web-threats - Intruders and Hackers, Cyber crimes.

12

UNIT – II SECURITY THREAT MANAGEMENT

Risk Assessment - Forensic Analysis - Security threat correlation –Threat awareness – Vulnerability sources and assessment.

12

UNIT – III SECURITY ELEMENTS

Authorization and Authentication - types, policies and techniques – Security certification – Security monitoring and auditing - Security Requirements Specifications.

12

UNIT – IV SECURITY MODELS

Access control, Trusted Computing and multilevel security - Security models - Trusted Systems- Software security issues - Physical and infrastructure security.

12

UNIT – V CASE STUDY

Carbank: The Great Bank Robbery - Cyber Security Updates Onboard - Monitoring of Log Files and Alerts.

12

TOTAL : 60

TEXT BOOKS:

1. Jocelyn O. Padallan ," Cyber Security", Arcler Press Publisher, 2019
2. Swiderski, Frank and Syndex , "Threat Modeling", Microsoft Press, 2004

REFERENCES:

1. William Stallings and Lawrie Brown, "Computer Security: Principles and Practice, Prentice Hall", 2008.
2. Thomas Calabres and Tom Calabrese, "Information Security Intelligence: Cryptographic Principles & Application", Thomson Delmar Learning Publication, 2004.

BCY237AE05A	OPERATIONS RESEARCH	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS)/ B.Sc. (Cyber Security) **/ BCA / B.Sc. (Data Science)**

COURSE OBJECTIVES

- To introduce the mathematical formulation of the problem to serve as tools in the development of science.
- To understand the LPP model and its solution.
- To focus on the transportation models to solve problems.
- To solve assignment problems using algorithms.
- To create network design and the solution on project analysis.

COURSE OUTCOMES

After completion of the course, students will be able to

- Formulate the LPP mathematically.
- To solve LPP using algorithms and also using graphical method.
- Solve transportation problem and assignment models in Data science.
- Design Network models and the solution on Project analysis.

SYLLABUS

UNIT – I LINEAR PROGRAMMING PROBLEM

Introduction - Mathematical formulation of a linear programming problem - Graphical solution

12

UNIT – II LINEAR PROGRAMMING PROBLEM-SIMPLEX METHOD AND BIG M METHOD

Simplex Method: Introduction - The Computational Procedure - Exceptional cases – Artificial variable techniques-Computational procedure

12

UNIT – III TRANSPORTATION PROBLEM

Introduction- Matrix form of transportation problem -Transportation table - Loops in a transportation table - Finding initial basic feasible solution (NWC, LCM and VAM methods) - Moving towards optimality - Degeneracy in transportation problems- Transportation algorithm (MODI method) - Unbalanced transportation problems.

12

UNIT – IV ASSIGNMENT AND ROUTING PROBLEMS

Assignment problem – Assignment algorithm - Hungarian assignment method –Unbalanced assignment problem-Routing problems - Travelling salesman problem

12

UNIT – V NETWORK MODELS

Introduction-Basic components - Rules of network construction - Time calculations in networks - Critical path method (CPM) - PERT - PERT calculations - Advantages of a network (PERT/CPM)

12

TOTAL: 60

TEXT BOOKS:

1. Kanti Swarup, P.K.Gupta and Man Mohan, Operations Research, Eighth Edition, Sultan Chand & Sons, New Delhi, 1999.
2. [Unit 1 – Ch 2 (2.1-2.3), Unit 2 – Ch 2 (2.6-2.7), Ch3 (3.3-3.5)
3. Unit 3 – Ch 6 (6.1-6.9), Unit 4 – Ch 7(7.1-7.4)Unit 5 – Ch 19 (19.1-19.10)]

REFERENCE BOOKS:

1. H.A.Taha, Operations Research, Eighth Edition, Pearson Education India, 2008
2. Richard Bronson, Operations Research, (Schaum's Outline Series), Second Edition McGraw Hill Company, 2003.
3. S.Hillier and J.Liebermann, Operations Research, Sixth Edition, Mc Graw Hill Company, 1995.
4. J.K.Sharma, Operation Research (Theory and Applications), First Edition, Mac Millen Ltd., 1997.
5. Barry Render, Ralph M. Stair, Allynan Bacon, Quantitative Analysis for Management, Fifth Edition, Boston, 1994.

BCY237AE05B	STATISTICAL METHODS	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

Common for B.Sc. (CS) / BCA / B.Sc. (Data Science) / B.Sc. (Cyber Security)

COURSE OBJECTIVES

- To develop a strong understanding of fundamental statistics concepts essential for data analysis
- To gain practical experience in analysing and interpreting data using statistical methods and tools commonly used in all aspects.
- To understand the principles and techniques of statistical inference, including hypothesis testing, confidence intervals, and estimation.
- To understand correlation and regression.

