Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)
Approved by Government of Tamil Nadu and Accredited by NAAC with 'A++' Grade (3rd Cycle-3.64 CGPA)
Dr. N.G.P. - KalapattiRoad, Coimbatore-641048, Tamil Nadu, India
Web: www.drngpasc.ac.in |Email: info@drngpasc.ac.in | Phone: +91-422-2369100

REGULATIONS 2023-24 for Undergraduate Programme
(Outcome Based Education model with Choice Based Credit System)

Bachelor of Science in Computer Science with Cyber Security Degree
(For the students admitted during the academic year 2023-24 and onwards)

Programme: B.Sc. Computer Science with Cyber Security.

Eligibility

Candidates for admission to the first year of the **Bachelor of Science (Computer Science with Cyber Security)** Degree Programme shall be required to have passed in the Higher Secondary Examinations conducted by the Government of Tamil Nadu in the relevant subjects or an Examination accepted as equivalent thereto by the Academic Council. Subject to such other conditions as may be prescribed there to are permitted to appear and qualify with any one of the following subjects: Mathematics / Computer Science / Statistics / Business Mathematics and wherever the students have not studied Mathematics, the necessary Mathematics knowledge be imparted through Tutorial/ Bridge Course.

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

1. To have a strong foundation of computer science principles which will provide a promising professional career in real world industry.
2. To be able to equip themselves in research and development, entrepreneurship, and start-up initiator as an individual or collaborative manner utilizing interpersonal skills.
3. To contribute to society and the cyber security community by participating in outreach programs, creating awareness and educating the public about safe computing practices.

PROGRAMME OUTCOMES

On the successful completion of the program, the following are the expected outcomes.

PO Number	PO Statement
PO1	To have a strong understanding of fundamental concepts of computer science and its related disciplines.
PO2	To develop viable solutions for IT enabled services by applying analytic and programming skills.
PO3	To exhibit the ability in adapting evolving technologies and new problem domains thus fostering creativity and innovation in cyber security discipline.
PO4	To engage in continuous learning, keeping pace with emerging trends, technologies, and threats in the field of cyber security.
PO5	To demonstrate social responsibility through ethics and values and environmental studies related activities in the society.

B.Sc. Computer Science with Cyber Security
Credit Distribution

Part	Subjects	No. of Papers	Credit	Semester No.
I (12 Credits)	Tamil / Hindi / French/Malayalam	4	4 x 3 = 12	I to IV
II (12 Credits)	English	4	4 x 3 = 12	I to IV
III (108 Credits)	Core (Credits 4)	11	11 x4= 44	I to VI
	Core (Credits 3)	2	2 x 3 = 6	I to VI
	Core (Credits 5) (Embedded- Core)	2	2 x 5 = 10	III to IV
	Core Project (Credits 4)	1	1 x 4 = 4	VI
	Core Practical (Credits 2)	3	3 x 2 = 6	I to VI
	Inter Departmental Course (IDC)	4	4 x 4 = 16	I to IV
	Discipline Specific Elective (DSE)	3	3 x 4 =12	V & VI
	Skill Enhancement Course (SEC)	4	4 x 2 = 8	III, IV, V&VI
	Industrial Training	1	1 x 2=2	V
IV (8 Credits)	Environmental Studies (AECC)	1	2	I
	Basic Tamil/Advance Tamil/Human Rights, & Women's Rights (AECC)	1	2	II
	Generic Elective (GE)	1	2	V
	Innovation & IPR/ Innovation, IPR & Entrepreneurship (AECC)	1	2	VI
V (2 Credits)	NSS/NCC/YRC/RRC/Yoga/Sports	-	2	I - II
TOTAL CREDITS			142	

CURRICULUM

B.Sc. Computer Science with Cyber Security

Course Code	Course Category	Course Name	L	T	P	Exam (hours)	Max Marks			Credits
							CIA	ESE	Total	
First Semester										
Part– I										
231TL1A1TA	Language-I	Tamil–I	4	1	-	3	25	75	100	3
231TL1A1HA		Hindi-I								
231TL1A1MA		Malayalam-I								
231TL1A1FA		French –I								
Part– II										
231EL1A1EA	Language-II	English -I	4	-	1	3	25	75	100	3
Part– III										
234AI1A1CA	Core - I	Problem Solving and Programming in C	4	1	-	3	25	75	100	4
234CY1A1CP	Core Practical - I	C Programming	-	-	4	3	40	60	100	2
234IT1A1CA	Core -II	Digital Computer Fundamentals	4	-	-	3	25	75	100	4
232MT1A1ID	IDC -I	Mathematics for Computing I	4	1	-	3	25	75	100	4
Part-IV										
233MB1A1AA	AECC-I	Environmental Studies	2	-	-	3	50	-	50	2
Part-V										
234CY1A1XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports	-	-	-	-	50	-	50	1
Total			**22**	**3**	**5**	**-**	**-**	**-**	**700**	**23**

10/6/23

BoS Chairman/HoD
Department of Computer Science
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

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10/6/23	14.7.23	5.8.23

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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Second Semester										
Part-I										
231TL1A2TA	Language-I	Tamil–II	4	1	-	3	25	75	100	3
231TL1A2HA		Hindi-II								
231TL1A2MA		Malayalam-II								
231TL1A2FA		French –II								
Part– II										
231EL1A2EA	Language-II	English -II	4	-	1	3	25	75	100	3
Part– III										
234CA1A2CA	Core -III	Data Structures	4	1	-	3	25	75	100	4
234CS1A2CA	Core -IV	Object Oriented Programming with C++	4	-	-	3	25	75	100	4
234CY1A2CP	Core Practical-II	Data Structures using C++	-	-	4	3	40	60	100	2
232MT1A2ID	IDC -II	Mathematics for Computing II	4	1	-	3	25	75	100	4
Part-IV										
231TL1A2AA	AECC-II	Basic Tamil	2	-	-	-	50	-	50	2
231TL1A2AB		Advanced Tamil								
235CR1A2AA		Human Rights and Womens Rights								
Part-V										
234CY1A2XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports	-	-	-	-	50	-	50	1
Total			22	3	5	-	-	-	700	23

16/10/2023
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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Third Semester										
Part – I										
231TL1A3TA	Language I	Tamil -III	3	1	-	3	25	75	100	3
231TL1A3HA		Hindi-III								
231TL1A3MA		Malayalam III								
231TL1A3FA		French III								
Part – II										
231EL1A3EA	Language-II	English -III	3	1	-	3	25	75	100	3
Part – III										
234CY1A3CA	Core - V	Computer Architecture	4	-	-	3	25	75	100	4
234CY1A3CB	Core -VI	Operating Systems Fundamentals	3	-	-	3	25	75	100	3
234CY1A3EP	Core Practical III	Database Design Concepts	3	-	4	3	40	60	100	5
234CY1A3SP	SEC Practical -I	Python Programming	-	-	4	3	40	60	100	2
232MT1A3ID	IDC-III	Discrete Mathematics	4	-	-	3	25	75	100	4
Total			**20**	**2**	**8**	-	-	-	**700**	**24**

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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Fourth Semester										
Part-I										
231TL1A4TA	Language-I	Tamil–IV	3	1	-	3	25	75	100	3
231TL1A4HA		Hindi-IV								
231TL1A4MA		Malayalam-IV								
231TL1A4FA		French –IV								
Part– II										
231EL1A4EA	Language-II	English -IV	3	1	-	3	25	75	100	3
Part– III										
234CY1A4CA	Core -VII	Computer Networking Principles	4	-	-	3	25	75	100	4
234CY1A4CB	Core -VIII	Principles of Cyber Security	3	-	-	3	25	75	100	3
234CY1A4EP	Core Practical -IV	Java Programming	3	-	4	3	40	60	100	5
234CY1A4SP	SEC Practical - II	Network Programming	-	-	4	3	40	60	100	2
235FI1A4IA	IDC -IV	Financial Cybersecurity	4	-	-	3	25	75	100	4
Total			**20**	**2**	**8**	-	-	-	**700**	**24**

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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Fifth Semester										
Part-III										
234CY1A5CA	Core - IX	Linux and Shell Programming	4	-	-	3	25	75	100	4
234CY1A5CB	Core -X	Secure Software Engineering	4	-	-	3	25	75	100	4
234CY1A5CC	Core -XI	Machine Learning in Cyber Security	4	-	-	3	25	75	100	4
234CY1A5CP	Core Practical -V	Linux and Shell Programming	-	-	4	3	40	60	100	2
234CY1A5CQ	Core Practical -VI	Machine Learning in Cyber Security	-	-	4	3	40	60	100	2
234CY1A5SP	SEC Practical-III	Digital Forensics Analysis	-	-	4	3	40	60	100	2
234CY1A5DA	DSE –I	Network Security and Cryptography	4		-	3	25	75	100	4
234CY1A5DB		Cybercrime Investigation and Digital Forensics								
234CY1A5DC		Data Warehousing and Mining								
234CY1A5TA	IT	Industrial Training	-	-	-	3	40	60	100	2
Part-IV										
	GE	-	2	-	-	3	50	-	50	2
Total			**18**		**12**	-	-	-	**850**	**26**

Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Sixth Semester										
Part–III										
234CY1A6CA	Core - XII	Web Application Development	4	-	-	3	25	75	100	4
234CY1A6CB	Core -XIII	Internet of Things	4	-	-	3	25	75	100	4
234CY1A6SP	SEC Practical -IV	Web Application and Security	-	-	4	3	40	60	100	2
234CY1A6CV	Core –XIV	Project	-	-	8	3	40	60	100	4
234CY1A6DA	DSE –II	Multimedia Security	4	-	-	3	25	75	100	4
234CY1A6DB		Ethical Hacking and Systems Defense								
234CY1A6DC		Big Data Analytics								
234CY1A6DD	DSE –III	Information Retrieval Systems	4	-	-	3	25	75	100	4
234CY1A6DE		Block Chain Technology								
234CY1A6DF		Deep Learning								
Part – IV										
233BC1A6AA	AECC-III	Innovation, IPR and Entrepreneurship	2	-	-	-	50	-	50	2
Total			**18**	**-**	**12**	**-**	**-**	**-**	**650**	**24**
***Grand total**									**4200**	**142**

*Total Credit Should not exceed 142 credits

DISCIPLINE SPECIFIC ELECTIVE

Students shall select the desired course of their choice in the listed elective course during Semesters V & VI

Semester V (Elective I)
List of Elective Courses

S. No.	Course Code	Name of the Course
1.	234CY1A5DA	Network Security and Cryptography
2.	234CY1A5DB	Cyber Forensics
3.	234CY1A5DC	Data Warehousing and Mining

Semester VI (Elective II)
List of Elective Courses

S. No.	Course Code	Name of the Course
1.	234CY1A6DA	Multimedia Security
2.	234CY1A6DB	Ethical Hacking and Systems Defense
3.	234CY1A6DC	Big Data Analytics

Semester VI (Elective III)
List of Elective Courses

S. No.	Course Code	Name of the Course
1.	234CY1A6DD	Information Retrieval Systems
2.	234CY1A6DE	Block Chain Technology
3.	234CY1A6DF	Deep Learning

GENERIC ELECTIVE COURSES(GE)

The following is the course offered under Generic Elective Course

Semester V (GE)

S. No.	Course Code	Name of the Course
1	234CY1A5GA	Basics of Cyber Security

EXTRA CREDIT COURSES

The following are the courses offered under self-study to earn extra credits:

Semester III

S. No.	Course Code	Name of the Course
1	234CY1ASSA	Web Essentials
2	234CY1ASSB	Digital Marketing

UG - REGULATION (R5)

(2023-24 and onwards)

(OUTCOME BASED EDUCATION WITH CBCS)

1.NOMENCLATURE

1.1 Faculty: Refers to a group of programmes concerned with a major division of knowledge Eg. Faculty of Computer Science consists of disciplines like Departments of Computer Science, Information Technology, Computer Technology, Computer Applications, Data Analytics, Cognitive Systems, Artificial Intelligence and Machine Learning and Cyber Security

1.2 Programme: Refers to the Bachelor of Science / Commerce /Arts stream that a student has chosen for study.

1.3 Batch: Refers to the starting and completion year of a programme of study. Eg. Batch of 2023–26 refers to students belonging to a 3 year Degree programme admitted in 2023 and completing in 2026.

1.4 Course: Refers to component of a programme. A course may be designed to involve lectures / tutorials / laboratory work / seminar / project work/ practical training / report writing / Viva- voce, etc., or a combination of these, to meet effectively the teaching learning needs.

a) **Core Course:**A course, which should compulsorily be studied by a candidate as a core requirement

b) **Inter Disciplinary Course (IDC):** A course chosen generally from a related discipline/subject with an intention to seek exposure in the discipline relating to the core domain of the student

c) **Discipline Specific Elective (DSE) Course**: Elective courses offered under main discipline/ subject of study.

d) **Skill Enhancement Courses (SEC):** Value-based and/or skill-based courses which are aimed at providing hands-on-training, competencies, skills, etc.

e) **Ability Enhancement Compulsory Courses (AECC):**Mandatory courses that lead to Knowledge enhancement. Environmental Science, Human Rights and Women's Rights, Basic Tamil/ Advanced Tamil, Innovation and IPR, Innovation, IPR and Entrepreneurship.

f) **Ability Enhancement Elective Course (AEEC)/Generic Elective (GE)** An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is Generic Elective.

1.5 Project Work:

Course involving application of knowledge in problem solving / analyzing /exploring a real life situation / difficult problem. The Project work will be given in lieu of a Core paper.

Internship/Industrial Training

Students must undertake industrial / institutional training for a minimum of 15 days during the IV semester summer vacation. The students will submit the report for evaluation during V semester.

1.6 Extra Credits:

Extra credits shall be awarded for achievements in identified curricular/co-curricular/Extracurricular activities executed outside the regular class hours. Extra credits are not mandatory for completing the programme.

2. STRUCTURE OF PROGRAMME

2.1 PART- I: LANGUAGE- I

Tamil or any one of the languages namely Malayalam, Hindi and French will be offered under Part – I in the first four semesters.

2.2 PART- II: LANGUAGE- II

English will be offered during the first four semesters.

2.3 PART- III:

- Core Course
- Inter Departmental Course (IDC)
- Discipline Specific Elective (DSE)
- Skill Enhancement Course (SEC)
- Industrial Training (IT)

2.4 PART- IV:

2.4.1 Ability Enhancement Compulsory Course (AECC):

The Ability Enhancement Compulsory Courses such as i)Environmental Studies, ii) Human Rights and Womens' Rights, iii) Innovation and IPR/ Innovation, IPR and Entrepreneurship are offered during I,II and VI Semester.

Basic Tamil

a) Those who have not studied Tamil up to XII Std and taken a non-Tamil language under Part-I shall take oneBasic Tamil coursein the second semester.

(OR)

Advanced Tamil

b) Those who have studied Tamil up to XII Std and taken a non-Tamil language under Part-I shall take one Advanced Tamil course in the second semester.

Note: Students who come under the above a+b categories are exempted from Human Rights and Women's Rights in the second semester.

Ability Enhancement Elective Course (AEEC)/Generic Elective (GE) An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is Generic Elective offered in V semester. (Theory/Practical/Non-Lab Practical)

2.5 PART- V: EXTENSION ACTIVITIES

The following extracurricular activities like NSS/YRC/NCC/RRC/Yoga/Sports/Clubs are offered under extension activities during semester I & II. Students will be evaluated based on their active participation in any one of the above activities. 75% Attendance is compulsory for extension activity.

3. CREDIT ALLOTTMENT

The following is the credit allotment:

- Lecture Hours (Theory) : 1 credit per lecture hour per week
- Laboratory Hours : 1 credit for 2 Practical hours per week
- Project Work : 1 credit for 2 hours of project work per week

4. DURATION OF THE PROGRAMME

The B.A. /B.Com./B. Sc. Programme must be completed within 3 years (6 semesters) and a maximum of 6 years (12 semesters) from the date of acceptance to the programme. If not, the candidate must enroll in the course determined to be an equivalent by BoS in the most recent curriculum recommended for the Programme.

5.REQUIREMENTS FOR COMPLETION OF A SEMESTER

Every student shall ordinarily be allowed to keep terms for the given semester in a program of his/ her enrolment, only if he/ she fulfills at least seventy five percent (75%) of the attendance taken as an average of the total number of lectures, practicals, tutorials, etc. wherein short and/or long excursions/field visits/study tours organised by the college and supervised by the faculty as envisaged in the

syllabus shall be credited to his/her attendance. Every student shall have a minimum of 75% as an overall attendance.

6. EXAMINATIONS

The end semester examinations shall normally be conducted after completing 90 working days for each semester. The maximum marks for each theory and practical course shall be 100 with the following breakup:

a) Mark distribution for Theory Courses

Continuous Internal Assessment (CIA)	: 25 Marks
End Semester Exams (ESE)	: 75 Marks
Total	: 100 Marks

i) Distribution of Internal Marks

S.No.	Particulars	Distribution of Marks
1	CIA I (2.5 Units) (On completion of 45th working day)	5
2	Model (All 5 Units) (On completion of 85th working day)	5
3	Attendance	5
4	Library Usage	5
5	Skill Enhancement *	5
	Total	**25**

Breakup for Attendance Marks:

S.No	Attendance Range	Marks Awarded
1	95% and Above	5
2	90% - 94%	4
3	85% - 89%	3
4	80% - 84%	2
5	75% - 79%	1

Note:

Special Cases such as NCC, NSS, Sports, Advanced Learner Course, Summer Fellowship and Medical Conditions etc. the attendance exemption may be given by principal and Mark may be awarded.

Break up for Library Marks:

S.No	Attendance Range	Marks Awarded
1	10h and above	5
2	9h– less than 10h	4
3	8h – less than 9h	3
4	7h - less than 8h	2
5	6h – less than 7h	1

Note:
In exception, the utilization of e-resources of library will be considered.

***Components for "Skill Enhancement" may include the following:**

Class Participation, Case Studies Presentation/term paper, Field Study, Field Survey, Group Discussion, Term Paper, Presentation of Papers in Conferences, Industry Visit, Book Review, Journal Review, e-content Creation, Model Preparation, Seminar and assignment.

Components for Skill Enhancement

Any one of the following should be selected by the course coordinator

S.No.	Skill Enhancement	Description
1	Class Participation	• Engagement in class • Listening Skills • Behaviour
2	Case Study Presentation/ Term Paper	• Identification of the problem • Case Analysis • Effective Solution using creativity/imagination
3	Field Study	• Selection of Topic • Demonstration of Topic • Analysis & Conclusion
4	Field Survey	• Chosen Problem • Design and quality of survey • Analysis of survey
5	Group Discussion	• Communication skills • Subject knowledge • Attitude and way of presentation • Confidence • Listening Skill
6	Presentation of Papers in Conferences	• Sponsored • International/National • Presentation • Report Submission
7	Industry Visit	• Chosen Domain • Quality of the work

		• Analysis of the Report • Presentation
8	Book Review	• Content • Interpretation and Inferences of the text • Supporting Details • Presentation
9	Journal Review	• Analytical Thinking • Interpretation and Inferences • Exploring the perception if chosen genre • Presentation
10	e-content Creation	• Logo/ Tagline • Purpose • Content (Writing, designing and posting in Social Media) • Presentation
11	Model Preparation	• Theme/ Topic • Depth of background Knowledge • Creativity • Presentation
12	Seminar	• Knowledge and Content • Organization • Understanding • Presentation
13	Assignment	• Content and Style • Spelling and Grammar • References

ii) Distribution of External Marks (ESE)

Total : 75
Written Exam : 75

Marks Distribution for Practical course

Total : 100
Internal : 40
External : 60

i) Distribution of Internals Marks

S.No.	Particulars	Distribution of Marks
1	Experiments/Exercises	15
2	Test 1	10
3	Test 2	10
4	Observation Notebook	05
	Total	**40**

ii) Distribution of Externals Marks

S.No.	Particulars	External Marks
1	Practical	40
2	Record	10
3	Viva- voce	10
	Total	**60**

Practical examination shall be evaluated jointly by Internal and External Examiners

Mark Distribution for Project/ Internship/ Industrial Training

Total : 100
Internal : 40
External : 60

i) Distribution of Internal Marks

S.No.	Particulars	Internal Marks
1	Review I	15
2	Review II	20
3	Attendance	5
	Total	**40**

ii) Distribution of External Marks

S.No	Particulars	External Marks
1	Project Work /Internship /Industrial training Presentation	40
2	Viva –voce	20
	Total	**60**

Evaluation of Project Work/Internship/ Industrial training shall be shall be done jointly by Internal and External Examiners.

7. Credit Transfer

a. Upon successful completion of **1 NPTEL** Course **(4 Credit Course)** recommended by the department, during Semester I to IV, a student shall be eligible to get exemption of one **4 credit course** during the V or VI semester. The proposed NPTEL course should cover content/syllabus of exempted core paper in V orVI semester.

S. No.	Course Code	Course Name	Proposed NPTEL Course	Credit
1			Option – 1 Paper title	4
			Option – 2 Paper title	
			Option – 3 Paper title	

b. Upon successful completion of **2 NPTEL Courses** (2 Credit each) recommended by the department, during Semester I to IV, a student shall be eligible to get exemption of **one 4 credit course** during the V or VI semester. Out of 2 NPTEL proposed courses, **atleast 1 course** should cover content/syllabus of exempted core paper in V orVI semester.

