



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

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

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

Bachelor of Science in Computer Science with Cognitive Systems
(For the students admitted during the academic year 2023-24 onwards)

Programme: B.Sc. Computer Science with Cognitive Systems

Eligibility

Candidates for admission to the first year of the **Bachelor of Science (Computer Science with Cognitive Systems)** 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 anyone of the following subjects: Mathematics / Computer Science and wherever the students have not studied Mathematics, the necessary Mathematics knowledge be imparted through Tutorial/Bridge Course.

Programme Educational Objectives

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

1. To offer a sufficient core understanding about Computer Science and Cognitive based applications to the students.
2. Graduates will be engaged in a wide range of careers and/or graduate studies in computer science or related fields with a passion for lifelong learning.
3. Students able to complete successfully be able to computer program on their own. Sufficient programming skills will require the use of best practices.
4. To understand of professional, ethical, legal, security, and social issues and responsibilities of the computing profession.
5. Understand how technological advances impact society and the social, legal, ethical and cultural ramifications of computer technology and their usage.



PROGRAMME OUTCOMES

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

PO Number	PO Statement
PO1	The graduates are relied upon to apply mathematical foundations, algorithmic standards and software engineering hypothesis in displaying, plan and direct of trials just as information interpretation and analysis.
PO2	Dissect an unpredictable computing issue and to apply principles of computing and other significant disciplines to recognize solutions.
PO3	Graduates will create solid thinking aptitudes to empower them to take effective choices in key administration and promoting positions and get presented to bleeding edge improvements in computing technology innovations.
PO4	Creating and executing solution based frameworks or potentially forms that address issues and additionally improve existing frameworks inside in a computing based industry.
PO5	Implementation of cognitive-skill based solutions for the betterment of society keeping the environmental context in mind, be aware of professional ethics and be able to communicate effectively.



B.Sc. Computer Science with Cognitive Systems

Credit Distribution

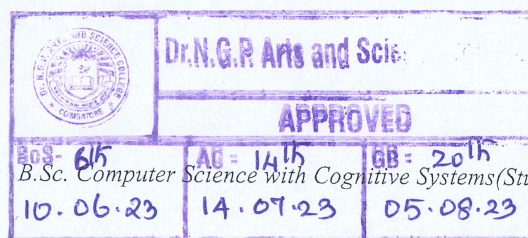
Part	Subjects	No. of Papers	Credit	Semester No.
I (12 Credits)	Tamil / Hindi / French/Malayalam	4	4 x 3 = 12	I to IV
II (12 Credits)	English	4	4x 3 = 12	I to IV
III (108 Credits)	Core (Credits 5)	2	2x5=10	V
	Core (Credits 4)	9	9x4=36	I to VI
	Core (Credits 3)	2	2x3=6	III & IV
	Core (Credits 5)Embedded -Core	2	2x5=10	III & IV
	Core Practical (Credits 2)	4	4x2=8	I to VI
	Inter Departmental Course (IDC)	4	16	I to IV
	Discipline Specific Elective (DSE)	3	3x 4 =12	V & VI
	Skill Enhancement Course (SEC)	4	8	III, IV, V & VI
IV (8 Credits)	Industrial Training	1	2	V
	Environmental Studies(AECC)	1	2	I
	Basic Tamil/ Advanced Tamil/Human Rights and Women's Rights (AECC)	1	2	II
	Innovation & IPR, Innovation, IPR & Entrepreneurship (AECC)	1	2	VI
V (2 Credits)	Generic Elective (GE)	1	2	V
	NSS/NCC/YRC/RRC/Yoga/Sports/Ciubs	-	2	I - II
TOTAL CREDITS			142	



CURRICULUM 2023-24
B. Sc. COMPUTER SCIENCE WITH COGNITIVE SYSTEMS

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
234CG1A1CP	Core Practical-I	C Programming	-	-	4	3	40	60	100	2
234CG1A1CQ	Core Practical-II	Introduction to worksheets	-	-	4	3	40	60	100	2
232MT1A1IC	IDC-I	Numerical Methods and Statistics	4	1	-	3	25	75	100	4
Part-IV										
233MB1A1AA	AECC-I	Environmental Studies	2	-	-	-	50	-	50	2
Part-V										
234CG1A1XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports/ Clubs	-	-	-	-	50	-	50	1
Total			18	3	9	-	-	-	700	21