COURSE OUTCOMES

After completion of the course, students will be able to

- Demonstrate a strong understanding of theory and statistical concepts, and apply this knowledge to data analysis.
- Understand the principles of statistical inference, including hypothesis testing, confidence intervals, and estimation and be able to apply them to real-world data sets.
- Critically evaluate statistical results, identify statistical errors, and communicate results effectively to a non-technical audience.
- To find correlation coefficient and regression equations.

SYLLABUS

UNIT – I BASIC STATISTICS

Introduction- Collection of data - Classification and tabulation of data-Bar diagram-Simple bar diagram-Multiple bar diagram-Component bar diagram-Percentage bar diagram- Pie diagram – Pictogram-Graphical representation-Frequency polygon-Frequency curve-Cumulative frequency (Ogive curve).

12

UNIT – II APPLIED STATISTICS

Measures of central tendency: Averages-Mean-Median-Mode-Measures of dispersion - Range - Mean deviation - Quartile deviation - Standard deviation –Moments – Skewness - Kurtosis.

12

UNIT – III CORRELATION AND REGRESSION

Introduction- Types of correlation-Correlation coefficient- Properties - Rank correlation-Regression - Regression equation of lines.

12

UNIT – IV TESTING OF HYPOTHESIS-LARGE SAMPLES

Introduction-Standard error and sampling distribution-Testof significance for large samples-Difference between means of two samples-Difference between means of two standard deviations

12

UNIT – V TESTING OF HYPOTHESIS-SMALL SAMPLES

Testof significance for small samples-Properties - Difference between means of two samples-Testing the significance of paired observations-Chi-Square test for goodness of fit-F test analysis of variance.

12

TOTAL: 60

TEXT BOOKS:

1. Dr. P.R. Vittal, Business Statistics, Margham Publications, Chennai-17 (Unit I – chapter 1-4) (Unit II –chapter 5-7) (Unit III- Chapters 8 and 9)
2. Gupta S.P, Statistical Methods, 28th Edition, Sultan Chand and Sons. New Delhi, 1997. (Volume II - Unit IV& V-chapters 3,4 and 5)

REFERENCE BOOKS:

1. Gupta S.P, Statistical Methods, 28th Edition, Sultan Chand and Sons., New Delhi, 1997.
2. Montgomery Douglas C. and. Runger George C, Applied Statistics and Probability for Engineers, John Wiley & Sons, Inc,
3. Richard Isaac, The Pleasures of Probability, Springer Verlag, 1995.
4. Spiegel Murry R., Stephens Larry J. Statistics, (Schaum's Outline Series), McGraw Hill Company.
5. T. Veerarajan, Probability, Statistics and Random Processes, Third edition, Tata McGraw-Hill, New Delhi, 2010.

BCY237P06	MINI PROJECT	L	T	P	C
		0	0	6	2

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To provide insights to the process of software development
- To enable student analytical and practical exposure by giving hands on experience with learned knowledge through different courses.
- To make the students to set the industrial exposure
- To implement the knowledge, technology, innovational ideas for solving the industrial problems
- To understand methodologies and professional way of documentation and communication.

COURSE OUTCOMES:

- Able to apply and develop modules using latest technologies.
- Able to apply and develop latest technologies
- Exercise team work in developing and integrating into a single project.
- Analyze the system for its productivity and feasibility.
- Exercise team work in developing and integrating into a single project.
- Prepare report on the application of emerging technologies in the selected industry

A Possible set of applications may be the following

1. Automation of Departmental Store, E-Seva, Banking, Hospital Industry etc.,
2. Web applications using PHP MVC
3. Web applications using Angular, Node JS/ React JS
4. Web applications using Java Frameworks like Hibernate, Struts or Spring
5. Web applications using MVC, C# and .NET Programming
6. Machine Learning/Deep Learning using Python
7. Android using Java or Kotlin
8. Cryptography using C# or JAVA or GO or PHP etc.,
9. Data Analytics using Python, R etc.,
10. Digital Image Processing using Java or Python, MATLAB etc.,
11. Natural Language Processing using Java, Python, R and so on
12. Networking using Java, GO, Python and so on

BCY238T01	CLOUD COMPUTING AND ITS SECURITY	L	T	P	C
		3	2	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- The course introduces the fundamental concepts of cloud computing, its services and Tools.
- To understand and explain the various Architectures of Cloud Computing and Virtualization with proper diagrams with labelling and Applications along with the understanding and comprehension of various components
- It concentrates the basic concepts of security systems and cryptographic protocols, which are widely used in the design of cloud security.
- To understand different various Avenues for Cloud Computing and Virtualization for their Applications along with the different levels of implementation.
- The issues related multi tenancy operation, virtualized infrastructure security and methods to improve virtualization security are also dealt with in this course.