Mandatory

The exempted core paper in the V or VI semester should be submitted by the students for approval before the end of 4th semester

Credit transfer will be decided by equivalence committee

S. No.	Course Code	Course Name	Proposed NPTEL Course	Credit
1			Option – 1 Paper title	2
			Option – 2 Paper title	
			Option – 3 Paper title	
2			Option – 1 Paper title	2
			Option – 2 Paper title	
			Option – 3 Paper title	

NPTEL Courses to be carried out during semester I – IV.

S.No.	Student Name	Class	Proposed NPTEL Course		Proposed Course for Exemption
			Course I	Option 1- Paper Title Option 2- Paper Title Option 3- Paper Title	Any one Core Paper in **V or VI semester**
			Course II	Option 1- Paper Title Option 2- Paper Title Option 3- Paper Title	

Class Advisor **HoD** **Dean**

8. Innovations

Upon Successful outcome of Design Thinking / Copy right/Product/ Patent by the end of the V Semester, student shall be eligible to get exemption in AECC: Innovation, IPR & Entrepreneurship / Innovation & IPR offered during VI Semester.

9.Internship/Industrial Training

Students must undertake industrial / institutional training for a minimum of 15 days during the IV semester summer vacation. The students shall submit the report for evaluation during V semester.

10. Extra Credits: 10

Earning extra credit is not essential for programme completion. Student is entitled to earn extra credit for achievement in Curricular /Co-Curricular/ Extracurricular activities carried out other than the regular class hours.

A student is permitted to earn a maximum of Ten extra Credits during the programme period.

A maximum of 1 credit under each category is permissible.

Category	Credit
Proficiency in foreign language	1
Proficiency in Hindi	1
Self study Course	1
Typewriting/Short hand	1
CA/ICSI/CMA (Foundations)	1
CA/ICSI/CMA(Inter)	1
Sports and Games	1
Publications / Conference Presentations (Oral/Poster)	1
Lab on Project	1
Innovation / Incubation / Patent / Sponsored Projects / Consultancy	1
Representation in State / National level celebrations	1
Awards/Recognitions/Fellowships	1

Credit shall be awarded for achievements of the student during **the period of study only**.

GUIDELINES

Proficiency in foreign language

A pass in any foreign language in the examination conducted by an authorized agency.

Proficiency in Hindi

A pass in the Hindi examination conducted by Dakshin Bharat Hindi Prachar Sabha.

Examination passed during the programme period only will be considered for extra credit.

Self study Course

A pass in the self study courses offered by the department.

The candidate should register the self study course offered by the department only in the III semester.

Typewriting/Short hand

A Pass in short hand /typewriting examination conducted by Tamil Nadu Department of Technical Education (TNDTE) and the credit will be awarded.

CA/ICSI/CMA(Foundations)

Qualifying foundation in CA/ICSI/CMA / etc.

CA/ICSI/CMA(Inter)

Qualifying Inter in CA/ICSI/CMA / etc.

Sports and Games

Students can earn extra credit based on their achievements in sports in University/ State / National/ International levels.

Publications / Conference Presentations (Oral/Poster)

Research Publications in Journals
oral/poster presentation in Conference

Lab on Project (LoP)

To promote the undergraduate research among all the students, the LoP is introduced beyond their regular class hours. LoP is introduced as group project consisting of not more than five members. It consist of four stages namely Literature collection, Identification of Research area, Execution of research and Reporting / Publication of research reports/ product developments. These four stages spread over from III to IV semester.

(**Evaluation will be done internally**)

Innovation / Incubation / Patent / Sponsored Projects / Consultancy

Development of model/ Products /Prototype /Process/App/Registration of Patents/ Copyrights/Trademarks/Sponsored Projects /Consultancy

Representation in State/ National level celebrations

State / National level celebrations such as Independence day, Republic day Parade, National Integration camp.

Awards/Recognitions/Fellowships

Regional/ State / National level awards/ Recognitions/Fellowships

GUIDELINES

100 % CIA Courses:

- **AECC**
- **AEEC**

S.No	Type of Course
1	Environmental Studies (AECC)
2	Human Rights and Women's Rights, Basic Tamil / Advanced Tamil (AECC)
3	Innovation &IPR/ Innovation, IPR and Entrepreneurship(AECC)
4	Generic Elective (AEEC)

Modalities for Implementing Internal Assessment Marks:

- Student pertaining to 2023 Batch (2023-26) UG programme for the above mentioned courses shall secure a minimum of 40% out of the maximum marks in the continuous internal assessment (CIA) i.e., 20 marks out of 50 marks.
- Students who have not acquired the minimum marks shall be allowed to reappear to improve their marks in the exam components only within the time duration of the programme, in the forthcoming semesters.

Distribution of Internal Marks for AECC & AEEC

S.No.	Particulars	Distribution of Marks
1	CIA I (2.5 Units) (On completion of 45th working day)	15
2	Model (All 5 Units) (On completion of 85th working day)	15
3	Assignment	05
4	Attendance	05
5	Library Usage	05
6	Skill Enhancement *	05
	Total	**50**

Distribution of Internal Marks for Generic Elective (AEEC) (Practical)

S.No.	Particulars	Distribution of Marks
1	CIA -I (1-5 Exercise)	5
2	CIA-II (6-10 Exercise)	5
3	Class Participation	10
4	Practical Record	10
5	Test-III & Viva –Voce(10+10)	20
	Total	**50**

Question paper pattern AECC & AEEC

Test	MARKS	DESCRIPTION	TOTAL	Remarks
CIA Test I **1 Hour** **First 2.5 Units**	50 x 1 = 50 Marks	MCQ	50 Marks	Marks secured will be Converted to 15 marks
CIA test II/ Model test **1 Hour** **All five Units**	50 x 1 = 50 Marks	MCQ	50 Marks	Marks secured will be Converted to 15 marks

Question paper pattern		Total Marks - 50	
Basic Tamil		**Advanced Tamil**	
Section -A		**Section -A**	
Choose the correct answer	**10**x2=20	**Choose the correct answer**	**10**x1=10
Section -B		**Section -B**	
True or false	10x2=20	**Fill in the blanks**	10x2=20
Section -C		**Section -C**	
Answer in one page	1x10=10	**Write an essay in two pages**	2x10=20

Question paper pattern for all other courses falling under Part I to Part III

CIA I : [1 ½ Hours-2.5 Units] - 25 Marks

SECTION	MARKS	DESCRIPTION	TOTAL	Remarks
Section – A	8 x 0.5 = 04 Mark	MCQ	25 Mark	Marks secured will be converted To 5 mark
Section - B	3 x 3 = 09 Mark	Answer ALL Questions Either or Type ALL Questions Carry Equal Marks		
Section - C	2 x 6 = 12 Mark			

CIA II /Model: [3 Hours-5 Units] - 75 Mark

SECTION	MARKS	DESCRIPTION	TOTAL	Remarks
Section – A	10 x 1 = 10 Mark	MCQ	75 Mark	Marks secured will be converted To 5 mark
Section - B	5 x 5 = 25 Mark	Answer ALL Questions (Either or Type Questions) Each Questions Carry Equal Mark		
Section - C	5 x 8 = 40 Mark			

End Semester Examination: [3 Hours-5 Units] - 75 Mark

SECTION	MARKS	DESCRIPTION	TOTAL
Section – A	10 x 1 = 10 Mark	MCQ	75 Mark
Section - B	5 x 5 = 25 Mark	Answer ALL Questions (Either or Type Questions) Each Questions Carry Equal Mark	
Section - C	5 x 8 = 40 Mark		

Question paper pattern for all other courses falling under Part I to Part III

CIA I : [1 1/2 Hours-2.5 Units] - 25 Marks

SECTION	MARKS	DESCRIPTION	TOTAL	Remarks
Section – A	8 x 0.5 = 04 Mark	MCQ	25 Mark	Marks secured will be converted To 5 mark
Section - B	3 x 3 = 09 Mark	Answer ALL Questions Either or Type ALL Questions Carry Equal Marks		
Section - C	2 x 6 = 12 Mark			

CIA II /Model: [3 Hours-5 Units] - 75 Mark

SECTION	MARKS	DESCRIPTION	TOTAL	Remarks
Section – A	10 x 1 = 10 Mark	MCQ	75 Mark	Marks secured will be converted To 5 mark
Section - B	5 x 5 = 25 Mark	Answer ALL Questions (Either or Type Questions) Each Questions Carry Equal Mark		
Section - C	5 x 8 = 40 Mark			

End Semester Examination: [3 Hours-5 Units] - 75 Mark

SECTION	MARKS	DESCRIPTION	TOTAL
Section – A	10 x 1 = 10 Mark	MCQ	75 Mark
Section - B	5 x 5 = 25 Mark	Answer ALL Questions (Either or Type Questions) Each Questions Carry Equal Mark	
Section - C	5 x 8 = 40 Mark		

Course Code	Course Name	Category	L	T	P	Credit
231TL1A1TA	TAMIL - I	LANGUAGE- I	4	1	-	03

PREAMBLE

This course has been designed for students to learn and understand

- மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடு நாகரீகம், பகுத்தறிவு ஆகியவற்றை அறியச் செய்தல்
- கலை மற்றும் மரபுகளை அறியச் செய்தல்
- மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	வாழ்க்கைத் திறன்கள் (Life Skills)- மாணவர்களின் செயலாக்கத் திறனை ஊக்குவித்தல்	K3
CO2	மதிப்புக்கல்வி (Attitude and Value education)	K4
CO3	பாட இணைச்செயல்பாடுகள் (Co-curricular activities)	K4
CO4	சூழலியல் ஆக்கம் (Ecology)	K4
CO5	மொழி அறிவு (Tamil knowledge)	K5

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1		✓	✓		✓
CO2	✓			✓	
CO3		✓			✓
CO4			✓		
CO5	✓			✓	✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A1TA	TAMIL - I	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **மறுமலர்ச்சிக் கவிதைகள்** 13 h

1. இலக்கிய வரலாறு - மறுமலர்ச்சிக் கவிஞர்களின் தமிழ்ப்பணிகள்
2. பாரததேசம் - பாரதியார்
3. படி - பாரதிதாசன்
4. தமிழரின் பெருமை - நாமக்கல் கவிஞர்
5. தமிழ்க் கொலை புரியாதீர் - புலவர் குழந்தை
6. திரைத்தமிழ்

அ) 'விஞ்ஞானத்த வளர்க்கப் போறண்டி' எனத் தொடங்கும் பாடல் - உடுமலை நாராயண கவி

ஆ) 'சும்மா கிடந்த நிலத்தை' எனத் தொடங்கும் பாடல் - பட்டுக்கோட்டை கல்யாண சுந்தரனார்

இ) 'சமரசம் உலாவும் இடமே' எனத் தொடங்கும் பாடல் - மருதகாசி

ஈ) 'உன்னை அறிந்தால்' எனத் தொடங்கும் பாடல் - கண்ணதாசன்

Unit II **புதுக்கவிதைகள்** 13 h

1. இலக்கிய வரலாறு - புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும்
2. கடமையைச் செய் - மீரா
3. மலையாளக் காற்று - சிற்பி
4. ஒப்பிலாத சமுதாயம் - அப்துல் ரகுமான்
5. கன்னிமாடம் - மு.மேத்தா
6. கரிக்கிறது தாய்ப்பால் - ஆரூர் தமிழ்நாடன்
7. ஐந்தாம் வகுப்பு 'அ' பிரிவு - நா. முத்துக்குமார்
8. ஹைகூ கவிதைகள் - 10 கவிதைகள்

Unit III **பெண்ணியம்** 09 h

1. தொலைந்து போனேன் - தாமரை
2. நீரில் அலையும் முகம் - அ. வெண்ணிலா
3. தற்காத்தல் - பொன்மணி வைரமுத்து
4. ஏனிந்த வித்தியாசங்கள் ? - மல்லிகா
5. புதையுண்ட வாழ்க்கை - சுகந்தி சுப்ரமணியன்

Unit IV **சிறுகதைகள்** 15 h

1. இலக்கிய வரலாறு - சிறுகதையின் தோற்றமும் வளர்ச்சியும்
2. கனகாம்பரம் - கு.ப.ராஜகோபாலன்
3. ஆற்றங்கரைப் பிள்ளையார் - புதுமைப்பித்தன்
4. பொம்மை - ஜெயகாந்தன்
5. காய்ச்சமரம் - கி. ராஜநாராயணன்
6. காட்டில் ஒருமான் - அம்பை
7. வேட்கை - சூர்யகாந்தன்

Unit V **பயிற்சிப் பகுதி** 10 h

அ. இலக்கணம்

1. வல்லின ஒற்று மிகும், மிகா இடங்கள் - ஒற்றுப்பிழை நீக்கி எழுதுதல்
2. ர,ற-ல,ழ,ள - ண,ந,ன வேறுபாடு - ஒலிப்பு நெறி, சொற்பொருள் வேறுபாடு அறிதல்)

ஆ. படைப்பாக்கம்

1. கவிதை - எழுதுதல் (15 வரிகள் முதல் 30 வரிகள் வரை)
2. சிறுகதை - எழுதுதல் (குறைந்தது 3 பக்கங்கள்)

Text Book

1 தமிழ் மொழிப்பாடம் - 2022-2023, தொகுப்பு: தமிழ்த்துறை, டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி, கோயம்புத்தூர் – 641048, வெளியீடு: நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை – 600 098.

References

1 பேராசிரியர் புலவர் சோம. இளவரசு, எட்டாம் பதிப்பு - 2014, தமிழ் இலக்கிய வரலாறு – மணிவாசகர் பதிப்பகம், சென்னை – 600 108.

2 பேராசிரியர் முனைவர் பாக்கியமேரி, முதற் பதிப்பு - 2013, இலக்கணம் - இலக்கிய வரலாறு - மொழித்திறன் - பூவேந்தன் பதிப்பகம், சென்னை-600 004.

3 இணையதள முகவரி: https://www.tamilvu.org

Course Code	Course Name	Category	L	T	P	Credit
231TL1A1HA	HINDI - I	LANGUAGE - 1	4	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature
- The techniques for expansion of ideas and translation process

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	✓
CO2		✓			✓
CO3				✓	
CO4	✓		✓		
CO5		✓	✓		✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A1HA	HINDI – I	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I 13 h

गद्य – नूतन गद्य संग्रह (जय प्रकाश)पाठ 1- रजियापाठ 2- मक्रीलपाठ 3- बहता पानी निर्मला पाठ 4- राष्ट्रपिता महात्मा गाँधी

Unit II 13 h

कहानी कुंज- डॉ वी.पी. 'अमिताभ' (पाठ 1-4)

Unit III 12 h

व्याकरण : शब्द विचार (संज्ञा, सर्वनाम,विशेषण)

Unit IV 12 h

अनुच्छेद लेखन

Unit V 10 h

अनुवाद अभ्यास-III (केवल अंग्रेजी से हिन्दी में) (पाठ 1 to 10)

Text Books

1. प्रकाशक: सुमित्र प्रकाशन 204 लीला अपार्ट्मेंट्स, 15 हेस्टिंग्स रोड'अशोक नगर इलाहाबाद-211001
2. प्रकाशक: गोविन्द प्रकाशनसदर बाजार, मथुरा उत्तरप्रदेश-281001
3. पुस्तक: व्याकरण प्रदिप – रामदेवप्रकाशक: हिन्दी भवन 36 टेगोर नगर इलाहाबाद-211024
4. पुस्तक: व्याकरण प्रदिप – रामदेवप्रकाशक: हिन्दी भवन 36 इलाहाबाद-211024
5. प्रकाशक: दक्षिण भारत प्रचार सभा चेनैई -17

Course Code	Course Name	Category	L	T	P	Credit
231TL1A1MA	MALAYALAM- I	LANGUAGE - I	4	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process
- the competency in translating simple Malayalam sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Apply creative ability	K3
CO5	Build the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	✓
CO2					✓
CO3		✓	✓		
CO4	✓			✓	
CO5		✓			✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A1MA	MALAYALAM - I	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **Novel** 14 h

Pathummayude Adu

Unit II **Novel** 10 h

Pathummayude Adu

Unit III **Short Story** 14 h

Nalinakanthi

Unit IV **Short Story** 10 h

Nalinakanthi

Unit V **Practical Application** 12 h

Expansion of ideas, General Essay and Translation

Text Books

1 Vaikkam Muhammed Basheer, "Pathummayude Adu" (NOVEL), DC Books & Kottayam

2 T.Padmanabhan, "Nalinakanthi" (Short Story), DC Books & Kottayam.

References

1 Malayala Novel Sahithyam.

2 Malayala Cherukatha Innale Innu.

Course Code	Course Name	Category	L	T	P	Credit
231TL1A1FA	FRENCH - I	LANGUAGE - I	4	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the competence in general communication skills with oral, written and comprehension & expression
- the culture, life style and the civilization aspects of the French people as well as of France
- the students to acquire competency in translating simple French sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the Basic verbs, numbers and accents	K1
CO2	Apply the adjectives and the classroom environment in France	K2
CO3	Select the Plural, Articles and the Hobbies	K2
CO4	Measure the Cultural Activity in France	K3
CO5	Evaluate the sentiments, life style of the French people and the usage of the conditional tense	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓				✓
CO2					✓
CO3					
CO4	✓		✓		✓
CO5	✓		✓		

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A1FA	FRENCH - I	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **Salut I Page 10** 12 h

Objectifs de Communication	Tâche	Activités de réception et de production orale
• Saluer • Enter en contact • avec quelqu'un. • Se presenter. • S'excuser	En cours de cuisine, premiers contacts avec les members d'un groupe	• Comprendre des personnes qui se saluent. • Ēchanger pour entrer en contact, se présenter, saluer, s'excuser. • Communiquer avec *tu* ou *vous*. • Comprendre les consignes de classe • Ēpeler son nom et son prénom. Computer jusqu'à 10.

Unit II **Enchanté I Page 20** 12 h

Objectifs de Communication	Tâche	Activités de réception et de production orale
• Demander de se presenter. • Présenter quelqu'un.	Dans la classe de français, se presenter et remplir une fiche pour le professeur.	• Comprendre les informations essentielles dans un échange en milieu professionnel. • Ēchanger pour se presenter et présenter quelqu'un.

Unit III **J'adore I Page 30** 12 h

Objectifs de Communication	Tâche	Activités de réception et de production orale
• Exprimer ses gouts.	Dans un café, participer à une soirée de rencontres rapides et remplir de taches d'appréciation	• Dans une soirée de recontres rapid comprendre des personnes qui échangent sur elles et sur leurs goût • Comprendre une personne qui parler des goûts de quelqu'un d'autre

Unit IV J'adore I Page 30 14 h

Objectifs de Communication	Tâche	Activités de réception et de production orale
• Présenter quelqu'un	Dans un café, participer à une soirée de rencontres rapides et remplir de taches d'appréciation	• Exprimer ses goûts • Comprendre une demande laissée sur un répondeur téléphonique. • Parler de ses projets de week-end
Autoévaluation du module I Page 40 – Préparation au DELF A1 page 42		
Demander à quelqu'un de faire quelque chose. Demander poliment. Parler d'actions passes. Tu veux bien?	Organiser un programme d'activités pour accueillir une personne importante	Comprendre une personne demande un service à quelqu'un. Demander à quelqu'un de faire quelque chose. Imaginer et raconter au passé à partir de situations dessinées.

Unit V Practical Application 10 h

Make in Own Sentences

Text Book

1 Regine Merieux, Yves Loiseau. 2012. LATITUDES – 1: Méthode de français (Page No: 9-55) Les Editions Dider, Paris, Imprime en Roumanie par Canale en Janvier

Course Code	Course Name	Category	L	T	P	Credit
231EL1A1EA	ENGLISH - I	LANGUAGE- II	4	-	1	3

PREAMBLE

This course has been designed for students to learn and understand

- the effect of dialogue, imagery and varied genres
- any spontaneous spoken discourse and respond to them with proper sentence structure
- the transactional concept of English language

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify the various aspects in poetry	K2
CO2	Infer linguistic and non-linguistic features of the context for understanding and interpreting	K3
CO3	Construct sentences and convey messages effectively in real life situations	K3
CO4	Apply different reading strategies with varying speed	K3
CO5	Prepare modules with their own ideas and present them coherently in a grammatically correct form	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓		✓	✓	✓
CO2		✓			✓
CO3	✓	✓		✓	
CO4			✓		
CO5	✓	✓			✓

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231EL1A1EA	ENGLISH- I	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I Genre Studies 12 h

Nissim Ezekiel: The Worm- Author's Biography- title indications- outline- paraphrasing the poem- context of poem- form- poetic devices- enjambment- techniques– Annotations

Niyi Osundare: Our Earth Will Not Die- Author's Biography- title indications- outline- paraphrasing the poem- context of poem- form- poetic devices- enjambment- techniques– Annotations

A. G. Gardiner: On Superstitions- Author's biography- Narrative structure- Exploration of the text- passage analysis- insight of ideas- cohesion and context- style- language techniques- Annotation

Nancy Bella: Clever Thief- Author's Biography- Plot Summary- Detailed summary and Analysis- Themes- Important Quotations- Characters- Description - analysis- Terms- Symbols- Critical analysis

H. G. Wells: The Truth about Pyecraft- Author's Biography-narrative structure- passage analysis- insight of ideas- cohesion and context- style- language techniques

Unit II Listening Skills 12 h

Listening vs. hearing- Types of listening, Tips to enhance Listening Skills, Non-verbal and Verbal signs of active listening - Comprehensive Listening - Listening to pre-recorded audios on speeches, interviews and conversations - Listening Activities- Listening and responding to complaints (formal situation), Listening to problems and offering solutions (informal)

Unit III Speaking Skills 14 h

Formal occasions- Introducing oneself, Introducing others, Enquiries and Seeking permission, Making short presentations- Informal occasions- Requests, Offering help, Congratulating, Farewell party, graduation speech- Giving instructions to do a task and to use a device, Giving and asking directions

Unit IV Reading Skills 10 h

Study Skills: Skimming and Scanning- Reading different kinds of texts- Types of reading-Developing a good reading speed, reading aloud, Referencing skill - Word

Power (Denotation and Connotation) - Reading comprehension, Data interpretation –Charts, Graphs, Advertisements

Unit V Writing Skills 12 h

Sentence patterns, Note- making and note taking-Strategies - Paragraph writing: Structure and Principles - Academic Writing - Formal and Informal Letters, Report, Book /Movie Review

Text Books

1. Gardiner, A. G. 1926. Alpha of the Plough: Second series, J.M. Dent & Sons Ltd., London, United Kingdom. pg.no-151-156. (Unit I)
2. Ezekiel, Nissim. "The Worm," Crazy Romantic Love, www. mianmawaisarain.live/2020/05/poem-worm-nissim-ezekiel.html. Accessed 3 Aug. 2022. (Unit I)
3. < http://livros01.livrosgratis.com.br/ln000835.pdf /> (Unit I)
4. Mithra, S. M. 1919. Hindu Tales from the Sanskrit, Macmillan & Co Ltd., London, United Kingdom. pg.no-127-142. (Unit I)
5. Nation, I. S. P and Jonathan Newton. 2009. Teaching ESL/EFL Listening and Speaking. Routledge, New York, United States. (Unit II)
6. Prabha, Dr. R. Vithya & S. Nithya Devi. 2019. Sparkle. (1st Edn.) McGraw - Hill Education, Chennai, India. (Unit III– V)

References

1. Our Earth Will Not Die By Niyi Osundare." Studocu.Com, studocu.com /in/document/bangalore-university/bachelor-of-computer-applications /1586771577-our-earth-will-not-die/27675462. Accessed 3 Aug. 2022.
2. OnSuperstitions."THEHISTORIAN,thehistorian1947.wordpress.com/2019/03/08/on-superstitions-by-a-g-gardiner. Accessed 3 Aug. 2022.
3. Swales, John M. & Feak, Christine B. 2012. Academic Writing for Graduate Students: Essential Tasks and Skills, University of Michigan Press, Michigan, United States.
4. Rudzka, Brygida -Ostyn, 2003. Word Power: Phrasal Verbs and Compounds: A Cognitive Approach, Mouton de Gruyter, New York, United States.