[Signature]
 Bos Chairman / HoD
 Dept. of Computer Science with Cognitive Systems
 Dr. N. G. P. Arts and Science College
 Coimbatore - 641 048
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B.Sc. Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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-II	Data Structures	4	1	-	3	25	75	100	4
234CG1A2CA	Core-III	Operating Systems	4	-	-	3	25	75	100	4
234CG1A2CP	Core Practical-III	Operating Systems	-	-	4	3	40	60	100	2
232MT1A2IC	IDC-II	Discrete Mathematics	4	1	-	3	25	75	100	4
Part-IV										
231TL1A2AA/ 231TL1A2AB/ 235CR1A2AA	AECC-II	Basic Tamil/ Advanced Tamil/ Human Rights and Women's Rights	2	-	-	-	50	-	50	2
Part-V										
234CG1A2XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports/ Clubs	-	-	-	-	50	-	50	1
Total			22	3	5	-	-	-	700	23

[Signature]

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APPROVED		
37th 17.10.2023	AC-16th 13.12.2023	GB-21st 05.01.2024



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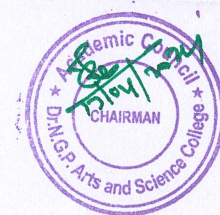
B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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										
234CA1A3CA	Core -IV	Database Management Systems	4	-	-	3	25	75	100	4
234CT1A3EP	Core Practical-IV	Java Programming	3	-	4	3	40	60	100	5
234CG1A3CA	Core-V	Computer Networks	3	-	-	3	25	75	100	3
234CG1A3SP	SEC Practical-I	SQL-PL/SQL	-	-	4	3	40	60	100	2
232MT1A3IC	IDC-III	Operations Research	4	-	-	3	25	75	100	4
Total			20	2	8	-	-	-	700	24

[Signature]

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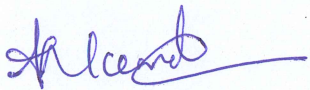
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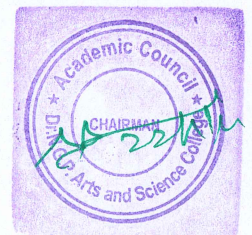
B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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										
234CG1A4CA	Core -VI	Cloud and Virtualization	4	-	-	3	25	75	100	4
234DA1A4EP	Core Practical -V	Python for Data Science	3	-	4	3	40	60	100	5
234CG1A4CB	Core - VII	Artificial Intelligence	3	-	-	3	25	75	100	3
234CG1A4SP	SEC Practical - II	Virtualization Tools	-	-	4	3	40	60	100	2
235BP1A4IA	IDC - IV	Industrial Psychology	4	-	-	3	25	75	100	4
Total			20	2	8	-	-	-	700	24



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APPROVED		
BoS- 9th 09.11.2024	AC - 18th 26.11.2024	GB -



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B.Sc. Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Fifth Semester										
Part–III										
234CG1A5CA	Core-VIII	Digital Technologies	4	1	-	3	25	75	100	5
234IT1A5CB	Core-IX	Cyber Security and Ethics	4	1	-	3	25	75	100	4
234CG1A5CB	Core-X	Software Testing	4	1	-	3	25	75	100	5
234CG1A5CP	Core Practical-V	Digital Technologies	-	-	4	3	40	60	100	2
234CG1A5SP	SEC Practical-III	Selenium Automation Testing	-	-	4	3	40	60	100	2
234CG1A5DA	DSE –I	Process Management	4	1	-	3	25	75	100	4
234CG1A5DB		Machine Learning								
234CG1A5DC		Infrastructure Management								
234CG1A5TA	IT	Industrial Training				3	40	60	100	2
Part–IV										
234CG1A5GA	GE	Smart Living with IoT	2	-	-	3	50	-	50	2
Total			18	4	8	-	-	-	750	26



Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Sixth Semester										
Part–III										
234CG1A6CA	Core-XI	Client Relationship Management	4	-	-	3	25	75	100	4
234CG1A6CB	Core-XII	Natural Language Processing	4	-	-	3	25	75	100	4
234CG1A6SP	SEC Practical-IV	ServiceNow Automation	-	-	4	3	40	60	100	2
234CG1A6CV	Core-XIII	Project	-	-	8	3	40	60	100	4
234CG1A6DA	DSE –II	Data Mining	4	-	-	3	25	75	100	4
234CG1A6DB		Cognitive Computing								
234CG1A6DC		Internet of Things and its applications								
234CG1A6DD	DSE –III	Deep Learning	4	-	-	3	25	75	100	4
234CG1A6DE		IT Infrastructure Library								
234CG1A6DF		Human Computer Interaction								
Part - IV										
233BC1A6AA	AECC-III	Innovation, IPR and Entrepreneurship	2	-	-	3	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	234CG1A5DA	Process Management
2	234CG1A5DB	Machine Learning Principles
3	234CG1A5DC	Infrastructure Management

Semester VI (Elective II)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	234CG1A6DA	Data Mining
2	234CG1A6DB	Cognitive Computing
3	234CG1A6DC	Internet of Things and its applications

Semester VI (Elective III)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	234CG1A6DD	Deep Learning
2	234CG1A6DE	IT Infrastructure Library
3	234CG1A6DF	Human Computer Interaction



GENERIC ELECTIVE COURSES (GE)

The following are the courses offered under Generic Elective Course

Semester V (GE)

S. No.	Course Code	Name of the Course
1	234CG1A5GA	Smart Living with IoT

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	234CG1ASSA	Software Project Management
2	234CG1ASSB	Data Center Management



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 one Basic Tamil course in 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 45 th working day)	5
2	Model (All 5 Units) (On completion of 85 th 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	<ul style="list-style-type: none"> • Engagement in class • Listening Skills • Behaviour
2	Case Study Presentation/ Term Paper	<ul style="list-style-type: none"> • Identification of the problem • Case Analysis • Effective Solution using creativity/imagination
3	Field Study	<ul style="list-style-type: none"> • Selection of Topic • Demonstration of Topic • Analysis & Conclusion
4	Field Survey	<ul style="list-style-type: none"> • Chosen Problem • Design and quality of survey • Analysis of survey
5	Group Discussion	<ul style="list-style-type: none"> • Communication skills • Subject knowledge • Attitude and way of presentation • Confidence • Listening Skill
6	Presentation of Papers in Conferences	<ul style="list-style-type: none"> • Sponsored • International/National • Presentation • Report Submission
7	Industry Visit	<ul style="list-style-type: none"> • Chosen Domain • Quality of the work



		<ul style="list-style-type: none"> • Analysis of the Report • Presentation
8	Book Review	<ul style="list-style-type: none"> • Content • Interpretation and Inferences of the text • Supporting Details • Presentation
9	Journal Review	<ul style="list-style-type: none"> • Analytical Thinking • Interpretation and Inferences • Exploring the perception if chosen genre • Presentation
10	e-content Creation	<ul style="list-style-type: none"> • Logo/ Tagline • Purpose • Content (Writing, designing and posting in Social Media) • Presentation
11	Model Preparation	<ul style="list-style-type: none"> • Theme/ Topic • Depth of background Knowledge • Creativity • Presentation
12	Seminar	<ul style="list-style-type: none"> • Knowledge and Content • Organization • Understanding • Presentation
13	Assignment	<ul style="list-style-type: none"> • 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 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 or VI 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 or VI 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
- AECC

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 (AECC)

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 & AECC

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	
<u>Basic Tamil</u>		<u>Advanced Tamil</u>	
Section -A		Section -A	
Choose the correct answer	10x2=20	Choose the correct answer	10x1=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		



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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input checked="" type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231TL1A1TA	TAMIL - I	SEMESTER I
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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



Dr. NGPASC

COIMBATORE | INDIA

B.Sc. Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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

தமிழ் மொழிப்பாடம் - 2022-2023, தொகுப்பு: தமிழ்த்துறை,

- 1 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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input checked="" type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231TL1A1HA	HINDI-I	SEMESTER I
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Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I	13 h
गद्य – नूतनगद्यसंग्रह(जयप्रकाश)पाठ 1- रजियापाठ 2- मक्रीलपाठ 3- बहतापानीनिर्मला पाठ 4- राष्ट्रपितामहात्मागाँधी	
Unit II	13 h
कहानीकुंज- डॉ.वी.पी. 'अमिताभ'(पाठ 1-4)	
Unit III	12 h
व्याकरण : शब्दविचार (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: सुमित्रप्रकाशन 204 लीलाअपार्टमेंट्स, 15 हेस्टिंग्सरोड'अशोकनगरइलाहाबाद-211001
- 2 प्रकाशक: गोविन्दप्रकाशनसदरबाजार, मथुराउत्तरप्रदेश-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 चेन्नई -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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231TL1A1MA	MALAYALAM - I	SEMESTER I
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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