COURSE OUTCOMES:

- To provide students the knowledge of fundamentals and essentials of Cloud Computing.
- Understand the importance of virtualization in distributed computing and how this has enabled the development of Cloud Computing
- Analyze Cloud infrastructure including Google Cloud and Amazon Cloud
- Evaluate the security issues related to multi-tenancy.
- Identify security implications in cloud computing.

SYLLABUS

UNIT – I CLOUD COMPUTING

History of Cloud Computing – Cloud Architecture – Cloud Storage – Why Cloud Computing Matters – Advantages of Cloud Computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services.

12

UNIT – II WEB-BASED APPLICATION

Pros and Cons of Cloud Service Development – Types of Cloud Service Development– Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds.

12

UNIT – III SECURITY CONCEPTS

Confidentiality – Privacy – Integrity – Authentication - Non-repudiation – Availability - Access control- Defence in depth – Least privilege - How these concepts apply in the cloud - Importance in PaaS, IaaS and SaaS. - User authentication in the cloud- Cryptographic Systems: Symmetric cryptography – Stream ciphers - Block ciphers - Modes of operation - Public-key cryptography – Hashing - Digital signatures -Public-key infrastructures - Key management - X.509 certificates - OpenSSL.

12

UNIT – IV MULTI-TENANCY ISSUES

Isolation of users/VMs from each other - Virtualization System Security Issues- ESX and ESXi Security- ESX file system security - Storage considerations - Backup and Recovery - Virtualization System Vulnerabilities - Management console vulnerabilities - Management server vulnerabilities -Administrative VM vulnerabilities - Guest VM vulnerabilities - Hypervisor vulnerabilities – Hypervisor escape vulnerabilities - Configuration issues - Malware.

12

UNIT – V LEGAL COMPLIANCE ISSUES

Responsibility - Ownership of data - Right to penetration test - Examination of modern Security Standards - How standards deal with cloud services and virtualization - C compliance for the cloud provider vs. compliance for the customer.

12

TOTAL: 60

TEXT BOOKS:

1. Michael Miller, “Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online”, Que Publishing, August 2008.
2. Haley Beard, “Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs”, Emereo Pty Limited, July 2008.
3. Tim Mather, Subra Kumaraswamy, ShahedLatif, “Cloud Security and Privacy: An Enterprise.

REFERENCES:

1. Perspective on Risks and Compliance”, O'Reilly Media; 1 edition [ISBN: 0596802765], 2009.
2. Ronald L. Krutz, Russell Dean Vines, “Cloud Security”, [ISBN: 0470589876], 2010.
3. John Rittinghouse, James Ransome, “Cloud Computing” ,CRC Press; 1st Edition, 2009.

BCY238AE02A	HUMAN VALUES AND PROFESSIONAL ETHICS	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

(Common to B.C.A. / B.Sc. (Computer Science / B.Sc. (DS) / B.Sc. (Cyber Security)

COURSE OBJECTIVES:

- To describe the significance of value inputs in a classroom and applying them in their life and profession.
- To learn about values and skills, happiness and accumulation of physical facilities.
- To enable the students to understand the value of harmonious relationship.
- To enable the students to know the role of human being in society and nature.
- To provide the theoretical idea about ethical and unethical practices.

COURSE OUTCOMES:

- Understand the significance of value inputs in a classroom and start applying them in their life and profession.
- Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.
- Understand the value of harmonious relationship based on trust and respect in their life and profession.
- Understand the role of a human being in ensuring harmony in society and nature.
- Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

SYLLABUS

UNIT – I INTRODUCTION TO VALUE EDUCATION

Value Education, Definition, Concept and Need for Value Education - The Content and Process of Value Education - Self-Exploration as a means of Value Education -. Happiness and Prosperity as parts of Value Education

12

UNIT – II HARMONY IN THE HUMAN BEING

Human Being is more than just the Body - Harmony of the Self (I) with the Body - Understanding Myself as Co-existence of the Self and the Body - Understanding Needs of the Self and the Needs of the Body

12

UNIT – III HARMONY IN THE FAMILY AND SOCIETY AND HARMONY IN THE NATURE

Family as a basic unit of Human Interaction and Values in Relationships - The Basics for respect and today's Crisis - Affection, Care, Guidance, Reverence, Glory, Gratitude and Love - Comprehensive Human Goal: The Five dimensions of Human Endeavour

12

UNIT – IV SOCIAL ETHICS

The Basics for Ethical Human conduct - Defects in Ethical Human Conduct - Holistic Alternative and Universal order - Universal Human Order and Ethical Conduct

12

UNIT – V PROFESSIONAL ETHICS

Value Based Life and Profession -. Professional Ethics and Right Understanding - Competence in Professional Ethics - Issues in Professional Ethics – The Current scenario - Vision for Holistic Technologies, Production System and Management Models

12

TOTAL: 60

TEXT BOOKS

1. A.N.Tripaty, Human Values, New Age International Publishers, 2019.
2. Bajpai.B.L., Indian Ethos and Modern Management, New Royal Book Co., Lucknow, Reprinted, 2004.