Course Code	Course Name	Category	L	T	P	Credit
234AI1A1CA	PROBLEM SOLVING AND PROGRAMMING IN C	CORE	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- The fundamental aspects of programming and problem solving
- The C language fundamentals
- The representation and working of arrays, pointers, functions and files

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Illustrate the basic principles of programming and problem solving	K2
CO2	Understand the fundamentals of C Language	K2
CO3	Implement decision making using branching and looping.	K3
CO4	Develop programs using arrays and functions	K3
CO5	Execute programs using pointers, structures and files	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓		✓	✓	✓
CO2	✓	✓	✓	✓	✓
CO3	✓	✓		✓	✓
CO4	✓		✓	✓	✓
CO5	✓		✓	✓	✓

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234AI1A1CA	PROBLEM SOLVING AND PROGRAMMING IN C	SEMESTER I

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Introduction to Programming and Problem Solving 12 h

Introduction: Types of Programming Languages – High level Languages – Assembly Languages – Machine Level Languages – System Software – Operating Systems – Compiler – Linker and Interpreter. Problem Solving Strategies: Steps involved in problem solving - Algorithms - Flow Charts - Symbols used in Flow Charts - Pseudo Codes – Structured Programming - Sequence – Selection – Repetition – Modular Programming.

Unit II C Language Fundamentals 12 h

Language Fundamentals: Introduction to C - Basic Structure of C Program – Constants – Variables – Data Types - Operators – Expressions – Evaluation of Expressions - Operator Precedence and Associativity - Managing the Input and Output – Formatted I/O – Unformatted I/O – Storage classes- Simple programs for logic building.

Unit III Decision Making and Arrays 12 h

Branching: Simple if Statement – if-else statement – elseif Ladder – Switch statement – goto, break and continue statements. Looping: while loop – do-while loop -for loop- nested for loop – Pre-processor Directives: Macro substitution – File inclusion – Compiler control directives. Arrays: Introduction – Types of arrays – Declaration and Initialization of Arrays – Dynamic Arrays.

Unit IV Strings, Functions and Pointers 12 h

Strings: Declaring and Initializing the string variables – String handling functions. Functions – Need for functions – Elements of functions – Category of functions – Passing arrays to functions - Recursion. Pointers: Understanding Pointers – Declaration and Initialization of pointer variables – Accessing variables through pointers – Pointers and arrays.

Unit V Structures and Files 12 h

Structures: Defining a structure – Declaring structure variables – Accessing structure member – Array of structures - Structure within structures -Unions. Files: Defining and opening a File – Closing a file – I/O Operations on files - Dynamic memory allocation - Command Line Arguments.

Text Books

1 Ashok N. Kamthane, 2009, "Programming and Data Structures", 1st Edition, Pearson Education

2 Byron Gottfried, 2018, "Schaum's Outline of Programming with C", 4th Edition, McGraw Hill Education.

References

1 E.Balagurusamy, 2017, "Programming in ANSI C", 7th Edition, TMH

2 H. Schildt, 2000, "C: The Complete Reference", 4th Edition, TMH.

3 ReemaThareja , 2015, "Programming in C", 2nd Edition, Oxford University Press

4 Anita Goel, Ajay Mittal, 2016,"Computer Fundamentals and Programming in C", 1st Edition, Pearson.

234CY1A1CP	CORE PRACTICAL: C PROGRAMMING	SEMESTER I

Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Develop a program to understand the concept of data types and variables.
2	Develop programs to familiarize the different types of operators.
3	Implement the concept of branching statements using simple programs.
4	Develop programs to practice the concepts of looping statements.
5	Implement the concepts of one- and two-dimensional arrays.
6	Develop a program to sort the given set of numbers using arrays
7	Demonstrate the operations of strings variables and functions.
8	Using functions demonstrate the concept of code reusability.
9	Implement the concept of structures.
10	Compute the following operations using Pointers: i. Addition of two matrices ii. Multiplication of two matrices
11	Using File Operations display the contents of a file.
12	Develop a program to copy the contents of one file to another

Note: Any 10 Experiments are Mandatory.

Course Code	Course Name	Category	L	T	P	Credit
234IT1A1CA	DIGITAL COMPUTER FUNDAMENTALS	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- The concepts of number system and circuits
- The principles of logic gates and memory
- The design and architecture of microprocessors and microcontrollers

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the types of number systems, Boolean Algebra	K2
CO2	Understand and analyze Logic gates	K2
CO3	Illustrate the concepts of combinational circuits	K3
CO4	Understand the different types of sequential logic and memory organization	K2
CO5	Understand the architecture of microprocessors and microcontrollers	K2

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓	✓	
CO2	✓	✓			✓
CO3		✓	✓	✓	✓
CO4	✓	✓	✓	✓	
CO5	✓		✓	✓	

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234IT1A1CA	DIGITAL COMPUTER FUNDAMENTALS	SEMESTER I

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Binary Systems and Boolean Algebra 10 h

Binary Numbers- Number base conversions- Octal and Hexadecimal conversions- Compliments- Binary codes - Decimal codes.

Basic Definitions-Boolean functions- Canonical standard forms: Minterms and Maxterms - Sum of Minterms-Product of Minterms-conversion between canonical forms.

Unit II Logic Gates and Boolean functions 8 h

Digital Logic Gates: AND, OR, Inverter, Buffer, NAND, NOT, Exclusive-OR, Exclusive-NOR.

The Map method-Two and three-variable Maps-Four variable Map - Five and Six-Variable Maps- Product of Sum simplification - Don't care conditions.

Unit III Combinational Logic 10 h

Adders: Half-Adder, Full-Adder. Subtractors Half-Subtractor, Full-Subtractor. Multilevel NAND Circuits: Universal Gate. Multilevel NOR Circuits: Universal Gate. Binary Parallel Adder- Decimal Adder - BCD Adder. Decoders: Demultiplexers-Encoders - Multiplexer.

Unit IV Sequential Logic & Memory Unit 10 h

Introduction- Flip-flops-Clocked RS Flip-flop - D Flip-flop - JK Flip-flop - Design of Counters- Registers -Ripple Counters.

The Memory Unit - Random Access Memories: Integrated-circuit Memory-Magnetic-core Memory.

Unit V Introduction to Microprocessors and Microcontrollers 10 h

Introduction – Microprocessor- Microcomputer- Architecture of Microprocessors- History- Evolution- Microprocessor Applications- Evolution of Microcontrollers- Application of Microcontrollers. Architecture of 8085 Microprocessor- Pin diagram of 8085 Microprocessor.

Text Books

1 M.Morris Mano, 2019, "Digital Logic and Computer Design", Pearson India Education.

2 Soumitra Kumar Mandal, 2018, "Microprocessors and Microcontrollers – Architecture, Programming and Interfacing using 8085, 8086, 8051", 15th Edition, Tata Mc Graw Hill Education.

References

1 S. Salivahanan and S Arivazhagan, 2018, "Digital Circuits and Design", 5th Edition, Oxford University Press, Noida

2 Thomas Floyd L., 2015, "Digital Fundamentals", 11th Edition, Pearson Publication Ltd, New Delhi

3 M Morris Mano, 2016, " Digital Logic and Computer Design", 5th edition, Pearson

4 Aditya P Mathur, 2016, "Introduction to Microprocessor", 3rd Edition, McGrawHill Education.

Course Code	Course Name	Category	L	T	P	Credit
232MT1A1ID	MATHEMATICS FOR COMPUTING-I	IDC	4	1	-	

PREAMBLE

This course has been designed for students to learn and understand

- the concepts of matrices and determinants
- the technique of obtaining eigen values and eigen vectors
- the method of solving linear system of equations

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	define the various terms of matrices and the operations involved in it	K1
CO2	identify the determinant value of matrices	K1
CO3	determine the eigen values and eigen vectors through different methods	K3
CO4	recognize the direct and indirect methods for solving algebraic equations	K1
CO5	discuss the method of solving differential and integral problems	K2

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	
CO2	✓		✓		
CO3	✓			✓	
CO4	✓	✓			
CO5	✓		✓	✓	

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

232MT1A1ID	MATHEMATICS FOR COMPUTING I	SEMESTER I

Total Credits:

Total Instruction Hours: 60 h

Syllabus

Unit I Systems of Linear Equations 13 h

Introduction to system of linear equations- - linear systems in two and three unknown - augmented matrices and elementary row operations - Gaussian elimination- Matrices and Matrix operations - inverses - algebraic properties of matrices - elementary matrices - method for finding A^{-1}- invertible matrices - diagonal matrices - triangular matrices - symmetric matrices

Unit II Determinants 12 h

Introduction - determinants by cofactor expansion- minors and cofactors - technique for evaluating 2×2 and 3×3 determinants - evaluating determinants by row reduction - elementary row operations - Matrices with proportional rows or columns - properties of determinants - Cramer's rule.

Unit III Eigenvalues and Eigenvectors 10 h

Definition of eigenvalues and eigenvectors - computing eigenvalues and eigenvectors - Diagonalization - Geometric and Algebraic multiplicity - complex vector spaces - vectors in C^n- differential equations - first order linear systems - solution by diagonalization

Unit IV Solution of Algebraic, Transcendental Equations and Linear Systems 13 h

Introduction - Newton-Raphson Method-Direct methods -Matrix inversion method

- Gaussian elimination method - Gauss Jordan method - Iterative methods - Gauss Seidel Method - Gauss Jacobi method

Unit V Interpolation, Numerical Differentiation and Integration 12 h

Introduction - Finite differences - Newton's formulae for interpolation – Interpolation with unevenly spaced points: Lagrange's interpolation formula- Numerical differentiation - maximum and minimum values of a tabulated function- Numerical integration - Trapezoidal rule - Simpson's 1/3 rule - Simpson's 3/8rule .

Text Books

1. Howard Anton and Chris Rorres, 2015 "Elementary Linear Algebra with Supplemental Applications", 11th Edition, Wiley India Pvt. Ltd, New Delhi. (Unit I to III)
2. Sastry, S.S, 2012, " Introductory methods of Numerical Analysis", Prentice- Hall of India. New Delhi. (Unit IV to V)

References

1. ParthaKarmakar, Chandan Bikash Das, PabitrakumarGouri, 2021 "Introduction to Linear Algebra", 1st Edition, Books and Allied(P) Ltd, Kolkata
2. Gilbert Strang, 2005, "Linear Algebra and its Applications", 4th Edition, Brooks/Cole, Noida.
3. VeerarajanT,Ramachandran.T, 2004. "Theory and Problems in Numerical Methods with Programs in C and C++",10th Edition, Tata Mc- Graw Hill Publishing Company Limited,New Delhi.
4. VenkataramanM.K. 2004,"Numerical Methods in Science and Engineering", 4th Edition,NPC

Course Code	Course Name	Category	L	T	P	Credit
233MB1A1AA	ENVIRONMENTAL STUDIES	AECC	2	-	-	2

PREAMBLE

This course has been designed for students to learn and understand

- Multi disciplinary aspects of Environmental studies
- Importance to conserve the Biodiversity
- Causes of Pollution and its control

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the importance of natural resources in order to conserve for the future.	K2
CO2	Infer on Natural resources and its conservation	K2
CO3	Apply the knowledge on Biodiversity and its conservation	K3
CO4	Relate effects, causes and control of air, water, soil and noise pollution etc.,	K2
CO5	Build awareness about sustainable development and Environmental protection	K2

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1					✓
CO2					✓
CO3					✓
CO4					✓
CO5					✓

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

233MB1A1AA	ENVIRONMENTAL STUDIES	SEMESTER I

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

Unit I Introduction to Environmental studies & Ecosystems 5 h

Introduction to Environmental studies& Ecosystems: Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere. Scope and importance; Concept of sustainability and sustainable development. Ecosystem- Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession.

Unit II Natural Resources: Renewable and Non-renewable Resources 5 h

Natural Resources: Renewable and Non-renewable Resources: Land Resources and land use change; Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Water: Use and overexploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs.

Unit III Biodiversity and Conservation 5 h

Biodiversity and Conservation: Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots. India as a mega-biodiversity nation; Endangered and endemic species of India. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit IV Environmental Pollution, Environmental Policies & Practices 5 h

Environmental Pollution, Environmental Policies & Practices: Environmental pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution. Nuclear hazards and human health risks. Solid waste management: Control measures of urban and industrial waste. Pollution case studies. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. Environment Laws: Environment Protection Act; Prevention & Control of Pollution Act – Air & Water. Wildlife Protection Act; Forest Conservation Act;

Unit V Human Communities and the Environment& Field Work 4 h

Human Communities and the Environment & Field Work: Human population and growth: Impacts on environment, human health and welfares. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Environmental communication and public awareness. Visit to an area to document environmental assets; river/forest/flora/fauna, etc. Population explosion – Family Welfare Programmes. Role of Information Technology in Environment and human health. Role of the Colleges, Teachers and Students in village adoption towards clean, green and make in villages in various aspects.

Text Books

1 Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.

2 Gadgil, M., & Guha, R.1993. This Fissured Land: An Ecological History of India. Univ. of California Press.

References

1 Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge

2 Gleick, P.H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press

3 Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006

4 Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.

5 McCully, P.1996. Rivers no more: the environmental effects of dams (pp. 29-64). Zed Books

6 McNeil, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century

7 Odum, E.P., Odum, h.T. & Andrews, J.1971. Fundamentals of Ecology. Philadelphia: Saunders.

10/6/23
BoS Chairman/HoD
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Dr.N.G.P. Arts and Science College
APPROVED

BoS- 15th	AC - 15th	GB - 20th
10/6/23	14.7.23	5.8.23

Dr.NGPASC
COIMBATORE | INDIA

Course Code	Course Name	Category	L	T	P	Credit
231TL1A2TA	TAMIL- II	LANGUAGE- I	4	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடுநாகரீகம் ,பகுத்தறிவு ஆகியவற்றை அறியச் செய்தல்
- கலை மற்றும் மரபுகளை அறியச் செய்தல்
- மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	வாழ்க்கைத்திறன்கள் (Life Skills) மாணவர்களின் செயலாக்கத்திறனை ஊக்குவித்தல்	K1
CO2	மதிப்புக்கல்வி (Attitude and Value education)	K2
CO3	பாடஇணைச்செயல்பாடுகள் (Co-curricular activities)	K2
CO4	சூழலியல் ஆக்கம் (Ecology)	K3
CO5	மொழி அறிவு (Tamil knowledge)	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓		
CO2	✓			✓	
CO3	✓	✓			
CO4	✓		✓		
CO5	✓			✓	

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A2TA	TAMIL- II	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I அற இலக்கியம் 13 h

1. இலக்கிய வரலாறு- பதினெண்கீழ்க்கணக்குநூல்கள்

2.திருக்குறள்

அ. அறன்வலியுறுத்தல்- அ. எண் 04

ஆ. நட்பாராய்தல் - அ. எண் 80

இ. நாடு- அ. எண் 74

ஈ. குறிப்பறிதல்- அ. எண் 110

Unit II அற இலக்கியம் 13 h

1. நாலடியார் - அறிவுடைமை
2. மூதுரை - ஔவையார் - 10 பாடல்கள் 6, 7, 9, 10, 14, 16, 17, 23, 26, 30
3. இனியவைநாற்பது- பூதஞ்சேந்தனார் - முதல் 10 பாடல்கள்

Unit III அறநெறிக் கட்டுரைகள் 09 h

1. இலக்கியவரலாறு - தமிழ் உரைநடையின் தோற்றமும் வளர்ச்சியும்

2. கலைகள்-உ.வே.சா

3. சங்க நெறிகள்- வ.சுப.மாணிக்கம்

Unit IV அறநெறிக் கட்டுரைகள் 15 h

1. வீர வணக்கம் - க.கைலாசபதி
2. தமிழர் பண்பாடு - டாக்டர் சோ.நா.கந்தசாமி
3. இணையத் தமிழ் வளர்ச்சி - முனைவர் ப.அர.நக்கீரன்

Unit V பயிற்சிப் பகுதி 10 h

1.இலக்கணம்-வழு, வழுவமைதி,வழாநிலை

2.அலுவலகம் சார்ந்த கடிதம் -விண்ணப்பங்கள், வேண்டுகோள்,முறையீடு

3.படைப்பாக்கம்-பொதுத்தலைப்பில் கட்டுரைகள் எழுதுதல்

Text Book

1 தமிழ் மொழிப்பாடம்-2023-2024,தொகுப்பு: தமிழ்த்துறை , டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி,கோயம்புத்தூர். வெளியீடு: நியூ செஞ்சுரி புக் ஹவுஸ் ,சென்னை. (Unit I to V)

References

1 பேராசிரியர் புலவர் சோம. இளவரசு,எட்டாம் பதிப்பு. 2014. தமிழ் இலக்கிய வரலாறு- மணிவாசகர் பதிப்பகம்,சென்னை.

2 பேராசிரியர் முனைவர் பாக்கியமேரி ,முதற் பதிப்பு. 2013. இலக்கணம்-இலக்கிய வரலாறு- மொழித்திறன்- பூவேந்தன் பதிப்பகம்,சென்னை. .

3 தமிழ் இணையக் கல்விக்கழகம் - TAMIL VIRTUAL ACADEMY. வலைதள முகவரி : https://www.tamilvu.org

Course Code	Course Name	Category	L	T	P	Credit
231TL1A2HA	HINDI- II	LANGUAGE- I	4	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature
- the techniques for expansion of ideas and translation process

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	✓
CO2	✓	✓			✓
CO3	✓		✓	✓	✓
CO4	✓		✓		✓
CO5	✓	✓	✓		✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A2HA	HINDI- II	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I 13 h

आधुनिकपद्य – शबरी(श्रीनरेशमेहता)

Unit II 13 h

उपन्यास: सेवासदन-प्रेमचन्द

Unit III 12 h

कहानी-किरीट- डा उषा पाठक / डा अचला पाण्डेय

पाठ 1.कफ़न, 3. चीफ़ की दावत

Unit IV 12 h

पत्र लेखन: (औपचारिक या अनौपचारिक)

Unit V 10 h

अनुवाद अभ्यास-III (केवल हिन्दी से अंग्रेजी में) (पाठ 1 to 10)

Text Books

1. प्रकाशक: लोकभारती प्रकाशन पहली मंजिल , दरबारी बिल्डिंग,महात्मा गाँधी मार्ग , इलाहाबाद. (Unit I)
2. प्रकाशक: सुमित्र प्रकाशन 204 लीला अपार्ट्मेंट्स , 15 हेस्टिंग्स रोड 'अशोक नगर इलाहाबाद . (Unit II)
3. प्रकाशक: राधाकृष्ण प्रकाशन दिल्ली. (Unit III)
4. पुस्तक: व्याकरण प्रदिप – रामदेवप्रकाशक: हिन्दी भवन 36 इलाहाबाद. (Unit IV)
5. प्रकाशक: दक्षिण भारत प्रचार सभा चेनैई. (Unit V)

Course Code	Course Name	Category	L	T	P	Credit
231TL1A2MA	MALAYALAM- II	LANGUAGE - I	4	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process
- the competency in translating simple Malayalam sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	✓
CO2	✓				✓
CO3	✓	✓	✓		✓
CO4	✓		✓	✓	✓
CO5	✓	✓	✓		✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A2MA	MALAYALAM- II	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **Novel** 12 h

Enmakaje: Chapter1- Chapter5

Unit II **Novel** 10 h

Enmakaje: Chapter 6- Chapter 10

Unit III **Novel** 12 h

Enmakaje: Chapter 11- Chapter 15

Unit IV **Autobiography** 14 h

NeermathalamPoothaKalam: Chapter 1- Chapter 10

Unit V **Autobiography** 12 h

NeermathalamPootha Kalam: Chapter 11- Chapter 20

Text Books

1. Ambika SuthanMangad, Enmakaje (Novel), DC Books Kottayam, Kerala, India. (Unit I to III)
2. Madhavikkutty, NeermathalamPootha Kalam (Autobiography), DC Books Kottayam, Kerala, India. (Unit IV & V)

References

1. MalayalaNovelSahithyam, DC Books Kottayam, Kerala, India.
2. MalayalaSahithyaCharithram, National Books Kottayam, Kerala, India.