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input checked="" type="checkbox"/>	Innovations
<input checked="" type="checkbox"/>	Intellectual Property Rights	<input checked="" type="checkbox"/>	Gender Sensitization
<input checked="" type="checkbox"/>	Social Awareness/ Environment	<input checked="" type="checkbox"/>	Constitutional Rights/Human Values/Ethics



231TL1A1FA	FRENCH - I	SEMESTER I
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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
<ul style="list-style-type: none"> • Saluer • Enter en contact avec quelqu'un. • Se présenter. • S'excuser 	En cours de cuisine, premiers contacts avec les membres d'un groupe	<ul style="list-style-type: none"> • Comprendre des personnes qui se saluent. • Échanger pour entrer en contact, se présenter, saluer, s'excuser. • Communiquer avec <i>tu</i> ou <i>vous</i>. • Comprendre les consignes de classe • Épeler son nom et son prénom. <p>Computer jusqu'à 10.</p>

Unit II Enchanté I Page 20 12 h

Objectifs de Communication	Tâche	Activités de réception et de production orale
<ul style="list-style-type: none"> • Demander de se présenter. • Présenter quelqu'un. 	Dans la classe de français, se présenter et remplir une fiche pour le professeur.	<ul style="list-style-type: none"> • Comprendre les informations essentielles dans un échange en milieu professionnel. • Échanger pour se présenter et présenter quelqu'un.

Unit III J'adore I Page 30 12 h

Objectifs de Communication	Tâche	Activités de réception et de production orale
<ul style="list-style-type: none"> • Exprimer ses goûts. 	Dans un café, participer à une soirée de rencontres rapides et remplir de taches d'appréciation	<ul style="list-style-type: none"> • Dans une soirée de rencontres 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
<ul style="list-style-type: none"> Présenter quelqu'un 	Dans un café, participer à une soirée de rencontres rapides et remplir de tâches d'appréciation	<ul style="list-style-type: none"> 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 passées. 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

- 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			✓		✓

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231EL1A1EA	ENGLISH- I	SEMESTER I
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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	✓	✓	✓	✓	

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



234AI1A1CA	PROBLEM SOLVING AND PROGRAMMING IN C	SEMESTER I
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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 Edn), Pearson Education.
- 2 Byron Gottfried, (2018), "Schaum's Outline of Programming with C", (4th Edn.) 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.



234CG1A1CP	CORE PRACTICAL : C PROGRAMMING	SEMESTER I
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Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Programs using formatted I/O statements and expressions.
2	Program to demonstrate arithmetic operations.
3	Programs using decision-making constructs
4	Program using Looping Statements
5	Program to implement String Handling Functions
6	Program to demonstrate array operations.
7	Program using Functions
8	Program to implement Structure
9	Program to implement Union
10	Program to demonstrate graphics application.
11	Program to perform file operations.
12	Program to demonstrate command line arguments.

Note: Out of 12 - 10 Mandatory



234CG1A1CQ	CORE PRACTICAL : INTRODUCTION TO WORKSHEETS	SEMESTER I
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Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Create a basic spreadsheet by entering text, numbers, and formulas.
2	Create a spreadsheet to demonstrate formatting of cells and columns
3	Create a spreadsheet to perform "what if?" calculations
4	Demonstrates the ease of creating charts.
5	Sort ,filter and print portions of a worksheet.
6	Export a table or chart into a Microsoft Word document
7	Create worksheet for VLOOKUP, HLOOKUP and other LOOKUPS.
8	Consolidate several worksheets into one and to link several worksheets to a master worksheet
9	Generating the Report using Excel
10	Create a worksheet to calculate descriptive statistics
11	Estimate a bivariate regression equation and related summary statistics.
12	Create dashboard in Excel using VBA code.