REFERENCE BOOKS

1. Bertrand Russell, Human Society in Ethics and Politics, 2009.
2. Corliss Lamont, Philosophy of Humanism, 2007.
3. Bhatia, R. & Bhatia, A Role of Ethical Values in Indian Higher Education, 2015

BCY238AE02B	MANAGEMENT PRINCIPLES AND PRACTICE	L	T	P	C
		3	1	0	4

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES:

- To understand the basic concepts of management
- To understand the basic concepts of Planning Process
- To understand the basic concepts of Organizing And Staffing
- The students to learn the Directing and Communicating.
- They have familiar with Coordinating and Controlling.

COURSE OUTCOMES:

- The ability to understand concepts of business management, principles and function of management.
- The ability to explain the process of planning and decision-making.
- The ability to create organization structures based on authority, task and responsibilities.
- The ability to explain the principles of direction, importance of communication, barrier of communication, motivation theories and leadership styles.
- The ability to understand the requirement of good control system and control techniques.

SYLLABUS

UNIT – I INTRODUCTION TO MANAGEMENT

Introduction –Meaning, Evolution of management thought, Pre-Scientific Management Era, Classical Management Era, Neo-Classical Management Era, Modern Management Era; Nature and Characteristics of Management - Scope and Functional areas of Management; Management as a Science, Art or Profession; Management and Administration; Principles of Management.

12

UNIT – II PLANNING AND DECISION MAKING

Nature, Importance and Purpose of Planning – Planning Process; Objectives; Types of plans – Decision making – Importance and steps; MBO and MBE.

12

UNIT – III ORGANIZING AND STAFFING

Nature and purpose of Organization; Principles of Organizing; Delegation of Authority; Types of Organization - Departmentation, Committees; Centralization vs Decentralization of Authority and Responsibility, Span of Control; Nature and importance of Staffing.

12

UNIT – IV DIRECTING AND COMMUNICATING

Meaning and Nature of Direction, Principles of Direction; Communication - Meaning and Importance, Communication Process, Barriers to Communication, Steps to overcome Communication Barriers, Types of Communication; Motivation theories – Maslow's Need Hierarchy Theory, Herzberg's Two Factor Theory, Mc.Gregor's X and Y theory. Leadership – Meaning, Formal and Informal Leadership, Characteristics of Leadership; Leadership Styles – Autocratic Style, Democratic Style, Participative Style, Laissez Faire Leadership Styles, Transition Leadership, Charismatic Leadership Style..

12

UNIT – V COORDINATING AND CONTROLLING

Coordination Meaning, Importance and Principles. Controlling-Meaning and steps in controlling, Essentials of Effective Control system, Techniques of Control.

12

TOTAL: 60

TEXT BOOKS:

1. Stephen P. Robbins, Management, Pearson
2. Koontz and O"Donnell, Management, McGraw Hill.
3. L M Prasad, Principles of management, Sultan Chand and Sons
4. V.S.P Rao/Bajaj, Management process and organization, Excel Books.GH25
5. T. Ramaswamy: Principles of Management, HPH.

BCY238P03	PROJECT	L	T	P	C
		0	0	21	12

(For Students admitted from 2024 onwards)

COURSE OBJECTIVES

- To understand the software engineering methodologies for project development.
- To gain knowledge on recent technologies
- To develop software products in various domains
- To improve their communication and presentation skill
- To get training for testing the software products

COURSE OUTCOME

- Analyze and design software in an efficient manner
- Understand the features of current technologies
- Implement the applications in various domains
- Create Test Plan and apply various testing methods
- Able to communicate and present the software product

INSTRUCTIONS

1. Sstudents have to do projects in an Industry / Research Organization / In house.
2. Students must attend the review meeting as per the guidelines**.**
3. The software products will be developed and tested in various domains using current technologies.
4. After completion of the project, students should submit Project completion certificate.
5. The document related to the Project should be prepared as per the guidelines and should be submitted on time.
6. Students may have to publish the papers based on their project work before submission of the Project Document.