Course Code	Course Name	Category	L	T	P	Credit
231TL1A2FA	FRENCH- II	LANGUAGE - I	4	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the Competence in General Communication Skills – Oral + Written- Comprehension & Expression
- the Culture, life style and the civilization aspects of the French people as well as of France
- the students to acquire Competency in translating simple French sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the Basic verbs, numbers and accents	K1
CO2	Apply the adjectives and the classroom environment in France	K2
CO3	Select the Plural, Articles and the Hobbies	K2
CO4	Measure the Cultural Activity in France	K3
CO5	Evaluate the sentiments, life style of the French people and the usage of the conditional tense	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1		✓			✓
CO2		✓			✓
CO3		✓			✓
CO4		✓			✓
CO5		✓			✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A2FA	FRENCH- II	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I 12 h

Proposer, accepter, refuserune invitation. Indiquer la date.	Organiser une soirée au cinéma avec des amis, par téléphone et par courriel.	Comprendreunemessage d'invitationsurunréponde urtéléphonique. Inviter quelqu'un accepter ourefuserl'invitation.

Unit II 12 h

Prendreet fixer un rendez-vous. Demander etindiquerl'heure.	Organiser une soirée au cinéma avec des amis, par téléphone et par courriel.	Comprendre des personnes qui fixentunrendez-vous par téléphonique. Prendreun rendez-vous par telephone

Unit III 12 h

Exprimer son point de vue positif et négatif. S'informersur le prix. S'informersur la quantitité. Exprimer la quantitité.	En groupes, choisir un cadeau pour un ami.	Exprimer son point de vuesur des idées de cadeau. Faire des achatsdans un magasin

Unit IV 14 h

Demander etindiquerune direction. Localiser (près de, en face de ….). Exprimerl'obligationl' Interdit.Conseiller.	Suivre un itinéraire à l'aided'indications par telephone et d'un plan. Par courrierélectronique, donner des informations et des conseils à un ami qui veut voyager.	Comprendre des indications de direction. Comprendre des indications de lieu. Comprendreune chanson. Comprendre de courts messages qui experiment l'obligationoul'interdictio n. Donner des conseils à des personnesdans des situations données.

Unit V 10 h

Make in Own Sentences

Text Book

1 Regine Merieux, Yves Loiseau, "LATITUDES - 1" (Page No: 56-101) (Methode de Français), Goyal Publisher & Distributors Pvt.Ltd., 86 UB Jawahar Nagar (Kamala Nagar), New Delhi-7 Les Editions Dider, Paris, 2008- Imprime en Roumanie par Canale en Janvier 2012. (Unit I to IV)

CourseCode	Course Name	Category	L	T	P	Credit
231EL1A2EA	ENGLISH- II	LANGUAGE- II	4	-	1	3

PREAMBLE

This course has been designed for students to learn and understand

- the language for specific purposes through various literary manuscripts
- the process of communicative competencies in academics through authentic contexts
- the different formats of business correspondence with lucidity and accuracy via various media

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify and appreciate the eminent writers' works of various genres	K1
CO2	Infer and comprehend complex situational talks	K2
CO3	Relate formal and informal communicative contexts to speak fluently	K2
CO4	Construct the denotative and connotativemeanings while reading specialized texts	K3
CO5	Develop the skill of writing through descriptions, narrations and essays	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1			✓		✓
CO2			✓		✓
CO3			✓		✓
CO4			✓		✓
CO5			✓		✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231EL1A2EA	ENGLISH-II	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I Genre Studies 15 h

John Keats: To a Friend Who Sent Me Some Roses - Author's Note - title indications- outline-paraphrasing the poem- context of poem- form- poetic devices- techniques- Style

A.G. Gardiner: On Habits - Author's Note- Title indications- Outline -Passage Analysis - context of the Prose - Narrative techniques- Style

SudhaMurthy: The Enchanted Scorpions-Author's Note - title indications-Plot summary- Outline of the story -devices- Narrative techniques- Style

David Pinski: A Dollar-Author's Note- Title indications -Plot Summary- Critical Analysis-Themes- Characteranalysis - Terms- Symbols

Unit II Listening Skills 10 h

Listening to Talks/Lectures by Specialists on selected subject-specific topics-Listening to Public Announcements- Listening to Instructions and Directions-Listening to Speeches- Listening to process/event descriptions to identify causes& effects

Unit III Speaking Skills 11 h

Small Talk- Mini Presentations and Making Recommendations- Group Discussions, Debates, and Expressing opinions through Role play- Picture Description-Giving Instruction to Use a Product- Presenting a Product- Summarizing a Lecture-Narrating Personal Experiences/ Events- Interviewing a Celebrity- Scientific Lectures- Educational Videos- Debates- Different Viewpoints on an Issue

Unit IV Reading Skills 12 h

Reading Biographies, Newspaper Reports, Technical Blogs-ReadingAdvertisements- Gadget Reviews- Newspaper Articles- Journal Reports – Reading Editorials & Blogs- Case Studies- Excerpts from Literary Texts

Unit V Writing Skills 12 h

Inferring & Interpreting- Predicting Reorganizing Material- Summary Writing Based on the Reading Passages- Writing - Emails & Essay Writing (Descriptive or Narrative)- Grammar - Tenses- Question Types: Wh/ Yes or No/ and Tags

Text Books

1. Keats, John. To a Friend Who Sent Me Some Roses. <https://www.Poets.org, 1820, poets.org/poem/ friend-who-sent-me-some-roses.html/>(UnitI)
2. Gardiner, Alfred George. On Habits (n.d.). <Https://Www. Gutenberg. Org/ Files/47429/47429-H/47429-H.Html/> (UnitI)
3. Murthy, Sudha. The Enchanted Scorpions. (n.d.). <https://www. ssgopalganj.in/online/EBooks/CLASS%20VI/Grandma's%20Bag%20of%20 Stories%20by%20Sudha%20Murthy.pdf/>pp-34-39.(UnitI)
4. Pinski, David.A Dollar-a One-act Play.<www.one-act-plays.com/ comedies/dollar.html/>(UnitI)
5. Hart, Steve,AravindR.Nair, VeenaBhambhani. 2016. Embark: English for Undergraduates. Cambridge University Press, New Delhi, India. (Unit II)
6. Lakshminarayan.2012. A Course Book On Technical English. Scitech Publications Pvt. Ltd., New Delhi, India. (Unit III)
7. Raman, Meenakshi&Sangeeta Sharma. 2016. Technical Communication-Principles And Practice, Oxford University Press, New Delhi, India. (Unit IV)
8. Viswamohan, Aysha. 2017. English For Technical Communication (With CD), McGraw Hill (India) Private Limited, New Delhi, India. (UnitV)

References

1. Bajwa and Kaushik. 2010. Springboard to Success- Workbook for Developing English and Employability Skills. Orient Black Swan, Chennai, India.
2. Chellammal, V. 2003. Learning to Communicate. Allied Publishing House, New Delhi, India
3. Krishnaswamy. N, LalithaKrishnaswamy& B.S. Valke. 2015. Eco English, Learning English through Environment Issues. An Integrated, Interactive Anthology. Bloomsbury Publications, New Delhi, India.
4. Syamala. V. 2002. Effective English Communication for You. Emerald Publishers, Chennai, Tamil Nadu, India.

Course Code	Course Name	Category	L	T	P	Credit
234CA1A2CA	DATA STRUCTURES	CORE	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Fundamental concept of data structure with effective utilization of space and time
- Linear and nonlinear data structures
- Different Searching, Sorting and Hashing techniques

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamentals of data structures and algorithmic complexity	K2
CO2	Demonstrate the operations of Stack and Queue and their applications	K2
CO3	Implement operations on linked list and its variants	K3
CO4	Apply non linear data structures such as trees and graphs in problem solving	K3
CO5	Analyze the various sorting, searching algorithms and hashing techniques	K4

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓				✓
CO2	✓	✓	✓	✓	✓
CO3	✓	✓	✓	✓	✓
CO4	✓	✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CA1A2CA	DATA STRUCTURES	SEMESTER II

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Introduction to Data Structures and Arrays 10 h

Introduction: Basic Terminology -Classification of Data Structures -Operations on Data Structures-Abstract Data Type-Algorithms-Time and Space Complexity -Big O Notation-Omega Notation (Ω) -Theta Notation (Φ). Arrays: Declaration of Arrays-Accessing the elements of an array-Storing values in Arrays-Operations on Arrays. Applications of Arrays: Sparse Matrices

Unit II Stacks and Queues 12 h

Stacks: Array Representation of Stacks- Operations on a Stack-Linked Representation of Stacks. Applications of Stacks: Evaluation of Arithmetic Expressions –Recursion. Queues: Array Representation of Queues - Operations on Queues -Linked Representation of Queues - Circular Queues. Applications of Queues: JOB Scheduling

Unit III Linked Lists 12 h

Singly Linked Lists: Inserting a node in a Linked List- Deleting a node from a Linked List. Circular Linked Lists: Inserting a node in a Circular Linked List - Deleting a node from a Circular Linked List. Doubly Linked Lists: Inserting a node in a Doubly Linked List - Deleting a node from a Doubly Linked List. Applications of Linked Lists: Polynomial Addition

Unit IV Trees and Graphs 14 h

Trees: Binary Trees – Representation of Binary Trees -Creating a Binary Tree - Traversing a Binary Tree- Binary Search Trees and its Operations - Threaded Binary Trees. Applications of Trees: Expression Trees. Graphs: Graph Terminology - Representation of Graphs - Graph Traversal Algorithms.Applications of Graphs: Shortest Path Algorithm : Dijkstra's Algorithm. Minimum Spanning Trees : Prim's Algorithm

Unit V Searching , Sorting and Hashing 12 h

Searching: Linear search –Binary Search. Sorting: Bubble Sort - Insertion Sort - Selection Sort – Quick Sort-Merge Sort -Heap Sort. Hashing and Collision: Hash Tables - Hash Functions - Collision. Applications of Hashing: Keyword Table in a Compiler.

Text Books

1. Reema Thareja, 2018, "Data Structures using C", Second Edition, Oxford University Press.
2. G A V Pai, 2017, "Data Structures and Algorithms: Concepts - Techniques and Applications", McGraw Hill Education.

References

1. Mark Allen Weiss, 2014, "Data Structures and Algorithm Analysis in C++", Third Edition , Pearson education.
2. Yashavant Kanetker, 2003, "Data Structure Through C++ Paperback" ,4th Edition, BPB Publications.
3. Lipchitz (Schaum's Outline Series), 2010,"Data Structures with C", McGraw Hill Education.
4. https://www.tutorialspoint.com/data_structures_algorithms/index.htm

Course Code	Course Name	Category	L	T	P	Credit
234CS1A2CA	OBJECT ORIENTED PROGRAMMING WITH C++	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- The object orientedprogramming principles.
- The structure and features of C++.
- The design and implementation of OOPs concepts using C++.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Describe the concepts of object oriented programming and basic constructs of C++ programming	K1
CO2	Design simple applications using classes and objects	K2
CO3	Illustrate the concept of Inheritance and apply pointers and strings	K3
CO4	Apply polymorphism and exception handling in program design	K3
CO5	Implement programs using File Management and STL	K4

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1		✓		✓	✓
CO2	✓		✓		
CO3	✓	✓	✓		
CO4	✓		✓	✓	
CO5	✓	✓	✓	✓	

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CS1A2CA	OBJECT ORIENTED PROGRAMMING WITH C++	SEMESTER II

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction to Object Oriented Programming 8 h

Introduction - Programming Paradigms - Key concepts of Object-Oriented Programming – Applications of Object-Oriented Programming - Variable, Value and Constant - Components of a C++ Program - Data Types - Expressions - Type Conversion - Order of Evaluation - Formatting Data: Manipulators in Input/Output- Branching and Looping.

Unit II Classes and Arrays 10 h

User-Defined Types: Classes-Class Definition-Member function- Access Modifiers-Inline function- Constructors and Destructors- Instance Members: Instance Data Members-Instance Member Functions -Static Members - Arrays: One-Dimensional Arrays - Multidimensional Arrays. Case Study: Wave Array

Unit III Pointers, Strings and Inheritance 10 h

References - Pointers - Pointer Types and Pointer variables - Constant Modifiers – Pointer to Pointer- Arrays and Pointers - Strings: C ++ String Class -C++ String Library – Inheritance: Private, Public and Protected Inheritance - Association - Dependency

Unit IV Polymorphism and Exception Handling 10 h

Polymorphism- Binding- Abstract Class : Pure Virtual Functions - Multiple Inheritance - Overloading Principles - Overloading as Member- Nonmember: Friend function-Exception Handling : Approach- Exceptions in Classes - Standard Exception Classes – Templates: Function Template - Class Template.

Unit V File Handling and Standard Template Library 10 h

Input and Output stream – Stream Classes - Console Streams - Console Objects - Stream State - File Streams - File I/O - Opening Modes - Sequential Vs Random Access - String Streams - Formatting Data: Direct use of Flags, Fields and Variables - Predefined Manipulators-Standard Template Library: Iterators, Sequence Containers, Container Adapters.

Text Books

1. Ashok Kamthane, 2017, "Object-Oriented Programming with ANSI and Turbo C++ 3rd Edition", Pearson (Unit 1.1 to 1.3).
2. Behrouz A. Forouzan, Richard F. Gilberg, 2020, "C++ Programming: An Object-Oriented Approach", McGraw-Hill Education (Unit I to V).

References

1. Bjarne Stroustrup, 2022, "C++ Programming Language, Fourth Edition" Pearson.
2. E Balagurusamy, 2020, "Object-Oriented Programming with C++, 8th Edition", McGraw Hill Education
3. M. Ashwin, V. Sreeprada, M. Santhosh, 2022, "A Hand Book on C++ Programming", Notion Press
4. YashavantKanetkar, 2020, "Let Us C++", BPB Publications.
5. https://www.codecademy.com/
6. https://www.simplilearn.com/

234CY1A2CP	CORE PRACTICAL: DATA STRUCTURES USING C++	SEMESTER II

Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Implementation of Conditional Statements and Loops
2	Implementation of Stacks and queues.
3	Apply constructors and Destructors to find the sum of digits of a number until it reduces to single digit.
4	Using arrays implement Linked List concept.
5	Create a class to store the details of an employee. Apply the concept of inheritance and calculate the different allowances (DA, HRA and PF) based on the basic pay..
6	Implement the concept of binary search and linear search
7	Demonstrate function and operator overloading.
8	Perform the three types of tree traversals using C++.
9	Apply the concept of Pure Virtual functions.
10	Implementation of graphs.
11	Demonstrate Standard Template Libraries.
12	Implementation of Sorting algorithms.

Note: Any 10 Experiments are Mandatory.

Course Code	Course Name	Category	L	T	P	Credit
232MT1A2ID	MATHEMATICS FOR COMPUTING- II	IDC	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the concepts of probability theory and distribution
- the method of finding the moments of a random variable
- the method of checking the validity of parameters through test statistic

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	State the basic concepts of probability theory	K1
CO2	Discuss the concept of discrete and continuous distribution	K2
CO3	Define the parameters of central tendencies and dispersion	K2
CO4	Demonstrate the applications of correlation and regression	K3
CO5	Analyze the validity of the values of parameters through hypothesis testing	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓		
CO2	✓	✓	✓	✓	
CO3	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

232MT1A2ID	MATHEMATICS FOR COMPUTING- II	SEMESTER II

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Elementary probability and Random variable 11 h

Random experiment - De-Morgan's laws - conditional probability - generalization of multiplicative law - Bayes' probabilities - random variable - discrete and continuous random variable - distribution function - discrete probability distribution and function - mathematical expectation - moments - moment generating function - characteristic function - cumulants.

Unit II Probability Distribution 12 h

Binomial distribution - Bernoulli's theorem - Poisson distribution and Poisson variate X - relationship between the probabilities , P(X=x) and P(X=x+1) - Hypergeometric distribution - Normal and Lognormal distribution - Beta, Gamma and Exponential distribution - Weibull distribution

Unit III Measures of Central tendency and Dispersion 13 h

Characteristics of a good measure of central tendency - mean - arithmetic Mean - pooled mean - geometric Mean - harmonic mean -median - mode.

Measures of dispersion - purposes - properties -range - interquartile range –mean deviation - variance - standard deviation - coefficient of variation.

Unit IV Correlation and Regression 12 h

Scatter diagram - least square method - properties - regression line of X on Y- regression coefficient from coded data - correlation methods - graphical method - correlation coefficient - correlation in grouped bivariate data - relationship between correlation coefficients and regression coefficients - rank correlation.

Unit V Test of Significance and t- Test 12 h

Types of hypothesis -two types of errors - level of significance - critical region - one and two tailed test - size and power of a test -randomized test -non randomized test - degrees of freedom - student's t- test - test of equality of two population means - paired t- test - interval estimation - large sample tests - tests of hypothesis for proportions.

Text Books

1 Agarwal B. L, 2013,"Basic Statistics", 6thEdition, New age International(P) Limited publishers, New Delhi.

References

1 Gupta C.B and Vijay Gupta, 2007, "An Introduction to Statistical Methods", 23rdEdition,S.Chand& Co, New Delhi.

2 Sanchetti, D.C. Kapoor, V.K, 2010"Statistics",7thEdition,S.Chand& Co, New Delhi.

3 Veerarajan. T,2017, "Fundamentals of Mathematical Statistics", 1stEdition, Yes Dee Publishing Pvt Ltd, Chennai.

4 SivaramakrishnaDas.P, Vijayakumar.C, 2020, "Probability and Statistics", 2nd Edition, Pearson Education, Noida.

231TL1A2AA	PART- IV: BASIC TAMIL	SEMESTER II

Total Credits: 2

Total Instruction Hours: 24 h

இளங்கலை 2023–24ஆம் கல்வியாண்டு முதல் சேர்வோர்க்குரியது

(10 மற்றும் 12– ஆம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயிலாதவர்களுக்கு)

(பருவத் தேர்வு இல்லை)

Syllabus

Unit I தமிழ் மொழியின் அடிப்படைக் கூறுகள் 05 h

எழுத்துகள் அறிமுகம்

1. உயிர் எழுத்துக்கள் - குறில் , நெடில் எழுத்துகள்

2. மெய் எழுத்துக்கள் - வல்லினம், மெல்லினம், இடையினம்

3. உயிர்மெய் எழுத்துக்கள்

4. பயிற்சி

Unit II சொற்களின் அறிமுகம் 05 h

1.பெயர்ச்சொல்

2.வினைச்சொல் – விளக்கம் (எ.கா.)

3.பயிற்சி

Unit III குறிப்பு எழுதுதல் 05 h

1. பெயர், முகவரி, பாடப்பிரிவு , கல்லூரியின் முகவரி

2. தமிழ் மாதங்கள்(12), வாரநாட்கள்(7)

3. எண்கள் (ஒன்று முதல் பத்து வரை), வடிவங்கள், வண்ணங்கள்

Unit IV குறிப்பு எழுதுதல் 05 h

1. ஊர்வன, பறப்பன, விலங்குகள்

2.மனிதர்களின் உறவுப்பெயர்கள்

3. ஊர்களின்பெயர்கள் (எண்ணிக்கை 10)

Unit V பயிற்சிப் பகுதி 04 h

பயிற்சிப் பகுதி (உரையாடும் இடங்கள்)

வகுப்பறை, பேருந்து நிலையம், சந்தை– பேசுதல்,எழுதுதல்.

Notes:

அகமதிப்பீட்டுத்தேர்வு– வினாத்தாள் அமைப்புமுறை- மொத்த மதிப்பெண்கள் - 50

		பகுதி –அ
சரியான விடையைத் தேர்வு செய்தல்	10	x2=20
		பகுதி –ஆ
சரியா? தவறா?		10x2=20
		பகுதி – இ
ஒரு பக்க அளவில் விடையளிக்க		1x10=10

குறிப்பு:

- அனைத்து அலகுகளில் இருந்தும் வினாக்கள் அமைதல் வேண்டும்
- பகுதி இ–க்கான வினாக்கள் இதுஅல்லது அதுஎன்ற அடிப்படையில் அமைதல் வேண்டும்

Text Book

1 அடிப்படைத் தமிழ் - 2023-2024,தொகுப்பு: தமிழ்த்துறை, டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி,கோயம்புத்தூர்.வெளியீடு: நியூ செஞ்சுரி புக் ஹவுஸ்,சென்னை. (Unit I to IV)

References

1 ஒன்றாம் வகுப்பு பாடநூல் - தமிழ்நாடு அரசு பாடநூல் கழகம், சென்னை.