Note: Out of 12 - 10 Mandatory



Course Code	Course Name	Category	L	T	P	Credit
232MT1A1IC	NUMERICAL METHODS AND STATISTICS	IDC	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the method of solving linear system of equations
- the relation between two attributes and measure their efficiency
- 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	recognize the direct and indirect methods for solving algebraic equations	K1
CO2	discuss the method of solving differential and integral problems	K2
CO3	define the parameters of central tendencies and dispersion.	K1
CO4	demonstrate the applications of correlation and regression	K2
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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



232MT1A1IC	NUMERICAL METHODS AND STATISTICS	SEMESTER I
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Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Solution of Algebraic, Transcendental and Linear systems of Equations 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 II Interpolation, Numerical Differentiation and Integration 12 h

Introduction - Finite difference - Newton's formula for forward and backward interpolation - Interpolation with unevenly spaced points: Lagrange's interpolation- Numerical differentiation - maximum and minimum values of a tabulated Function - Numerical integration - Trapezoidal rule - Simpson's 1/3 Rule - Simpson's 3/8 Rule.

Unit III Classification, Measures of Central tendency and Dispersion 13 h

Frequency distribution - 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 - Inter quartile range -Mean deviation - Variance - Standard Deviation - coefficient of variation.

Unit IV Correlation and Regression 11 h

Scatter diagram - Least square method of fitting a regression line - properties - regression line of X on Y- Correlation methods - determination of correlation by graphical method - Correlation Coefficient - Correlation in grouped bivariate data - relationship between correlation coefficients and regression coefficient - Rank correlation.

Unit V Test of Significance and Chi-square Test 11 h

Test of hypothesis for population variance -two types of error - 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

Chi-square Test: test of hypothesis for population variance - test of goodness of fit - test in one way classification - Contingency table - Test of independence of factors - Yate's correction.

Note: 20% Theory and 80% Problem



Text Books

- 1 Sastry S.S., 2012, "Introductory methods of Numerical Analysis", Prentice-Hall of India, New Delhi (Unit I to II)
- 2 Agarwal B L, 2013, Basic Statistics, New age International (P) Limited publishers, New Delhi. (Unit III to V).

References

- 1 Gupta C.B. and Vijay Gupta, 2007, "Introduction to Statistical Methods", S.Chand & Co, New Delhi
- 2 Sanchetti D.C. Kapoor, V.K. 2010. Statistic, S.Chand & Co, New Delhi
- 3 Venkataraman M K, 2004, "Numerical Methods in Science and Engineering", 4th Edition, NPC.
- 4 Veerarajan T, 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 .



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					✓

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



233MB1A1AA	ENVIRONMENTAL STUDIES	SEMESTER I
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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

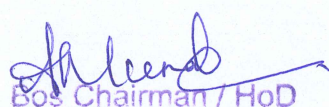
Human Communities and the Environment & Field Work: Human population and growth: Impacts on environment, human health and welfares. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation. Environmental communication and public awareness. Visit to an area to 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.


Bos Chairman / HoD

Dept. of Computer Science with Cognitive Systems
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 Dr. N. G. P. Arts and Science College		
APPROVED		
6th	AC - 14th	GB - 20th
10.06.23	14.07.23	05.08.23



Dr. NGPASC

COIMBATORE | INDIA

B.Sc. Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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
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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 - ஒளவையார் - 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, வழுவுமைதி,வழாநிலை

2. அலுவலகம் சார்ந்த கடிதம் -விண்ணப்பங்கள், வேண்டுகோள்,முறையீடு

3. படைப்பாக்கம்-பொதுத்தலைப்பில் கட்டுரைகள் எழுதுதல்



Dr.NGPASC

COIMBATORE | INDIA

B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input checked="" type="checkbox"/> Intellectual Property Rights	<input checked="" type="checkbox"/> Gender Sensitization
<input checked="" type="checkbox"/> Social Awareness/ Environment	<input checked="" type="checkbox"/> Constitutional Rights/ Human Values/ Ethics



231TL1A2HA	HINDI - II	SEMESTER II
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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 अपार्टमेंट्स, 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 चेन्नई. (Unit V)



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

231TL1A2MA	MALAYALAM- II	SEMESTER II
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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



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

231TL1A2FA	FRENCH- II	SEMESTER II
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Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I

12 h

Proposer, accepter, refuser une invitation. Indiquer la date.	Organiser une soirée au cinéma avec des amis, par téléphone et par courriel.	Comprendre un message d'invitation sur un répondeur téléphonique. Inviter quelqu'un à accepter ou refuser l'invitation.
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Unit II