2 தமிழ் இணையக் கல்விக்கழகம் - TAMIL VIRTUAL ACADEMY வலைதள முகவரி: <https://www.tamilvu.org/>

231TL1A2AB	PART- IV: ADVANCED TAMIL	SEMESTER II

Total Credits: 2

Total Instruction Hours: 24 h

இளங்கலை 2023– 2024 ஆம் கல்வியாண்டு முதல் சேர்வோர்க்குரியது

(10 மற்றும் 12– ஆம் வகுப்புகளில் தமிழ் மொழிப்பாடம் பயின்றவர்களுக்கு உரியது)

(பருவத் தேர்வு இல்லை)

Syllabus

Unit I கவிதைகள் 06 h

1. தமிழ்நாடு - பாரதியார்
2. மனதில் உறுதி வேண்டும் - பாரதியார்
3. இன்பத்தமிழ் - பாரதிதாசன்
4. வேலைகளல்லவேள்விகள் - தாராபாரதி
5. தமிழா! நீ பேசுவது தமிழா! - காசியானந்தன்
6. நட்புக் காலம்(10 கவிதைகள்)- அறிவுமதி கவிதைகள்

Unit II கட்டுரை 05 h

கட்டுரைத் தொகுப்பு -நல்வாழ்வு - டாக்டர் மு.வரதராசன்

1. நம்பிக்கை
2. புலனடக்கம்
3. பண்பாடு

Unit III இலக்கணம் 04 h

1. வல்லினம் மிகும் மற்றும் மிகா இடங்கள்
2. ர,ற,ல,ழ,ள,ந,ண,ன – வேறுபாடு அறிதல்

Unit IV கடிதங்கள் 05 h

1. பாராட்டுக் கடிதம்
2. நன்றிக் கடிதம்
3. அழைப்புக் கடிதம்
4. அலுவலக விண்ணப்பங்கள்

Unit V பயிற்சிப் பகுதி 04 h

படைப்பாக்கப் பகுதி

பொதுத் தலைப்புகளில் கவிதை,கட்டுரை எழுதச்செய்தல்

Notes

அக மதிப்பீட்டுத் தேர்வு - வினாத்தாள் அமைப்பு முறை- மொத்த மதிப்பெண்கள் 50

	பகுதி –அ
சரியான விடையைத் தேர்வு செய்தல் 10	x1=10
	பகுதி –ஆ
கோடிட்ட இடங்களை நிரப்புக.	10x2=20
	பகுதி –இ
இரண்டு பக்க அளவில் விடையளிக்க	2x10=20

குறிப்பு:

- அனைத்து அலகுகளில் இருந்தும் வினாக்கள் அமைதல் வேண்டும்
- பகுதி இ–க்கான வினாக்கள் இதுஅல்லது அதுஎன்ற அடிப்படையில் அமைதல் வேண்டும்

Text Book

1 சிறப்புத் தமிழ் - 2023-2024, தொகுப்பு: தமிழ்த்துறை , டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி, கோயம்புத்தூர். வெளியீடு: நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை. (Unit- I to IV)

References

1 பேராசிரியர் புலவர் சோம. இளவரசு ,எட்டாம் பதிப்பு. 2014 . தமிழ் இலக்கிய வரலாறு – மணிவாசகர் பதிப்பகம்,சென்னை.

2 டாக்டர் மு.வரதராசன். 2010. நல்வாழ்வு, பாரி நிலையம், சென்னை.

3 பேராசிரியர் முனைவர் பாக்கியமேரி ,முதற் பதிப்பு.2013. இலக்கணம் - இலக்கிய வரலாறு - மொழித்திறன்- பூவேந்தன் பதிப்பகம், சென்னை..

4 தமிழ் இணையக் கல்விக்கழகம் - TAMIL VIRTUAL ACADEMY. வலைதள முகவரி : <https://www.tamilvu.org/>

Course Code	Course Name	Category	L	T	P	Credit
235CR1A2AA	HUMAN RIGHTS AND WOMEN'S RIGHTS	AECC	2	-	-	2

PREAMBLE

This course has been designed for students to learn and understand

- Concepts of Human Rights.
- Human Right Violations and Redressal Mechanism.
- Rights to Women and Child.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of Human Rights.	K1
CO2	Describe the Fundamental Rights.	K2
CO3	Relate Human Right Violations and Redressal Mechanism.	K3
CO4	State the Rights to Women and Child.	K2
CO5	Apply Civil and Political Rights of Women.	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1		✓		✓	✓
CO2		✓	✓	✓	✓
CO3				✓	✓
CO4		✓		✓	✓
CO5	✓	✓	✓	✓	✓

	Skill Development		Entrepreneurial Development
	Employability		Innovations
	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

235CR1A2AA	HUMAN RIGHTS AND WOMEN'S RIGHTS	SEMESTER II

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

Unit I Introduction to Human Rights 04 h

Meaning - Definition - Nature - Content - Legitimacy of Human Rights - Origin and Development of Human Rights - Theories - Principles of Magna Carta - Modern Movements of Human Rights - The Future of Human Rights. Case studies related to human rights.

Unit II Human Rights in India 05 h

The Constitution of India: Fundamental Rights - Right to Life and Liberty - Directive Principles of State Policy - Fundamental Duties - Individual and Group Rights - Other facets of Human Rights - Measures for Protection of Human Rights in India.

Unit III Human Right Violations and Redressal Mechanism 05 h

Human Rights: Infringement of Human Right by State Machinery and by Individual - Remedies for State action and inaction - Constitutional Remedies - Public Interest Litigation (PIL) - Protection of Human Rights Act, 1993 - National Human Rights Commission - State Human Rights Commissions - Constitution of Human Right Courts.

Unit IV Rights to Women and Child 05 h

Matrimonial protection - Protection against dowry - Protection to pregnancy - Sexual offences - Law relating to work Place - Directive principles of Constitution (Article 39 a, d, e & Article 42, 43 & 46) - Trafficking of women - Constitutional Rights - Personal Laws - Protection of children against Sexual Offences Act, 2012 (POCSO).Case studies related toSexual offences.

Unit V Civil and Political Rights of Women 05 h

Right of Inheritance - Right to live with decency and dignity - The Married women's Property Act, 1874 - Women's right to property - Women Reservation Bill - National Commission for Women - Political participation -Pre-independent political participation of women - Participation of Women in post independent period. Kavalan App.Case studies related to women rights.

Text Books

1 Lalit Parmar, 1998, "Human Rights", Anmol Publications Pvt. Limited, New Delhi.

2 Krishna Pal Malik, 2009, "Women & Law ", Allahabad Law University, New Delhi.

References

1 Mandagadde Rama Jois, 2015, "Human Rights", Bharatiya Values, Bharatiya Vidya Bhavan Publications, Mumbai.

2 Paras Diwan and Piyush Diwan, 1994, "Women and Legal Protection", South Asia Books, Andhra Pradesh.

3 Venkataram and Sandhiya. N, 2001, "Research in Value Education", APH Publishing Corporation, New Delhi.

4 Anand A S, 2008, "Justice for Women: Concerns and Expressions", Universal Law Publishing Co., New Delhi.

16/10/23

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Dr.N.G.P. Arts and Science College

Course Code	Course Name	Category	L	T	P	Credit
231TL1A3TA	TAMIL- III	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடுநாகரீகம்,பகுத்தறிவு ஆகியவற்றை அறியச் செய்தல்
- கலை மற்றும் மரபுகளை அறியச் செய்தல்
- மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	வாழ்க்கைத்திறன்கள் (Life Skills)- மாணவர்களின் செயலாக்கத்திறனை ஊக்குவித்தல்	K1
CO2	மதிப்புக்கல்வி (Attitude and Value education)	K2
CO3	பாடஇணைச்செயல்பாடுகள் (Co-curricular activities)	K2
CO4	சூழலியல் ஆக்கம் (Ecology)	K3
CO5	மொழி அறிவு(Tamil knowledge)	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓		
CO2				✓	
CO3		✓			
CO4	✓		✓		
CO5	✓			✓	

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A3TA	TAMIL- III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **காப்பியங்கள்** 10 h

1.சிலப்பதிகாரம் –வழக்குரை காதை

2. மணிமேகலை–ஆதிரை பிச்சையிட்ட காதை

Unit II **காப்பியங்கள்** 10 h

1. கம்பராமாயணம் -கும்பகர்ணன் வதைப்படலம்: பா. எண் : 60 முதல் – 100 வரை

2. பெரிய புராணம் - அதிபத்த நாயனார்புராணம்

Unit III **சிற்றிலக்கியங்கள்** 10 h

1.திருக்குற்றாலக்குறவஞ்சி - வசந்தவல்லி பந்தாடிய சிறப்பு (6: 4கண்ணிகள்)

2.கலிங்கத்துப்பரணி-களம்பாடியது: போர்க்களக் காட்சி- பா.எண்: 472 முதல்- 502 வரை

Unit IV **இலக்கிய வரலாறு** 10 h

1.காப்பியம் – வரையறை,ஐம்பெருங் காப்பியங்கள்,ஐஞ்சிறு காப்பியங்கள்

2.கம்பராமாயணம், பெரிய புராணம் – குறிப்பு

3. சிற்றிலக்கியங்களின் தோற்றமும் வளர்ச்சியும்

Unit V **இலக்கணம் &பயிற்சிப் பகுதி** 08 h

அ. இலக்கணம்

1.'பா' வகைகள் : வெண்பா, ஆசிரியப்பா, கலிப்பா, வஞ்சிப்பா - பொது இலக்கணம் மட்டும்.

2. அணி: உவமையணி, உருவக அணி, இல்பொருள் உவமையணி விளக்கம், உதாரணம்.

ஆ. பயிற்சிப் பகுதி

1.வாசகர் கடிதம்: நாளிதழ், வானொலி, செய்தி ஊடகங்களுக்கு விமர்சனம் எழுதுதல்

2.திரைக்கதை விமர்சனம்: மத்திய மற்றும் மாநில அரசு விருது பெற்ற தமிழ்த் திரைப்படங்கள் மட்டும்

Text Book

1 தமிழ் மொழிப்பாடம்-2023 -2024 ,தொகுப்பு: தமிழ்த்துறை, டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி,கோயம்புத்தூர். வெளியீடு: நியூ செஞ்சுரி புக் ஹவுஸ்,சென்னை. (Unit I to V)

References

1 பேராசிரியர் புலவர் சோம. இளவரசு,எட்டாம் பதிப்பு-2014,தமிழ் இலக்கிய வரலாறு- மணிவாசகர் பதிப்பகம்,சென்னை.

2 பேராசிரியர் முனைவர் பாக்கியமேரி,முதற் பதிப்பு- 2013,இலக்கணம்-இலக்கிய வரலாறு- மொழித்திறன்- பூவேந்தன் பதிப்பகம்,சென்னை. .

3 தமிழ் இணையக் கல்விக்கழகம் - TAMIL VIRTUAL ACADEMY. வலைதள முகவரி: https://www.tamilvu.org

Course Code	Course Name	Category	L	T	P	Credit
231TL1A3HA	HINDI- III	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature
- the techniques for expansion of ideas and translation process

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	✓
CO2		✓			✓
CO3	✓		✓	✓	
CO4					✓
CO5	✓	✓	✓		✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A3HA	HINDI– III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

पद्य – काव्य पराशर (भोलानाथ)

(प्राचीन- कबीर, तुलसी, सुर, मीरा, आधुनिक- मैथिलीशरण गुप्त, अरूण कमल)

Unit II 10 h

हिन्दी साहित्य का इतिहास: (साधारण ज्ञान)

Unit III 10 h

अलंकार:अनुप्रास,यमक, श्लेष, वक्रोक्ति, उपमा,रूपक

Unit IV 10 h

संवादलेखन

Unit V 08 h

अनुवादअभ्यास-III (केवलहिन्दीसेअंग्रेजीमें)

(पाठ10 to 20)

Text Books

1 प्रकाशक: जवाहर पुस्तकालय सदर बाजार, मथुराउत्तर प्रदेश-281001(Unit I)

2 आचार्य रामचन्द्र शुक्ललोकभारती प्रकाशन इलाहाबाद. (Unit II)

3 प्रकाशक: विनोद पुस्तक मंदिरआगरा-282002 (Unit III)

4 पुस्तक: व्याकरणप्रदिप–रामदेवप्रकाशक: हिन्दीभवन36 इलाहाबाद-211024(Unit IV)

5 प्रकाशक: दक्षिण भारत प्रचार सभा चेनैई -17(Unit V)

Course Code	Course Name	Category	L	T	P	Credit
231TL1A3MA	MALAYALAM- III	LANGUAGE-I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process
- the competency in translating simple Malayalam sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	
CO2	✓				✓
CO3		✓	✓		
CO4	✓			✓	✓
CO5	✓	✓	✓		✓

COURSE FOCUS ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A3MA	MALAYALAM- III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **Poetry** 10 h

Kumaranasan

Unit II **Poetry** 10 h

Kumaranasan

Unit III **Poetry** 10 h

Kumaranasan

Unit IV **Poetry** 10 h

VayalarRamavarma

Unit V **Poetry** 08 h

VayalarRamavarma

Text Books

1 Kumaranasan. 1998. Chinthavishtayaya Sitha. DC Books Kottayam, Kerala, India.(Unit I to III)

2 Ayisha (Poem), National Book Stall Kottayam, Kerala, India. (Unit IV & V)

Reference

1 Dr.M.Leelavathy.Kavitha Sahithya Charithram. Sahithya Academy Thrissur, Kerala, India.

Course Code	Course Name	Category	L	T	P	Credit
231TL1A3FA	FRENCH- III	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the Competence in General Communication Skills – Oral + Written- Comprehension & Expression
- the Culture, life style and the civilization aspects of the French people as well as of France
- the students to acquire Competency in translating simple French sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the Basic verbs, numbers and accents	K1
CO2	Apply the adjectives and the classroom environment in France	K2
CO3	Select the Plural, Articles and the Hobbies	K2
CO4	Measure the Cultural Activity in France	K3
CO5	Evaluate the sentiments, life style of the French people and the usage of the conditional tense	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓				✓
CO2	✓	✓			
CO3			✓	✓	
CO4	✓	✓			✓
CO5	✓		✓	✓	✓

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
	Employability		Innovations
	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231TL1A3FA	FRENCH- III	SEMESTER III

Total Credits: 3
Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

° Décrireun lieu. ° Situer	A partird'unerecherche de documents, composer une presentation touristique pour un magazine ou un site internet.	Comprehendre la description d'un lieu. Décrireunevilleouunerégionq u'onaime. Interrogersur la situation of d'un lieu. Comprendre des indications sur la fréquenced'actions.	Comprendreune presentation de catalogue touristique. Comprendre des pictogrammes. Comprendre la description d'un lieu et d'une situation precise dans un message électronique.

Unit II 10 h

Se situerdans le temps.	A partird'unerecherc he de documents, composer une presentation touristique pour un magazine ou un site internet.	Comprehendre la description d'un lieu. Décrireunevilleouunerégio nqu'onaime. Interrogersur la situation of d'un lieu. Comprendre des indications sur la fréquenced'actions.	Comprendreune presentation de catalogue touristique. Comprendre des pictogrammes. Comprendre la description d'un lieu et d'une situation precise dans un message électronique.

Unit III 10 h

Raconter. ° Décrire les étapesd'une action.	Raconterune scene insolite à l'oreal et à l'écrit.	Comprehendre le récit d ún voyage. Raconterses actions quotidiennes.	Ecrire une biographie a partir d'eléments écrits.

Unit IV 10 h

Exprimer l'intensité et la quantité. ° Interroger.	Raconterune scene insoliteà l'oreal et à l'écrit.	Comprehendre le récit d ún voyage. Raconterses actions quotidiennes.	Ecrire une biographie a partir d'eléments écrits.

Unit V 08 h

Make in Own Sentences based on the above Lessons

Text Book

1 LATITUDES 1 (Méthode de français) Pages from 102-127, Author : ReginеMérieux, Yves Loiseau(Unit I to IV)

Course Code	Course Name	Category	L	T	P	Credit
231EL1A3EA	ENGLISH - III	LANGUAGE- II	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the basics of English grammar and specific usage
- the importance of the vocabulary and its use in different contexts
- the necessity of communication and composition writing skills

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Infer the specific usage of while-listening process	K2
CO2	Organize the various abilities and sub-skills involved in reading	K3
CO3	Utilize the importance of speaking skills and developing it through various practices	K3
CO4	Master diverse business communication formats and skills	K4
CO5	Acquire all-round mature outlook to function effectively in different context	K4

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1			✓		✓
CO2	✓	✓		✓	
CO3	✓		✓		✓
CO4	✓		✓		]
CO5	[]	[✓]	[]	[✓]	[]

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
	Employability		Innovations
✓	Intellectual Property Rights	✓	Gender Sensitization
✓	Social Awareness/ Environment	✓	Constitutional Rights/ Human Values/ Ethics

231EL1A3EA	ENGLISH - III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I Listening and Reading 09 h

Listening in casual conversation, Small group and Conference setting - Listening for Factual Information- Barriers of Listening- Developing Listening skills- Poor listening vs Effective Listening - Basics of Reading- Efficient and Inefficient Readers- Advantages of Reading- Four Basic steps of Effective Reading- Stumbling blocks in becoming an effective Reader- Strategies for Comprehending and Retaining content- Effective Note Taking while Reading

Unit II Speaking 09 h

Purpose of General Conversations- Advantages, Features of a good conversation- Tips for improving Conversation- Public Speaking- Importance of Public Speaking- Benefits, Tips, Overcoming fear of Public Speaking- Preparatory steps - Structuring the contents- Audience Awareness- Mode of Delivery

Unit III Writing Skills 10 h

Preparing an Effective CV or a Resume with Job Applications- Employers expectation - Organize the material– Useful suggestions- Cover Letter- Content to be included– Tone of the letter- Report Writing- importance– features- Types – main parts– Feasibility report– Accident report- Scientific report- Memos – Introduction– Structure- Proposal Writing

Unit IV English for Communication & Skill for Employment 12 h

Notices, Agendas and Minutes- Business correspondence- Speeches- Meetings, Vocabulary Development- Editing Skills, and Reference Skills- Reading and Replying to E-Mails- Making Presentations- Interview Techniques- Group Discussion, and Oral Presentation Skills- Interacting with Superiors, and Listening to Reports and Customer Complaints- Preparing the minutes of a meeting- Presenting Data in Verbal and Non-verbal modes- The Correct Attitude of Employment

Unit V Soft Skills 08 h

Importance of soft skills- Attributes- Social Skills- Thinking- Negotiating- Exhibiting- Identifying - Soft Skills training -Train Yourself- Practicing soft skills- Measuring attitude – Self-Discovery: Importance of knowing yourself- Process - SWOT analysis – Benefits – Usage – SWOT Analysis grid- Art of Negotiation

Text Books

1. Camp and Satterwhite. 1998. College English and Communication. 7th Edition Glencoe Mchrawttill Publishers, New York, Unites States of America. (Unit I, II, III)
2. Kumar, Sanjay and Lata Pushp. 2018. Language and Communication Skills for Engineers. First Edition, Oxford University Press, India. (Unit I, II, III)
3. Mohan, Krishna and Banerji, Meera. 2009. Developing Communication skills. 2nd Edition, Macmillcan, India. (Unit I, II, III, IV)
4. Alex. Soft Skills. 2009. S. Chand Publishing, New Delhi, India. (Unit V)

References

1. Ghosh, B.N. Editor. 2017. Managing Soft Skills for Personality Development. McGraw- Hill Education, Chennai, India.
2. Miles Craven. 2008. Cambridge English Skills Real Listening and Speaking. First Edition, Cambridge University Press, United Kingdom.
3. Mishra, Gauri and Ranjana Kaul.2016. Language Through Literature. Primus Books, India.
4. Pillai G, Radhakrishna. 2000. English for Success. Emerald Publishers, Chennai, India.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A3CA	COMPUTER ARCHITECTURE	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- The basic concepts of computer architecture
- the design considerations involved in implementing parallel and serial interface circuits.
- he features of various interconnection standards, identifying their strengths and limitations.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basic terminologies of computer architecture	K1
CO2	Understand the basic processing units and hardware components	K2
CO3	Understand the concepts of pipeline organization	K2
CO4	Analyze different bus arbitration techniques and their impact on system performance.	K4
CO5	Evaluate multiprocessor organizations based on their topology, scalability, and communication mechanisms.	K4

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓		✓	✓
CO2	✓			✓	✓
CO3	✓			✓	
CO4	✓	✓		✓	✓
CO5	✓			✓	

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A3CA	COMPUTER ARCHITECTURE	SEMESTER III

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction 8 h

Basic Concepts-Computer Types- Functional Units- Basic Operational Concepts- Performance- Instruction Set Architecture- Memory Locations and Addresses- Memory Operations- Instructions and Instruction Sequencing- Addressing Modes- Assembly Language.

Unit II Input/Output and Processing Unit 10 h

Basic Input/ Output- Accessing I/O Devices- Interrupts- Basic Processing Units- Fundamental Concepts- Instruction Execution- Hardware Components- Instruction Fetch and Execution Steps- Control Signals- Hardwired Control- CISC Style Processors

Unit III Pipelining 10 h

Basic Concepts- Pipeline Organization- Pipelining issues- Data Dependencies- Memory Delays- Branch Delays- Performance Evaluation- Super Scalar Operation- Pipelining in CISC Processors

Unit IV Input-Output Organization 10 h

Introduction – Bus Structure- Bus Arbitration- Interface Circuits: Parallel Interface and Serial Interface- Interconnection Standards: Universal Serial Bus- Firewire- PCI Bus- SCSI Bus- SATA- SAS- PCI Express.

Unit V Parallel Processing 10 h

Introduction- Parallel Processing: Multiprocessor Organizations- Symmetric Multiprocessors- Cache Coherence and the MESI Protocol.

Text Books

1 [Carl Hamacher, 2012, "Computer Organization and Embedded Systems", 6th Edition, TMH, New Delhi]

References

1 Mahalakshmi. M, 2015, "Computer Architecture and Organization" 1st Edition, Margham, Chennai.

2 John L Hennessy,2011, "Computer Architecture", 1st Edition, Elsevier New Delhi.

3 Nicholas Carter, 2010, "Computer Architecture", 4th Edition, TMH, NewDelhi.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A3CB	OPERATING SYSTEMS FUNDAMENTALS	CORE	3	-	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the foundational principles, concepts, and mechanisms that underpin modern operating systems.
- the inner workings of operating systems, gaining a deep understanding of how to manage resources.
- communication between software applications and hardware devices.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basic concepts of operating systems and their impact on computing.	K1
CO2	Understand the transitions between thread states and the synchronization primitives used to coordinate thread execution.	K2
CO3	Analyze the role of CPU scheduling in operating systems and its impact on system performance.	K4
CO4	Apply the segmentation concept and how to optimize memory.	K3
CO5	Analyze the file system structure and implementation of the Linux operating	K4

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓		✓
CO2	✓	✓	✓		
CO3	✓				✓
CO4	✓				✓
CO5	✓	✓			

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A3CB	OPERATING SYSTEMS FUNDAMENTALS	SEMESTER III

Total Credits: 3

Total Instruction Hours: 36 h

Syllabus

Unit I Introduction 7 h

Introduction- Operating System Structure- Operating System Operations- Computing Environments- Operating System Structures: Operating System Services- System Calls.

Unit II Process Concepts and Threads 7 h

Process concepts - Process Creation – Process Termination - Process states - Process Description – Process Control. Threads: Processes and Threads – Thread States – Thread Synchronization – Types of Thread – Multithreading model.

Unit III Process Scheduling and Deadlocks 7 h

CPU Scheduling - Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Thread Scheduling - Multiple-Processor Scheduling - Deadlocks: Deadlock Characterization - Methods for Handling Deadlock - Deadlock Prevention - Deadlock Avoidance: Safe State - Resource-Allocation Graph Algorithm - Banker's Algorithm - Deadlock Detection - Recovery from Deadlock.

Unit IV Memory Management 7 h

Memory Management: Swapping - Contiguous Memory Allocation - Paging – Structure of Page Table - Segmentation. Virtual Memory: Demand Paging - Page Replacement: Basic Page Replacement - FIFO Page Replacement - Optimal Page Replacement - LRU Page Replacement.

Unit V File Management 8 h

File System Structure - File System Implementation - Directory Implementation - Allocation Methods - Free-space Management

Case Studies: Linux System, Mobile Operating System.

Text Books

1 Silberschatz, Galvin, Gagne, 2018, "Operating System Concepts", 9th Edition, Wiley.

References

1 Andrew S. Tanenbaum, 2018,"Modern Operating Systems 4e", Pearson Education India

2 Mukesh Singhal, Niranjan G. Shivaratri, 2019, "Advanced Concepts in Operaring System", 10th edition, McGraw-Hill

3 William Stallings, 2017, "Operating Systems: Internals and Design Principles", 9th Edition, Pearson Education

4 Herbert Bos, S. Tanenbaum, 2020,"Modern Operating System", 6th Edition Pearson education.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A3EP	DATABASE DESIGN CONCEPTS	Core Practical	3	0	4	5

PREAMBLE

This course has been designed for students to learn and understand

- the importance of database design in building robust and scalable database systems.
- efficient and scalable databases to manage and manipulate data effectively.
- the Structured Query Language and PL/SQL

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand and implement the fundamental concepts and principles of database design	K2
CO2	Demonstrate the basic concepts of SQL and implementation of constraints	K2
CO3	Apply join operations to combine data from multiple tables based on related columns	K3
CO4	Understand the history and fundamentals of PL/SQL as a programming language.	K2
CO5	Understand and analyze the concept of Transaction Control Language	K4

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓		✓	✓	
CO2	✓	✓	✓	✓	
CO3	✓	✓	✓		✓
CO4	✓	✓		✓	
CO5	✓				

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A3EP	DATABASE DESIGN CONCEPTS	SEMESTER III

Total Credits: 5

Total Instruction Hours: 84 h

Syllabus

Unit I Database Concepts 16 h

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model– Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De -normalization.

1) Develop a design for a database.

2) Creation of entity relationships diagram.

3) Apply normalization.

Unit II Structured Query Language 17 h

Introduction to SQL – SQL Data Definition and Data types- Constraints in SQL- Basic Retrieval Queries- INSERT, DELETE and Update Statements in SQL- Data Manipulation Language (DML) – Adding a new Row/Record – Updating and Deleting Existing Rows/Records – Retrieving Data from a Table – Arithmetic Operations – Restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command –CASE structure.

1) Creation of Tables

2) Modification of Tables

3) Implement constraints on tables.

Unit III Advanced SQL 17 h

Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operators: Join – Set operators- Nested Queries and Subqueries.

1) Creation of functions

2) Perform join operations.

3) Creation of subqueries and nested queries.

Unit IV PL/SQL 17 h

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and

Embedded SQL: Control Structures – Nested Blocks - Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Procedures- Functions- Packages and Triggers.

1) Working with PL/SQL basic commands.

2) Implement procedures and functions.

3) Working with packages and triggers

Unit V Transaction Management 17 h

Transactions: Transaction Concept - A Simple Transaction Model - Storage Structure - Transaction Atomicity and Durability - Transaction Isolation - Serializability - Transaction Isolation and Atomicity - Transaction Isolation Levels - Implementation - Transactions as SQL Statements. Concurrency Control: Lock-Based Protocols - Deadlock Handling - Timestamp-Based Protocols - Validation-Based Protocols.

1) Apply TCL commands in SQL.

2) Implement a stored procedure in SQL that performs multiple database operations within a single transaction.

Text Books

1 [A. Silberchartz, H. F. Korth, S. Sudarshan 2019, "Database System concepts", (7th Edn.), Mc Graw Hill. Unit 1 – V]

2 [Nilesh Shah, 2005, "Database Systems Using Oracle: A Simplified Guide to SQL and PL/SQL", Second Edition, Pearson Education]

References

1 [Nilesh Shah, 2005, "Database Systems Using Oracle: A Simplified Guide to SQL and PL/SQL", Second Edition, Pearson Education.]

2 [Raghuram Krishnan, Johnanes Gehrke, (2011), "Database Management System", (3rd Edn.), Mc Graw Hill.]

3 O`neil Patricand, O`neil Elizabeth,(2008), "Database Principles, Programming and Performance", (2nd Edn.), Margon Kaufmann Publishers Inc

4 Elmasri Ramez and Navathe Shamkant. B, (2010), "Fundamentals of Database System Concepts", (6th Edn.), Addison Wesley

234CY1A3SP	PYTHON PROGRAMMING	SEMESTER III

Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Programs to implement Variable and Assignment and Standard Built-in Functions
2	Programs to Implement Operators and Numeric Type Functions
3	Programs to implement Strings and String Operators:
4	Programs to implement String Built-in Methods.
5	Programs to implement Lists and List Built-in Methods
6	Programs to implement Tuple and Tuple Built-in Methods
7	Programs to implement Dictionaries and Built in Methods.
8	Programs to implement Conditional Statements
9	Programs to implement Looping Statements
10	Programs to implement Switch case, Break and Continue Statements
11	Programs to implement Object Oriented Concepts.
12	Programs to implement standard libraries in Python.

Course Code	Course Name	Category	L	T	P	Credit
232MT1A3ID	DISCRETE MATHEMATICS	IDC	4		-	4

PREAMBLE

This course has been designed for students to learn and understand

- the logical operators and applications
- the concept of relation and functions.
- the application of graph theory, trees and automata.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	learn the concept of set theory	K1
CO2	interprets the various optimization problems in the term of relations and functions	K2
CO3	identify applications of logical operators	K2
CO4	model and solve real world problems using graphs and theory	K4
CO5	relate the concept of Finite state automation in practical problems.	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓		✓	
CO2	✓			✓	✓
CO3	✓	✓	✓		
CO4		✓			
CO5	✓		✓		✓

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

232MT1A3ID	DISCRETE MATHEMATICS	SEMESTER III

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Set Theory 9 h

Set and its elements - set description - types - Venn-Euler Diagrams - set operations and laws of set theory - fundamental products - index and indexed sets - partitions of sets - minsets - countable and uncountable sets - Algebra of sets and duality - computer representation - the inclusion and exclusion principle

Unit II Relations and Functions 10 h

Relations: Introduction - cartesian product of sets - binary relations – set operation on relations - types– partial order relation – equivalence relation and classes-Functions: Introduction - types – invertible functions - composition of functions.

Unit III Mathematical Logic 10 h

Propositional calculus – basic logical operations - statements generated by a set - conditional statements -converse, inverse and contrapositive statements - biconditional - tautologies - contradiction - contingency - argument - methods of proof - equivalence and implication

Unit IV Graph Theory and Trees 10 h

Basic terminology - paths, cycles and connectivity - subgraphs - types - isomorphic and homeomorphic graphs - representation of graphs in computer memory- Eulerian and Hamiltonian graphs - cartesian product - shortest path.

Trees: Properties - binary trees - complete binary tree - tree of an Algebraic expression - traversing binary trees.

Unit V Language, Grammar and Automata 9 h

Language: the set theory of strings - languages – regular expressions and regular languages – grammar – finite state machine – finite state automata.

Note: 20% Theory and 80% Problem

Text Books

1 Sharma J.K., 2022, "Discrete Mathematics", 4th Edition, Trinity Press, New Delhi.

References

1 Tremblay J.P. and Manohar R., 1997, "Discrete Mathematics Structures with Applications to computer science", 2nd Edition, Mc Graw Hill International, New York.

2 Venkataraman M.K, Sridharan N and Chandrasekaran N., 2000, "Discrete Mathematics ", The National publishing Company, Chennai.

3 Kolman B, Busby R.C. and Ross S.C., 2006, "Discrete Mathematical Structures", 5th Edition., Prentice Hall of India Pvt. Ltd., New Delhi.

4 Kenneth H. Rosen., 1999, "Discrete Mathematics and its Applications", 4th Edition, Mc Graw-Hill Professional, New York.

234CY1ASSA	SELF STUDY: WEB ESSENTIALS	SEMESTER III

Total Credit: 1

Syllabus

Unit I Introduction to Internet

Internet- Growth of Internet and ARPA Net–Owners of the Internet -Anatomy of Internet – History of WWW - Basic Internet Terminologies – Net etiquette - Internet Applications - Commerce on the Internet– Governance on the Internet - Impact of Internet on Society.

Unit II Interconnectivity

Connectivity types - Setting up a connection – Hardware requirements- Selection of a modem - Software requirements – Internet accounts by ISP-ISDN-Protocol options-Service options. Internet Network: Network Definition Common terminologies – Node - Host- Workstation –Network Administrator - Network Components – Servers-client Server-Communication Media

Unit III Dimensional Data Warehouse

Browsers - Parts of a browser Window-Running a browser - Working with a Browser. Search engines: - Types of search engines - Search and meta search engines.

Unit IV E-mail

E-mail - E-mail Networks and Servers - E-mail Protocols - Structure of E-mail - Attachments – E-mail Clients - E-mail Clients - web based E-mail-Address book – Signature File.

Unit V HTML

Introduction to HTML – HTML browsers -Different versions of HTML-HTML tags - Document overview – Header elements - Section headings - Block headings - Lists-Inline elements – Images -working with Tables, Forms, Frames

Text Books

1 Internet Technology and Web design, 2011, Ramesh Bangia, Firewall Media, Third Edition, Lakshmi Publications Pvt. Ltd.

References

1 Margaret Levine Young, 2019, "Complete Reference Internet" 9th Edition, TMH.

2 Rizwan Ahmed.P, 2015, "Internet and its Applications", 1st Edition, Margham Chennai.

3 Douglas E. Comer, 2009 "The Internet Book" 4th Edition, PHI Learning Pvt. Ltd., New Delhi.

234CY1ASSB	SELF STUDY: DIGITAL MARKETING	SEMESTER III

Total Credit: 1

Syllabus

Unit I Importance of Marketing in Business

Marketing and its Business Importance –Structure – Objective – Begin with a plan - The digital marketing framework –Organizing your marketing plan to market your business - Content marketing- Content plans.

Unit II Social media in business

Structure - objective – Social media landscape - Facebook – Content plan for social media -Improving the metric of fan page – Customize page tabs – Implement and monitor campaigns – Measuring impact – Measurement Analysis Optimization

Unit III Social Ads)

Structure – Objective – Choose the appropriate social network for your business – Making display ads meet your goals- Facebook Ads – Create and manage ads on Facebook – Run Campaign on Facebook – Setting up facebook and campaign

Unit IV SEO (Search Engine Optimization)

SEO for Beginners – Structure – Objective – Search Engine Optimization – Relevance – Authority and SEO – Origin of SEO - Keywords for SEO – Legendary Onsite SEO analysis – Accessibility – Indexability

Unit V Display Advertising

Display advertising to target your audience – Structure – Objectives – Working of display ads – Ad server – Direct response marketing – Branding – Different display advertising sales models.

Text Books

1 Cecilia Figueroa, 2019, "Introduction to Digital Marketing 101", First Edition, BPB Publications India.

References

1 Puneet Singh Bhatia, 2019, "Fundamentals of Digital Marketing", Pearson Education, Second Edition, India

2 Seema Gupta, 2022, "Digital Marketing", McGraw Hill, Standard Edition.

3 Stephanie Diamond, 2019, "Digital Marketing All in One for Dummies", 6th Edition, For Dummies.

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APPROVED
BoS - 1st 4/4/24 | AC - 17th 17/4/24 | GB -

Academic Council * Dr.N.G.P. Arts and Science College * CHAIRMAN

Course Code	Course Name	Category	L	T	P	Credit
231TL1A4TA	TAMIL - IV	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- மொழிப்பாடங்களின் வாயிலாக தமிழரின் பண்பாடு நாகரீகம், பகுத்தறிவு ஆகியவற்றை அறியச் செய்தல்
- கலை மற்றும் மரபுகளை அறியச் செய்தல்
- மாணவர்களின் படைப்பாக்கத்திறன்களை ஊக்குவித்தல்

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	வாழ்க்கைத் திறன்கள் (Life Skills)- மாணவர்களின் செயலாக்கத் திறனை ஊக்குவித்தல்	K3
CO2	மதிப்புக்கல்வி (Attitude and Value education)	K4
CO3	பாட இணைச்செயல்பாடுகள் (Co-curricular activities)	K4
CO4	சூழலியல் ஆக்கம் (Ecology)	K4
CO5	மொழி அறிவு (Tamil knowledge)	K5

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1		✓	✓		✓
CO2	✓			✓	
CO3		✓			✓
CO4			✓		
CO5	✓			✓	✓

COURSE FOCUSES ON

✓	Skill Development	_	Entrepreneurial Development
✓	Employability	_	Innovations
_	Intellectual Property Rights	_	Gender Sensitization
_	Social Awareness/ Environment	_	Constitutional Rights/ Human Values/ Ethics

231TL1A4TA	TAMIL - IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **எட்டுத்தொகை** 10 h

1. நற்றிணை – குறிஞ்சித் திணை

I.பா.எண் : 01 – கபிலர்

II.பா.எண் : 88 – நல்லந்துவனார்

III.பா.எண் : 102 – செம்பியனார்

2. குறுந்தொகை – முல்லைத்திணை

I.பா.எண் : 65 – கோவூர்கிழார்

II. பா.எண் : 167 – கூடலூர்கிழார்

மருதத்திணை

I.பா.எண் : 08 – ஆலங்குடி வங்கனார்

II.பா.எண் : 61 – தும்பிசேர்கீரனார்

III.பா.எண் :196 – மிளைக் கந்தன்

நெய்தல் திணை

I.பா.எண் : 57 – சிறைக்குடி ஆந்தையார்

Unit II **எட்டுத்தொகை** 08 h

1. கலித்தொகை – பாலைக்கலி

I.பா.எண் : 09 – பெருங்கடுங்கோ

2. அகநானூறு - மருதத்திணை

I.பா.எண் : 86 – நல்லாவூர்கிழார்

3. புறநானூறு - I.பா.எண் : 188 – பாண்டியன் அறிவுடை நம்பி

II.பா.எண் : 192 – கணியன் பூங்குன்றனார்

III.பா.எண் : 279 – ஒக்கூர் மாசாத்தியார்

IV.பா.எண் : 312 – பொன்முடியார்

Unit III **பத்துப்பாட்டு** 10 h

1. பட்டினப் பாலை – கடியலூர் உருத்திரங் கண்ணனார் -1முதல் 218 வரிகள் வரை மட்டும்.

Unit IV **இலக்கிய வரலாறு** 10 h

1. எட்டுத் தொகை நூல்கள்
2. பத்துப்பாட்டு நூல்கள்

Unit V **இலக்கணம் மற்றும் திறனாய்வுப் பகுதி** 10 h

I. இலக்கணம்

1. அகத்திணை – அன்பின் ஐந்திணை - விளக்கம்
2. புறத்திணை – 12 திணைகள் - விளக்கம்

II. பயிற்சிப் பகுதி

சங்கப் பாடல்கள் குறித்து திறனாய்வு செய்தல்.

Note: பயிற்சிப் பகுதியில் வினாக்கள் அமைத்தல் கூடாது.

Text Book

செய்யுள் திரட்டு - மொழிப் பாடம் - 2023- 24

1 தொகுப்பு: தமிழ்த்துறை, டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி,(Unit I - V)

References

1 பேராசிரியர் புலவர் சோம. இளவரசு, எட்டாம் பதிப்பு -2014, தமிழ் இலக்கிய வரலாறு - மணிவாசகர் பதிப்பகம், சென்னை.

2 பேராசிரியர் முனைவர் பாக்கியமேரி, முதற் பதிப்பு- 2013, இலக்கணம் -இலக்கிய வரலாறு - மொழித்திறன் -பூவேந்தன் பதிப்பகம், சென்னை.

3 தமிழ் இணையக் கல்விக்கழகம்.<http://www.tamilvu.org/>

Course Code	Course Name	Category	L	T	P	Credit
231TL1A4HA	HINDI - IV	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature
- the techniques for expansion of ideas and translation process

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	✓
CO2		✓			✓
CO3	✓		✓	✓	
CO4					✓
CO5	✓	✓	✓		✓

COURSE FOCUSES ON

✓	Skill Development	-	Entrepreneurial Development
✓	Employability	-	Innovations
-	Intellectual Property Rights	-	Gender Sensitization
-	Social Awareness/ Environment	-	Constitutional Rights/ Human Values/ Ethics

231TL1A4HA	HINDI- IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

नाटक

Unit II 10 h

एकांकी

Unit III 10 h

काव्य मंजरी

Unit IV 10 h

सूचना लेखन

Unit V 08 h

अनुवाद अभ्यास- III

Text Books

1. लडाई – सर्वेश्वरदयाल सक्सेना प्रकाशक: वाणी प्रकाशन 21-A, दरियागंज नई दिल्ली-110002. (Unit I)
2. एकांकी पंचामृत – डॉ राम कुमार (भोर और तारा छोड्कर) प्रकाशक: जवाहर पुस्तकालय सदर बाजार, मथुरा उत्तर प्रदेश-281001. (Unit II)
3. काव्य मंजरी- (डा मुन्ना तिवारी) मैथिलीशरण गुप्त- मनुष्यता, जयशंकर प्रसाद- बीती विभावरी जागरी सूर्यकान्त त्रिपाठी निराला- तोडती पत्थर और भिक्षुक. (Unit III)
4. सूचना लेखन पुस्तक: व्याकरण प्रदिप – रामदेव प्रकाशक: हिन्दी भवन 36 इलाहाबाद -211024. (Unit IV)
5. अनुवाद अभ्यास (केवल अंग्रेजी से हिन्दी में) (पाठ 10 to 20) प्रकाशक: दक्षिण भारत प्रचार सभा चेनैई -17 (पाठ10 to 20). (Unit V)

Course Code	Course Name	Category	L	T	P	Credit
231TL1A4MA	MALAYALAM- IV	LANGUAGE - I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the writing ability and develop reading skill
- the various concepts and techniques for criticizing literature, to learn the techniques for expansion of ideas and translation process
- the competency in translating simple Malayalam sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the fundamentals of novels and stories	K1
CO2	Understand the principles of translation work	K2
CO3	Expose the knowledge writing critical views on fiction	K2
CO4	Build creative ability	K3
CO5	Apply the power of creative reading	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓			✓	
CO2	✓				✓
CO3		✓	✓		
CO4	✓			✓	✓
CO5	✓	✓	✓		✓

COURSE FOCUS ON

✓	Skill Development	-	Entrepreneurial Development
✓	Employability	-	Innovations
-	Intellectual Property Rights	-	Gender Sensitization
-	Social Awareness/ Environment	-	Constitutional Rights/ Human Values/ Ethics

231TL1A4MA	MALAYALAM- IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **Drama** 10 h

Saketham- Sreekandan Nair

Unit II **Drama** 10 h

Saketham- Sreekandan Nair

Unit III **Drama** 10 h

Saketham- Sreekandan Nair

Unit IV **Screen Play** 10 h

Perumthachan- Vasudevan Nair

Unit V **Screen Play** 08 h

Perumthachan- Vasudevan Nair

Text Books

1. Nair, Sreekandan C.N. 2023. Saketham, Drama. DC Books Kottayam, Kerala, India. (Unit I to III)
2. Nair, Vasudevan M.T. 1994. Perumthachan- Screenplay. DC Books Kottayam, Kerala, India. (Unit IV & V)

Reference

1. Sankarapillai. 2005. Malayala Nataka Sahithya Charithram, Kerala Sahithya Akademi Publishers, Kerala, India.

Course Code	Course Name	Category	L	T	P	Credit
231TL1A4FA	FRENCH - IV	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the Competence in General Communication Skills – Oral + Written- Comprehension & Expression
- the Culture, life style and the civilization aspects of the French people as well as of France
- the students to acquire Competency in translating simple French sentences into English and vice versa

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the Basic verbs, numbers and accents	K1
CO2	Apply the adjectives and the classroom environment in France	K2
CO3	Select the Plural, Articles and the Hobbies	K2
CO4	Measure the Cultural Activity in France	K3
CO5	Evaluate the sentiments, life style of the French people and the usage of the conditional tense	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓				✓
CO2	✓	✓			
CO3			✓	✓	
CO4	✓	✓			✓
CO5	✓		✓	✓	✓

COURSE FOCUSES ON

✓	Skill Development	_	Entrepreneurial Development
✓	Employability	_	Innovations
_	Intellectual Property Rights	_	Gender Sensitization
_	Social Awareness/ Environment	_	Constitutional Rights/ Human Values/ Ethics

231TL1A4FA	FRENCH - IV	SEMESTER IV

Total Credits: 3
Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

°Décrirequelqu'un. ° Comparer	En milieu professional, recruiter quelquún et justifier sonchoix.	S'exprimersur les styles de vêtemantReconnaitre des personnes à partit de descriptions.	Comprendre la description de personnesdans un extrait de roman.