12 h

Prendre et fixer un rendez-vous. Demander et indiquer l'heure.	Organiser une soirée au cinéma avec des amis, par téléphone et par courriel.	Comprendre des personnes qui fixent un rendez-vous par téléphonique. Prendre un rendez-vous par téléphone
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Unit III

12 h

Exprimer son point de vue positif et négatif. S'informer sur le prix. S'informer sur la quantité. Exprimer la quantité.	En groupes, choisir un cadeau pour un ami.	Exprimer son point de vue sur des idées de cadeau. Faire des achats dans un magasin
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Unit IV

14 h

Demander et indiquer une direction. Localiser (près de, en face de ...). Exprimer l'obligation/ l'interdit. Conseiller.	Suivre un itinéraire à l'aide d'indications par téléphone et d'un plan. Par courrier électronique, donner des informations et des conseils à un ami qui veut voyager.	Comprendre des indications de direction. Comprendre des indications de lieu. Comprendre une chanson. Comprendre de courts messages qui expriment l'obligation ou l'interdiction.
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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

		Donner des conseils à des personnes dans des situations données.
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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)



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

Course Code	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 connotative meanings 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
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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

Sudha Murthy: 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- Character analysis - 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- Reading Advertisements - 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/>> (Unit I)
- 2 Gardiner, Alfred George. On Habits (n.d.). <<https://www.Gutenberg.Org/Files/47429/47429-H/47429-H.html/>> (Unit I)
- 3 Murthy, Sudha. The Enchanted Scorpions. (n.d.). <<https://www.ssgopalganj.in/online/EBooks/CLASS%20VI/Grandma's%20Bag%20of%20Stories%20by%20Sudha%20Murthy.pdf/>> pp-34-39. (Unit I)
- 4 Pinski, David. A Dollar - a One-act Play.<www.one-act-plays.com/comedies/dollar.html/> (Unit I)
- 5 Hart, Steve, Aravind R. Nair, Veena Bhambhani. 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. (Unit V)

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, Lalitha Krishnaswamy & 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

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

234CA1A2CA	DATA STRUCTURES	SEMESTER II
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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 (Θ). 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
234CG1A2CA	OPERATING SYSTEMS	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Basics of operating systems
- The fundamental of process management, memory management and storage management
- The installation of Linux and windows operating system

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 operating systems	K1
CO2	Perform the operation on processes, scheduling and inter process communication	K3
CO3	Apply the various memory management strategies and page replacement techniques	K3
CO4	Use file concepts, access and allocation methods	K3
CO5	Illustrate the installation of Linux and Windows operating systems	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

234CG1A2CA	OPERATING SYSTEMS	SEMESTER II
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Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction to Operating Systems 10 h

Computer Basics: Definition of a Computer - Characteristics and Applications of Computers - Block Diagram of a Digital Computer - Classification of Computers based on size and working

Hardware Basics: Central Processing Unit - I/O Devices-Memory Devices-Secondary storage devices. Operating System Basics: OS Definition, Functions, OS as a Resource Manager, Types of OS, Evolution of OS, Operating System Operations, Operating System Services, User Operating System Interface, System Calls, Types of System Calls.

Unit II Process Management 10 h

Basic Concepts, Process Scheduling, Operations on Processes, Inter-process Communication, Scheduling Criteria, Scheduling Algorithms, Multiple Processor Scheduling

Unit III Memory Management 10 h

Memory Management Strategies, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory Management, Demand Paging, Page Replacement Techniques and Algorithms

Unit IV Storage Management 9 h

File Concept, Access Methods, Directory Structure, Protection, Implementing File Systems, File System Structure, Directory Implementation, Allocation Methods, Free Space Management, Efficiency and Performance, Recovery

Unit V Operating Systems Installation 9 h

Introduction to Linux: Versions, Components, Features; Installation of Linux OS, Managing Directories, Managing Files. Introduction to Windows: Versions, GUI Components, Features; Installation of Client OS and Server OS, Installation of Roles and Features, Managing Users and Groups, Managing Devices and Printers, Storage Management, Managing and Monitoring of Server, Backup and Restoration



Text Books

- 1 Course Material - TATA Consultancy Services
- 2 Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, 2018, "Operating System Concepts", 10th Edition