Unit II 10 h

ExprimerPaccord ou le désaccord. ° Se situerdans le temps.	En milieu professional, recruiter quelquún et justifier sonchoix.	Décrire des personnes. Comprendre des personnes qui experiment leur accord ouleurdésaccord.	Comprendre des différences de points de vueexprimétesdans de message électronique. Raconter unsourvenir.

Unit III 10 h

° Parler de Pavenir.	Discuter de l'organisation d'un voyage de groupepuispréparerune fiche projet et la templit.	Comprendreune chanson. Echangersursesprojets de vacancy	Comprendre le message d'une carte d'anniversaire

Unit IV 10 h

° Exprimer des souhaits. ° Décrirequelqu'un	Discuter de l'organisation d'un voyage de groupepuispréparerune fiche projet et la templit.	Discuter du programme de la soire à venir. Addresser des souhaits à quelqu'un.	Comprendre le message d'une carte d'anniversaire

Unit V 08 h

Make in Own Sentences based on the above Lessons

Text Book

1 LATITUDES 1 (Méthode de français) Pages from 128-151, Author : Regine Mérieux, Yves Loiseau (Unit I to IV)

Course Code	Course Name	Category	L	T	P	Credit
231EL1A4EA	ENGLISH - IV	LANGUAGE II	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- how language shapes society, enhancing critical reading, writing, and thinking skills through various literary forms
- the fundamentals of writing, including essay composition, persuasive communication, and creative expression
- the process of critical thinking through the analysis of literature

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Summarize main points and supporting details from listening to public addresses and demonstrate poem comprehension.	K2
CO2	Demonstrate clear and expressive speech while engaging in role-play and dramatization activities.	K3
CO3	Interpret textual elements such as themes, tone, and authorial intent in various reading materials.	K3
CO4	Produce clear summaries and paraphrases, maintaining the essence of the original text.	K3
CO5	Prepare for job interviews by employing appropriate interview techniques, confidence, and professionalism.	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓		✓	✓
CO2		✓		✓	
CO3	✓		✓		
CO4		✓			✓
CO5	✓		✓		✓

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability		Innovations
	Intellectual Property Rights		Gender Sensitization
✓	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

231EL1A4EA	ENGLISH - IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **Listening** 10 h

Nissim Ezekeil - Goodbye Party for Miss Pushpa T.S.
D.H. Lawrence - Last Lessons of the Afternoon
Dr. APJ Abdul Kalam's speech at European Union
Listening for subtext – Tone and Emotion – Vivid Language and Pacing – Listening for Vision and Hope – Use of Storytelling
Punctuations: Periods, Commas, Semicolons, Colons, Apostrophes, Ellipses, Exclamation Points

Unit II **Speaking** 10 h

Oscar Wilde - The Importance of Being Earnest
Direct Speech and Indirect Speech - Commands and Requests, Exclamations and Wishes, Conversion of Indirect to Direct
Rules for changing direct speech into indirect speech

Unit III **Reading** 09 h

Gita Hariharan - The Remains of the Feast -
Langston Hughes - Thank You M'am
Making Inferences and Predictions - Identifying Author's Purpose and Tone- Contextual Vocabulary Building
Tenses: The Uses of Present, Past and Future Tenses

Unit IV **Writing Skills** 10 h

George Orwell - Why I Write
Summarizing vs. Paraphrasing - Expressing Purpose and Intent in Writing- Constructing Strong Arguments and Opinions
Grammar - Paraphrasing - Use of Paraphrasing, Characteristics of a good paraphrase, The Paraphrase of Poetry, Special Hints, Method of Procedure

Unit V **Soft Skills** 09 h

Steve Jobs - 2005 Stanford Commencement Address - Effective Communication - Presentation Skills
Business Corporate Soft Skills - Six common corporate conversation faux pas, Decision making Techniques, Negotiation Styles Job Interviews - Preparatory Steps for Job Interviews - Interview Skill Tips

Text Books

1. Straus, Jane, Lester Kaufman, and Tom Stern, editors. The Blue Book of Grammar and Punctuation: An Easy-to-Use Guide with Clear Rules, Real-World Examples, and Reproducible Quizzes. 12th ed., Jossey-Bass, 2021. (Unit I)
2. Wilde, Oscar. The Importance of Being Earnest. Edited by Norman Page, 2nd ed., Penguin Classics, 2000. (Unit II)
3. Hariharan, Gita. The Remains of the Feast. 1st ed., Penguin Books India, 1992. (Unit III)
4. Orwell, George. "Why I Write." George Orwell: An Anthology of His Prose, edited by John Carey, Harcourt, 2000. pp. 232-237. (Unit IV)
5. Meyer, John. The Soft Skills Handbook for Corporate Success: Essential Strategies for Business Professionals. 2nd ed., Business Insights, 2020. (Unit V)

References

1. Lawrence, D.H. The Complete Poems of D.H. Lawrence. Edited by V.J. Harding, 1st ed., Heinemann, 1992.
2. Buczynski, Mark. Soft Skills for the Workplace: How to Build Successful Relationships and Advance Your Career. 2nd ed., Wiley, 2018.
3. Hughes, Langston. "Thank You, M'am." The Penguin Anthology of American Poetry, edited by Rita Dove, Penguin Books, 2006, pp. 530-533.
4. Nelson, Brian. The Soft Skills Handbook: Essential Skills for the Workplace. 3rd ed., Business Publishing, 2019.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A4CA	COMPUTER NETWORKING PRINCIPLES	Core	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Basic concepts of networking.
- Principles and technologies behind modern networking systems.
- Principles of Wireless Communication Networks.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn fundamentals of data communication and OSI Model.	K1
CO2	Understand User Datagram Protocol and Transmission Control protocol.	K1
CO3	Acquire knowledge on network routing protocol concepts.	K2
CO4	Interpret Error Detection/Correction and Transmission media.	K3
CO5	Understand Various IEEE Standards.	K1

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓		✓	✓	✓
CO2		✓			
CO3	✓	✓		✓	
CO4			✓		
CO5	✓	✓			✓

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A4CA	COMPUTER NETWORKING PRINCIPLES	SEMESTER IV

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I OSI model 9 h

Data Communication: Networks – Network Types – Protocol Layering – TCP/IP Protocol Suite – Open System Interconnection Model - Application Layer Protocols: Web and HTTP – FTP – Electronic Mail in the Internet – DNS.

Unit II UDP and TCP Protocols 9 h

Transport Layer Services - UDP: Segment Structure, Checksum–Reliable Data Transfer: Go-Back-N, Selective Repeat- TCP: Connection, Segment Structure, Flow Control, Connection Management- Principles of Congestion Control - TCP Congestion Control.

Unit III Routing Protocols 10 h

Introduction - Virtual Circuit Networks – Datagram Networks – Router: Input, Switching, Output - Internet Protocol: Datagram Format, IPV4, ICMP, IPV6 – Routing Algorithms: Link-State, Distance – Vector - Routing in the Internet: Border Gateway Protocol (BGP).

Unit IV Error Detection/Correction and Transmission media 10 h

Introduction – Error Detection and Correction Techniques: Parity Checks, Cyclic Redundancy Check, Checksum – Random Access Protocol: Slotted ALOHA – CSMA/CD- Link Layer Addressing and ARP- Physical Layer: Signals, Digital Transmission, Analog Transmission, Multiplexing - Transmission Media: Guided – Unguided.

Unit V IEEE Standards 10 h

Introduction – Wireless Link and Network Characteristics - WiFi 802.11 Wireless LAN: 802.11 Architecture – 802.11 MAC Protocol – IEEE 802.11 Frame -Personal Area Networks: Bluetooth and Zigbee, Cellular Internet Access Architecture-Securing Wireless LANs.

Text Books

1 James F. Kurose, Keith W. Ross, 2019," Computer Networking, A Top-Down Approach", 6th edition, Pearson Education.

2 Behrouz A. Forouzan, 2020, "Data Communications and Networking with TCP/IP Protocol Suite, 6th edition TMH.

References

1 Larry L. Peterson, Bruce S. Davie, 2018, "Computer Networks: A Systems Approach", 5th edition, Relax India - New Delhi.

2 William Stallings, 2019, "Data and Computer Communications", 10th edition, Pearson Education.

3 Andrew S. Tanenbaum, 2022, "Computer Networks", 5th edition, Pearson India

Course Code	Course Name	Category	L	T	P	Credit
234CY1A4CB	PRINCIPLES OF CYBER SECURITY	CORE	3	-	-	3

PREAMBLE

This course has been designed for students to learn and understand

- Basics of information security principles.
- Techniques to mitigate different cyber threats.
- Security Controls

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Summarize the foundational principles of information security	K1
CO2	Understand cyber security threats.	K3
CO3	Acquire knowledge on strategies to enhance threat protection.	K2
CO4	Integrate security requirements for managing physical assets.	K2
CO5	Identify and apply principles of privacy and regulatory compliances.	K1

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓		✓	✓	✓
CO2		✓			
CO3	✓	✓		✓	✓
CO4			✓		
CO5	✓	✓		✓	✓

COURSE FOCUSES ON

✓	Skill Development		Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
✓	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A4CB	PRINCIPLES OF CYBER SECURITY	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 36 h

Syllabus

Unit I Information Security and Cyber Security 7 h

Introduction to Information Security: Principles, Policies – Cyber security Overview – Difference between Information Security and Cyber Security – Common threats in the market – Importance of Cyber Security – Cyber security strategy and its importance – Strategy components.

Unit II Cyber security Methods 6 h

Password Cracking – Malwares – DoS and DDoS Attacks – SQL Injection – Phishing: Different Techniques, Common Phishing Scams, Prevention Measure- Identity Theft: Types, Techniques, Prevention - Attacks on Wireless network: Types, Tools.

Unit III Next Generation Firewalls 9 h

Perimeter Networks: Firewall, Types - Deep Pocket Inspection - Web Proxy and Secure Web gateway - Web Application Firewall-Virtual Private Network - Zero Day Attack Protection - Intrusion Detection and Prevention System – Domain Name System Security - Next Generation Firewalls - Web Security Solutions.

Unit IV Cyber Security Planning 8 h

Security Governance principles, components and Approach-Information Risk Management-Asset Identification-Threat Identification-Vulnerability Identification-Risk Assessment Approaches-Likelihood and Impact Assessment-Risk Determination, Evaluation and Treatment-Security Management Function-Security Policy- - Security Models: Bell La Padula, Biba Integrity, Chinese Wall.

Unit V Security Controls 6 h

People Management-Human Resource Security-Security Awareness and Education-Information Management- Information Classification and handling-Privacy-Documents and Record Management - Physical Asset Management-Office Equipment-Industrial Control Systems-Mobile Device Security - System Development - -Incorporating Security into SDLC

Text Books

1 Ashish Misra, 2022, "Modern Cybersecurity Strategies", 1st edition, BPB Publications.

2 William Stallings, "Effective Cybersecurity: A Guide to Using Best Practices and Standards", 1st edition, Addison-Wesley Professional.

References

1 James Graham, Richar Howard, Ryan Olson, 2011, "Cyber Security Essentials", CRC Press.

2 Nina Godbole, Sunit Belapur, 2011, "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", Wiley India Publications.

3 W.A. Coklin, G. White, 2016, "Principles of Computer Security", 4th edition, McGraw-Hill.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A4EP	JAVA PROGRAMMING	Core Practical	3	-	4	5

PREAMBLE

This course has been designed for students to learn and understand

- Basics of Java Programming
- Concepts of packages, interfaces and exception handling.
- Swing Components and JDBC Connectivity.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamentals of Java Programming.	K1
CO2	Summarize the concepts of packages and interfaces.	K2
CO3	Apply exception handling and multithreading principles to develop applications.	K3
CO4	Illustrate Java event handling through Delegation Event Model.	K2
CO5	Demonstrate interactive Java applications by integrating Swing and JDBC.	K2

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓		✓	✓	
CO2	✓	✓	✓	✓	
CO3	✓	✓	✓		✓
CO4	✓	✓		✓	
CO5	✓				

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A4EP	JAVA PROGRAMMING	SEMESTER IV

Total Credits: 5

Total Instruction Hours: 84 h

Syllabus

Unit I Introduction 16 h

Overview of Java - Java Development Environment - Structure of Java Program: Data Types, Variables and Arrays - Operators and Control Statements.

1. Practice basic Java programs.

2. Programs using arrays.

3. Program to implement control statements.

Unit II Classes, Objects, Packages and Interfaces 17 h

Class Fundamentals - Objects - finalize () method - Inner Classes - super keyword – Packages: Member Access, import packages – Interfaces: Default Interface Methods, Variables and Applying Interface.

4. Practice programs using classes.

5. Practice inner class functions and demonstrate their interaction.

6. Practice package creation, importing, and implementing an interface with default methods.

Unit III Exception Handling and Multithreaded Programming 17 h

Exception Handling: Fundamentals, Types - Uncaught Exceptions - Creating own Exceptions - Multithreaded Programming: Java Thread Model, creating a Thread, creating multiple Threads - Thread Priorities - Interthread Communication, Suspending, Resuming and Stopping Threads- Synchronization.

7. Program to create threads with different priorities.

8. Practice thread communications and managing thread cooperation using wait() and notify().

9. Practice the programs using Exception handling.

Unit IV Event Handling and Swing 17 h

Event Handling Mechanisms - Delegation Event Model - Event Classes - Key Event Class - Event Listener Interface - Swing: Origin of Swing - Features -Components and Containers – Packages - Simple Swing Application - Event Handling.

10. Implement event listeners for simple button clicks.

11. Demonstrate keyboard events using Listener interface.

12. Practice mouse events using Listener interfaces.

13. Practice basic Swing components and button events.

Unit V GUI and JDBC 17 h

Exploring Swing- Swing menus- JDBC- Architecture - JDBC vs ODBC - Types of Drivers - Components - Interfaces and classes – Database connectivity using JDBC.

14. Practice working with Swing menus.

15. Build applications using Swing and JDBC enforcing security.

Text Books

1 Herbert Schildt 2018, "Java: The Complete Reference" 13th edition, TMH.

2 [Cay S Horstmann, 2020, "Core Java Volume-1 Fundamentals", 11thEdition, Pearson Indian Education Services Pvt. Lt, India.]

References

1 John R Hubbard,2011," Programming with Java", 2nd edition, TMH.

2 Balagurusamy. E, 2015, "Programming with Java: A Primer", 5th edition, TMH

3 Joshua Bloch, 2018, "Effective Java" 1st edition, Pearson Education.

234CY1A4SP	NETWORK PROGRAMMING	SEMESTER IV

Total Credits: 2
Total Hours: 48 h

S.No	List of Experiments
1	Build a basic Network Topology.
2	Simulate a bus topology using a single backbone cable and multiple PCs.
3	Create a ring topology and understand the flow of data in a looped network
4	Simulate a mesh network by connecting each router to every other router
5	Create a hierarchical tree topology to illustrate levels of network devices.
6	Set up a wireless mesh network to simulate wireless connectivity in a mesh layout.
7	Configure a router and a switch to allow PCs on different subnets to communicate.
8	Create a network with a web server and allow PCs to access it.
9	Capture and view real-time packets on your network interface.
10	Capture and analyze HTTP packets from browsing activity.
11	Capture and examine the TCP 3-way handshake process.
12	Capture ARP packets to observe address resolution on the local network.
13	Analyzing DNS Requests and Responses.
14	Inspecting HTTP GET and POST Requests
15	Capture and view real-time packets on your network interface.

Course Code	Course Name	Category	L	T	P	Credit
235FI1A4IA	FINANCIAL CYBERSECURITY	IDC	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Theories of different types of financial markets.
- Functions of cyber security in banks and other financial institutions.
- Cyber law and complaint procedures.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	know the basic concepts of financial markets	K1
CO2	understand about the Financial Crime	K2
CO3	learn about Cyber Security for Capital Market	K2
CO4	understand Cyber Space and Cyber law in India.	K3
CO5	identify Legal and Regulatory Measures for Financial Security in Cyberspace	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	-	✓-	✓-	✓
CO2	✓	-	-	✓	✓
CO3	✓	✓-	✓	-	✓
CO4	✓	-	✓	✓	✓
CO5	-	✓	-	✓	-

COURSE FOCUSES ON:

☑	Skill Development	☐	Entrepreneurial Development
☐	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☑	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

235FI1A4IA	FINANCIAL CYBERSECURITY	SEMESTER IV

Total Credits: 4
Total Instruction Hours: 48 h

Syllabus

Unit I Financial Market 12 h

Introduction to Financial Markets in India-Role and Importance of Financial Markets, Types of Financial Markets - Capital Market in India - Introduction to Stock Markets - Primary and Secondary market - Money Markets & Debt Markets in India -Banking Institutions – Types – Role.

Unit II Financial Crime 10 h

KYC meaning - KYC Fraud - Customer Care Fraud - Lottery Fraud - Debit card and Credit card fraud - Loan Fraud - Digital payment- Overview of digital payment - Recent development in Digital payment - UPI Fraud - Investment Frauds

Unit III Cyber Security for Financial Market 08 h

Cyber security threats in capital markets - Types of cyber security threats - Impact of cyber threats on capital markets - Essential cyber security measures -Need for prevention of cyber threats in Capital market - Role of AI and ML in cyber security

Unit IV Cyber space and Cyber law 08 h

Introduction to e commerce - Contract aspect in cyber law - Security aspect in cyber law - The criminal aspect of cyber law - Global trend in cyber law - Legal framework for electronic data interchange law - Need for Indian cyber law

Unit V Legal and Regulatory Measures for Financial Security in Cyberspace 10 h

Information technology act 2000 - Electronic governance - Laws for Protecting Financial Systems from Cyber Threats - National Cyber Security Policy 2023 - Impacts of Financial Fraud - ISO 27001 - The RBI Cyber Security Framework for Banks (2016) - Cyber Safety Tips

Note: Distribution of Marks: Theory 100%
Case studies related to the above topics to be discussed (Examined internal only)

Text Books

1. Bhalla V.K, 2014, "Fundamentals of Investment Management", Second Edition, Sultan Chand & Sons, New Delhi.
2. Indian Institute of Banking & Finance, 2012, "Prevention of Cyber Crimes and Fraud Management", Second Edition, Macmillan Publishers India Pvt. Ltd., Chennai.

References

1. Verma Amita, 2009, "Cyber Crimes and Law", Central Law Publications, Allahabad,
2. Dasgupta M, 2009, "Cyber Crimes In India – A Comparative Study", Eastern Law House, Kolkata,
3. Barkha and Mohan Rama U, 2023, "Cyber Law and Crimes – IT Act 2000 and Computer Crime Analysis", Asia Law House, Hyderabad.
4. Scott Charney, 2021, "The Internet, Law Enforcement and Security, Internet Policy Institute".

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APPROVED
BoS- 2nd 9/11/24 | AC - 18th 26/11/24 | GB -

Academic Council
CHAIRMAN
Dr.N.G.P. Arts and Science

Course Code	Course Name	Category	L	T	P	Credit
234CY1A5CA	LINUX AND SHELL PROGRAMMING	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the Linux environment
- the fundamentals of shell programming
- tools and methods for Linux application development

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic Linux commands.	K1
CO2	Understand and navigate the Linux file system using command-line interface (CLI).	K3
CO3	Analyze directories and file system permissions.	K2
CO4	Implement control flow structures (loops, conditionals) in shell scripts.	K3
CO5	Demonstrate different softwares in Linux.	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓	✓	
CO2	✓			✓	✓
CO3		✓	✓		✓
CO4	✓	✓			✓
CO5			✓	✓	✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A5CA	LINUX AND SHELL PROGRAMMING	SEMESTER V

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction 8 h

Introduction – History of UNIX and Linux – System Features – Software Features – Differences between Linux and Other Operating System – hardware requirements - sources of Linux Information Linux Startup and Setup: User accounts – Accessing the Linux system – Linux Commands

Unit II Linux Shell 10 h

The command line – Command line Editing - Creating files using the vi editor: Text editors – The vi editor - Managing Documents: Locating files in LINUX – Standard files – Redirection – Filters – Pipes - Ending Processes: ps and kill - The C Shell: Command Line Editing and - C Shell Command Line Editing - C Shell History - The TCSH Shell - TCSH Command Line Completion - TCSH History Editing - TheZ-shell.

Unit III Linux File Structure 10 h

Linux file types – File structures – managing Files - Managing Directories – File and Directory operation – File Management Operation: File and Directory permissions

Unit IV Shell Scripts and Programming 10 h

Shell Variables – Definition of Variables - Variable values - Strings – Values from Linux commands – Shell Scripts – User Defined commands - Executing Scripts – Script Arguments – Environment Variables and Subshells Variable – Control Structures – Test operations – Conditional Control Structures –Test Expressions – Shell conditions – Shell loops – Simple Programs using shell scripts.

Unit V Linux Softwares 10 h

Software Management -Software Package Types - Red Hat Package Manager (RPM) - Debian - Installing Software from Compressed Archives: .tar.gz - Command and Program Directories - Office and Database Applications - Running Microsoft Office on Linux: Cross Over OpenOffice.org - KOffice - KOffice Applications - GNOME Office - Document Viewers - PDAAccess-DatabaseManagement-SQLDatabases(RDMS)-XbaseDatabases-Editors - GNOME Editor: Gedit - K Desktop Editors

Text Books

1. Richard Petersen, 2019, "Linux: The Complete Reference", 6th Edition, Tata McGraw- Hill Publishing Company Limited, New Delhi.
2. Neil Matthew, Richard Stones, Alan Cox, 2007, "Beginning Linux Programming", 3rd Edition, Wrox Publication.

References

1. Daniel P. Bovet, 2022, "Understanding the Linux Kernel", 3rd Edition, Shroff Publishers and Distributers-Mumbai.
2. Robert Love, 2020, "Linux Kernel Development", 3rd Edition, Pearson Education, New Delhi.
3. Remy Card, 2013,"Linux Kernal Book", 1st Edition, Wiley New Delhi.
4. Mike McGrath, 2018, "Linux in easy Steps", 1st Edition, BPB New Delhi.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A5CB	SECURE SOFWARE ENGINEERING	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the principles of software engineering
- the technical foundations of software engineering, from process models and agile methods
- professional software development practices aligned with industry standards

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the principles of professional software development	K1
CO2	Prepare a software requirements specification document adhering to industry standards	K3
CO3	Develop use case and sequence diagrams.	K2
CO4	Apply test-driven development practices to write effective unit tests	K3
CO5	Define key dependability properties such as availability, reliability, safety, and security	K1

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓	✓	
CO2	✓			✓	✓
CO3		✓	✓		✓
CO4	✓	✓			✓
CO5			✓	✓	

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A5CB	SECURE SOFWARE ENGINEERING	SEMESTER V

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction 8 h

Introduction: Professional software development-Software engineering ethics-Software processes: Software process models-Process activities-The rational unified process

Unit II Agile software development and Requirements engineering 10 h

Agile methods-Plan-driven and agile development-Extreme Programming-Agile project management-Scaling agile methods. Requirements Engineering: Functional and non-functional requirements-Requirements specification, validation and management.

Unit III System modeling 10 h

Context models-Interaction models: Use case modeling-Sequence diagrams - Structural models: Class Diagrams-Generalization-Aggregation -Behavioral models: Data-driven modeling - Event-driven modeling - Model-driven engineering: Model-driven architecture-Executable UML

Unit IV Software testing 10 h

Introduction-Development testing: Unit Testing- Component Testing-System Testing-Test-driven development-Release testing: Requirements-based testing-Scenario testing-Performance testing-User testing.

Unit V Dependability and security 10 h

Dependability properties-Availability and reliability-Safety-Security-Risk-driven requirements specification-Safety Specification-Security specification.

Text Books

1 Ian Sommerville, 2017, "Software Engineering" ,9th Edition, Addison-Wesley.

References

1 Richard E Fairley, 2016, "Software Engineering Concepts", Tata McGraw Hill, New Delhi.

2 Roger S. Pressman, 2016, "Software Engineering: A Practitioners Approach", 7th Edition, McGraw Hill Education.

3 Rajiv Chopra,2014, "Modern Software Engineering", 1st Edition, I. K. International - New Delhi.

4 Rajib Mall, 2014, "Fundamentals of Software Engineering", 4th Edition, Prentice Hall India Learning Pvt Ltd.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A5CC	MACHINE LEARNING IN CYBER SECURITY	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- machine learning techniques for cybersecurity applications
- time series analysis and ensemble modeling for cybersecurity to detect anomalies.
- context-based security event detection techniques.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamentals of machine learning and its role in cybersecurity	K2
CO2	Apply time series analysis in cybersecurity to identify security trends	K3
CO3	Detect malicious pages based on their URL structure and content.	K2
CO4	Develop spam detection models using machine learning algorithms	K3
CO5	Apply AI techniques for detecting and preventing cyber threats.	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓	✓	
CO2	✓			✓	✓
CO3		✓	✓		✓
CO4	✓	✓	✓	✓	✓
CO5			✓	✓	✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A5CC	MACHINE LEARNING IN CYBER SECURITY	SEMESTER V

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction to Artificial Intelligence and Machine Learning 9 h

Introduction to AI: Definition- Branches -Applications- Current Trends- Basics of Machine learning in Cyber Security: Data in Machine Learning- Machine learning Algorithm Types - Machine Learning Architecture- Hands on Machine Learning: Python Packages

Unit II Time Series Analysis and Ensemble Modelling 10 h

Time Series Analysis- Classes of Time Series Models- Time Series Decomposition- Time Series Analysis in Cyber Security: Trends and Seasonal Spikes- Predicting DDoS Attacks-Ensemble Learning Methods: Types- Cyber Security with ensemble techniques- Detecting Cyber Attacks.

Unit III Legitimate and Lousy URL 9 h

Abnormalities in URL- Detecting malicious pages- Detecting malicious URLs: Logistic regression- Support Vector Machine- Multiclass Classification- Characteristics of Completely Automated Public Turing test to tell Computers and Humans Apart (CAPTCHA)- Using AI to crack CAPTCHA

Unit IV Spam Email Spoofing and Network Anomaly Detection 10 h

Spam Email Types- Spam Detection-Network Anomaly Detection using k means: Stages of Network Attack- Windows event Logs- Data Modeling- k means algorithm.

Case Study: Spam and Network Anomaly Detection in a Financial Institution.

Unit V Context Based Malicious Event Detection 10 h

Adware- Bots- Bugs- Ransomware- Rootkit-Spyware- Trojan Horses- Viruses- Worms- Malicious data injection within Databases and Wireless Sensors- Malicious URL Detection with Decision Trees.

Case Study: Detecting Ransomware and Rootkit Attacks Using Machine Learning.

Text Books

1. Dr. Nilakshi Jain, 2019, "Artificial Intelligence -Making a System Intelligent", 1st Edition, Wiley India Pvt. Ltd
2. Soma Halder, Sinan Ozdemir, 2018,"Hands-On Machine Learning for Cybersecurity" 1st Edition, Packt Publishing

References

1. Brij B. Gupta and Quan Z. Sheng, 2019, "Machine Learning for Computer and Cyber Security: Principle, Algorithms, and Practices", 1st Edition, CRC Press.
2. Christopher M Bishop, 2010, "Pattern Recognition and Machine Learning", Springer.
3. Ethem Alpaydın,2020, "Introduction to Machine Learning", 3rd Edition, MIT Press.
4. Tom Mitchell, 2019, "Machine Learning", 1st Edition McGraw Hill Education.

234CY1A5CP	LINUX AND SHELL PROGRAMMING	SEMESTER V

Total Credits: 2
Total Instructions Hours: 48 h

S.No.	Contents
1	Use uname, lsb_release, and cat /etc/os-release to find details about the Linux system. Create a practice folder and try basic commands.
2	Open and edit a file using: nano, vi, or gedit.
3	Create a bash script and practice basic programs.
4	Creating Files using vi Editor.
5	Write a bash script to copy all .txt files from one directory to another and log the time it ran.
6	Write a Script to i. Print CPU info, memory, disk usage, and IP address. ii. List all logged-in users and their login times.
7	Linux shell script to implement conditional statements
8	Linux shell script to implement looping statements.
9	Linux Shell script to design a Menu-Driven Calculator.
10	Launch LibreOffice and practice create documents
11	Run Microsoft Office using PlayOnLinux
12	Create and query an SQLite database

234CY1A5CQ	MACHINE LEARNING IN CYBER SECURITY	SEMESTER V

Total Credits: 2
Total Instructions Hours: 48 h

S.No.	Contents
1	Implementing Basic Machine Learning Model for Intrusion Detection
2	MongoDB with Python: Storing and Retrieving Cybersecurity Logs.
3	Time Series Analysis for Cybersecurity: Detecting Anomalous Traffic Patterns.
4	Predicting DDoS Attacks Using Time Series Forecasting.
5	Cybersecurity Threat Detection Using Ensemble Learning
6	Malicious URL Detection using Logistic Regression and Decision trees.
7	Detecting Malicious URLs Using Support Vector Machine (SVM).
8	Cracking CAPTCHA Using AI and Image Processing
9	Spam Email Detection Using Naïve Bayes Classifier.
10	Ransomware and Rootkit Detection Using Machine Learning.
11	Windows Event Log Analysis for Security Threat Detection.
12	Detecting Malicious Data Injection in Wireless Sensor Networks.

234CY1A5SP	DIGITAL FORENSICS ANALYSIS	SEMESTER V

Total Credits: 2
Total Instructions Hours: 48 h

S.No.	Contents
1	Creating a Case in Autopsy.
2	Adding and Ingesting a Disk Image.
3	File and Metadata Analysis.
4	Keyword Search: Search for specific terms across data.
5	Extracting and Analyzing Email Headers.
6	Extract Browser History and analyze user browsing behavior.
7	Recovering Deleted Files.
8	Create and export forensic reports.
9	Timeline Analysis with the ingested image.
10	USB Device Detection and identify usage of external storage devices.
11	Email Artifact Analysis and Correlating Artifacts Across Sources.
12	Registry and OS Artifacts.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A5DA	NETWORK SECURITY AND CRYPTOGRAPHY	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- attacks on computers and how to handle the security issues
- digital certificate and public key infrastructure protocols
- firewalls in network securities

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the need for computer security and various security approaches.	K2
CO2	Understand various symmetric key algorithms and their modes of operation.	K2
CO3	Analyze the working and implementation of SSL and TLS protocols.	K3
CO4	Apply the principles and concepts of authentication methods, Kerberos, and cryptographic solutions.	K3
CO5	Interpret the security firewalls and private networks.	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓	✓	
CO2	✓			✓	✓
CO3		✓	✓		✓
CO4	✓	✓			✓
CO5			✓	✓	

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A5DA	NETWORK SECURITY AND CRYPTOGRAPHY	SEMESTER V

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction 8 h

Computer Security: Introduction -Need for security - Security approaches - Principles of Security -Types of attacks. Cryptography Techniques: Basic terms- Plain text and Cipher text -Substitution techniques - Transposition techniques - Encryption and decryption - Symmetric and Asymmetric key cryptography.

Unit II Symmetric Key Algorithms and AES 10 h

Symmetric Key Algorithms and AES: Introduction - Algorithm Types and modes - An overview of Symmetric key Cryptography - Data Encryption Standard (DES) - Blowfish - Advanced Encryption Standard (AES). Asymmetric Key Algorithms: Digital Signature and RSA: Introduction - Brief history of Asymmetric Key cryptography - An Overview of Asymmetric Cryptography - The RSA algorithm - Symmetric and Symmetric Cryptography together - Digital Signatures.

Unit III Public Key Infrastructure 10 h

Public Key Infrastructure (PKI): Introduction- Private key Management- the PKIX Model - Public key Cryptography standards - XML, PKI and Security -Internet Security Protocols: Introduction - Basic Concepts - Secure Socket Layer - (SSL) - Transport Layer Security (TLS) -3D secure Protocol - Electronic Money - Email Security

Unit IV User Authentication and Kerberos 10 h

User Authentication and Kerberos: Introduction - Authentication basics - Passwords - Authentication Tokens- biometric authentication - Kerberos - Key distribution centre - Security Handshake Pitfalls. Cryptography in JAVA, .NET, and Operating System: Introduction - Cryptographic Solution using JAVA - Cryptographic Solutions using Microsoft .NET Framework - Cryptographic Toolkits - Security and Operating Systems - Database Security.

Unit V Network Security Firewalls and Virtual Private Networks 10 h

Network Security Firewalls and Virtual Private Networks (VPN): Introduction - Brief introduction to TCP/IP - Fire Walls-Types of firewall-Firewall Configuration- Limitation of Firewall - IP security-IPSec Overview-IPSec Key Management -

Virtual Private networks (VPN) – Intrusion.

Text Books

1 Atul Kahate, 2022, "Cryptography and Network Security", 1st Edition, Tata McGraw-Hill Publishing.

2 William Stallings, 2017, "Cryptography and Network Security - Principles and Practice", 7th Edition, Pearson Education.

References

1 Michael E. Whitman, 2019, "Principles of Information Security",6th Edition, Cengage Learning India Pvt Ltd – Delhi.

2 Bhushan Trivedi, 2022,"Cryptography and Network Security",1st Edition, BPB - New Delhi.

3 Pankaj Sharma, 2023, "Information Security", 1st Edition, S.K. Kataria and Sons - New Delhi.

4 Charles P. Pfleeger, 2018, "Security in Computing", 5th Edition, Pearson India Education – Noida.

Course Code	Course Name	Category	L	T	P	Credit
234CY1A5DB	CYBERCRIME INVESTIGATION AND DIGITAL FORENSICS	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the foundational concepts of cybercrime.
- various forms of cyber offenses and its challenges.
- digital forensics, its methodologies, and applications.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the classifications of cybercrimes.	K2
CO2	Identify and analyze various cyber offenses and attack methods.	K3
CO3	Evaluate the security risks and mitigation strategies associated with mobile and wireless technologies	K2
CO4	Apply the principles and tools of computer forensics to investigate digital crimes.	K3
CO5	Demonstrate the ability to conduct forensic analysis on handheld devices.	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓		
CO2	✓			✓	✓
CO3		✓	✓		✓
CO4	✓	✓		✓	✓
CO5			✓	✓	

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A5DB	CYBERCRIME INVESTIGATION AND DIGITAL FORENSICS	SEMESTER V

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Cyber Crime Introduction 9 h

Introduction-Cyber Crime and Information Security- Classifications of Cybercrimes- Cyber Crime: The Legal Perspective- Cyber Crimes: An Indian Perspective- A Global Perspective on Cyber Crime.

Unit II Cyber Offenses 9 h

Cyber offenses: Attack by Criminals-Social Engineering-Cyber Stalking- Cyber Café and Cyber Crimes-Botnets- Attack Vector- Cloud Computing.

Unit III Cyber Crime: Mobile and Wireless Devices 10 h

Introduction- Proliferation of Mobile and Wireless Devices- Trends in Mobility- Credit Card Frauds- Registry Settings for Mobile devices- Authentication Service Security- Attacks on Mobiles- Mobile Devices Security Implications for organizations and Security Issues in Mobile Devices.

Unit IV Computer Forensics 10 h

Introduction -Background of Cyber Forensics-Need for Computer Forensics- Cyber Forensic and Digital Evidence- Forensics Analysis of Email- Digital Forensics Life Cycle- Network Forensics- Computer Forensics Investigation Approaches.

Unit V Forensics of Handheld devices 10 h

Computer Forensics for OSI Model- Forensics and Social Networking Sites- Forensics in Handheld Devices: Cell Phone Working characteristics- Handheld Devices and Digital Forensics- Tool Kits for Handheld Device Forensics.

Case Study: Confidential Data Theft Through Forensics Investigation.

Text Books

1 Nina Godbole, 2019, "Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives", 1st Edition, Wiley India Publications

References

1 John Sammons,2014, "The Basics of Digital Forensics: The Primer for Getting Started in Digital Forensics", 2nd Edition, Syngress.

2 Chad Steel, 2006, "Windows Forensics: The field guide for conducting corporate computer investigations", Wiley India Publications.

3 Nelson Phillips and Enfinger Steuart, 2009, "Computer Forensics and Investigations", Cengage Learning, New Delhi, 2009.

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Course Code	Course Name	Category	L	T	P	Credit
234CY1A5DC	DATA WAREHOUSING AND MINING	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the foundational concepts of data warehousing and data mining.
- large-scale data through warehousing, mining and clustering techniques
- the various data mining algorithms.

COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamental concepts of Data Warehousing.	K1
CO2	Interpret various Data Warehouse schemas.	K3
CO3	Summarize the significance of Data Mining and its tasks.	K2
CO4	Apply Association Rule Mining algorithms and classifiers.	K3
CO5	Implement basic clustering algorithms on different types of data	K3

MAPPING WITH PROGRAMME OUTCOMES

COs/POs	PO1	PO2	PO3	PO4	PO5
CO1	✓	✓	✓	✓	
CO2	✓			✓	✓
CO3		✓	✓		✓
CO4	✓	✓		✓	✓
CO5			✓	✓	✓

COURSE FOCUSES ON

✓	Skill Development	✓	Entrepreneurial Development
✓	Employability	✓	Innovations
✓	Intellectual Property Rights		Gender Sensitization
	Social Awareness/ Environment		Constitutional Rights/ Human Values/ Ethics

234CY1A5DC	DATA WAREHOUSING AND MINING	SEMESTER V

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction to Datawarehouse 8 h

The Need for an Operational Data Store (ODS)- Operational Data Store: Types-Architecture- Advantages-Data Warehouse: History- Definition- Architecture-Benefits-Data Marts-Comparative Study of Data Warehouse with OLTP and ODS.

Unit II Data Warehouse Schema and Online Analytical Processing 10 h

Introduction to Data Warehouse Schema- Star Schema-Snowflake Schema-Fact Constellation Schema-Online Analytical Processing (OLAP): Introduction-Representation of Multi-dimensional Data-Types of OLAP Servers-OLAP Operations.

Unit III Introduction to Data Mining 10 h

Introduction- Importance of Data Mining- Data Mining functionalities-Classification- Data Mining Task Primitives- Issues in Data Mining- Data Preprocessing: Data Cleaning- Data Integration and Transformation- Data Reduction- Data Discretization and Concept Hierarchy Generation.

Unit IV Association Rule Mining and Classification 10 h

Market Basket Analysis-Frequent Item sets, Closed Item sets, and Association Rules-Frequent Pattern Mining-Frequent Itemset Mining Methods-Classification by Decision Tree Induction-Bayesian Classification-Rule-Based Classification.

Unit V Clustering 10 h

Cluster Analysis-Types of Data in Cluster Analysis-Partitioning Methods Hierarchical Methods-Density-Based Methods.

Text Books

1 Parteek Bhatia, 2019, "Data Mining and Data Warehousing: Principles and Practical Techniques", 1st edition, Cambridge University Press - New Delhi.

2 Jiawei Han, 2006, "Data Mining: Concepts and Techniques", 2nd Edition, Pearson Education

References

1 Alex Bezon, Stephen J. Smith 2010, "Data Warehousing, Data Mining & OLAP", McGraw- Hill.

2 Riswan Ahmed. P, 2015, "Data Warehousing and Data Mining", 1st edition, Margham - Chennai.

3 Pang-Ning tan, 2022, "Introduction to Data Mining", 2nd Edition, Pearson India Publications.

4 Hongbo Du, 2019, "Data Mining Techniques and Applications: An Introduction", 4th Edition, Cengage New Delhi.

234CY1A5GA	BASICS OF CYBER SECURITY	SEMESTER V

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

Unit I Introduction to Information Security and Cybersecurity 4 h

Information security - Principles: Confidentiality - Integrity and Availability - Policies - Need for an information security policy - Building block of information security policy - Cybersecurity - Definition of cybersecurity - Difference between information security and cybersecurity.

Unit II Cybercrime 5 h

Introduction to Cybercrime - Cyberspace - Cybersquatting - Cyberpunk - Cyberwarfare - Prevention of Cybercrime - types of Cybercriminals - Cybercrime against individuals, property - organization.

Unit III Methods and Tools in Cyber Line 5 h

Password Cracking - Technique - Prevention measures - Tools - Malwares: - Keyloggers - Types - Spyware - Types - Virus - Types - Worms - Types - Difference between virus and worms- Trojans - Types - Backdoors - Steganography - Types.

Unit IV Cyberspace and Cyber Law 5 h

Introduction to e Commerce- Contract Aspects in Cyber Law- Security Aspects of Cyber Law- Intellectual Property Aspect in Cyber Law- Evidence Aspect in Cyber Law- Criminal Aspects in Cyber Law.

Unit V Phishing and Wireless Network Attacks 5 h

Phishing - phishing emails - Techniques - e-mail phishing scam - website phishing scams - prevention measures - Identity Theft - Types - Techniques - Prevention measures - Wireless Network Attacks - types - techniques for securing wireless network - Tools for WNA.

Text Books

1 Nilakshi Jain and Ramesh Menon, 2020, "Cyber Security and Cyber Laws", 1st Edition, Wiley India.

References

1 Anand Shinde, 2021, "Introduction to Cyber Security", 1st Edition, Notion Press Media Pvt Ltd.

2 Raef Meeuwisse,2017, "Cybersecurity for Beginners", 2nd Edition, Cyber Simplicity Ltd

3 Lucas Glisson, "Cyber Security for Beginners Lucas Glisson", 1st Edition, Notion Press

4 Nina Godbole, 2011, " Cyber Security", 1st Edition, Wiley.