References

- 1 H.M. Deitel, P.J.Deitel and D.R.Choffnes, "Operating Systems", 2004, 3rd Edition, Pearson Education Publication.
- 2 Mukesh Singhal Niranjana G.Shivaratri, 2019,"Advanced Concepts of Operating System-Distributed, Database and Multiprocessor Operating System", McGraw Hill Education (India) Edition 2001.
- 3 Andrew S.Tanenbaum, 2014, "Modern Operating Systems" 4th Edition, PHI.
- 4 William Stallings, 2012, "Operating Systems: Internals and Design Principles", 3rd Edition, Pearson/Prentice Hall Publication



234CG1A2CP	CORE PRACTICAL : OPERATING SYSTEMS	SEMESTER II
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Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Explain the steps to Install the Windows Client OS
2	Install a Virtual Machine with Windows Client OS
3	Explain the steps to Create Users and Groups.
4	Demonstrate the usage of Devices and Printers
5	Demonstrate the usage of Disk Management Console.
6	Explain the steps to Install the Server OS.
7	Install a Virtual Machine with Windows Server OS.
8	Demonstrate how to Install Roles and Features
9	Demonstrate the Usage of Server Storage Management
10	Explain the various Management and Monitoring requirements
11	Explain the Backup Types and steps to take Backups.
12	Explain the steps to Install the Linux OS.

Note: Out of 12 - 10 Mandatory



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

Course Code	Course Name	Category	L	T	P	Credit
232MT1A21C	DISCRETE MATHEMATICS	IDC	4	1	-	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	Interpret the various optimization problems in term of relations and functions	K3
CO3	Identify applications of logical operators	K2
CO4	Determine the concept of graph theory and trees	K2
CO5	Apply the concept Finite state automation in defining the grammars.	K3

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



232MT1A2IC	DISCRETE MATHEMATICS	SEMESTER II
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Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Set Theory 10 h

Introduction - 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- Fuzzy sets

Unit II Relations and Functions 12 h

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

Unit III Mathematical Logic 10 h

Introduction - 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 - predicate calculus-quantifiers

Unit IV Graph Theory and Trees 14 h

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

Unit V Language, Grammar and Automata 14 h

Introduction - 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 ManoharR, 1997,"Discrete Mathematics Structures withApplications to computer science", 2nd Edition,McGraw Hill International, New York
- 2 VenkataramanM.K. SridharanN. and Chandarasekaran N, 2000,"Discrete Mathematics", The National publishing Company, Chennai.
- 3 KolmanB,Busby R.C.andRoss 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, McGraw-Hill Professional, New Delhi.



231TL1A2AA	PART- IV: BASIC TAMIL	SEMESTER II
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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.



Dr.NGPASC

COIMBATORE | INDIA

B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

Notes:

அகமதிப்பீட்டுத்தேர்வு – வினாத்தாள் அமைப்புமுறை- மொத்த மதிப்பெண்கள் - 50

சரியான விடையைத் தேர்வு செய்தல்	பகுதி -அ $10 \times 2 = 20$
சரியா? தவறா?	பகுதி -ஆ $10 \times 2 = 20$
ஒரு பக்க அளவில் விடையளிக்க	பகுதி -இ $1 \times 10 = 10$

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
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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



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COIMBATORE | INDIA

B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

Notes

அக மதிப்பீட்டுத் தேர்வு - வினாத்தாள் அமைப்பு முறை- மொத்த மதிப்பெண்கள் - 50

சரியான விடையைத் தேர்வு செய்தல்	பகுதி -அ 10x1=10
கோடிட்ட இடங்களை நிரப்புக.	பகுதி -ஆ 10x2=20
இரண்டு பக்க அளவில் விடையளிக்க	பகுதி -இ 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/>



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B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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	✓	✓	✓	✓	✓

<input type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input checked="" type="checkbox"/>	Gender Sensitization
<input checked="" type="checkbox"/>	Social Awareness/ Environment	<input checked="" type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



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COIMBATORE | INDIA

B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

235CR1A2AA	HUMAN RIGHTS AND WOMEN'S RIGHTS	SEMESTER II
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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 to Sexual 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.



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APPROVED		
Bos-7th 17.10.2023	AC-16th 13.12.2023	GB-21st 05.01.2024



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COIMBATORE | INDIA

B.Sc Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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
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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. கலிங்கத்துப்பராணி-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

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input checked="" type="checkbox"/> Intellectual Property Rights	<input checked="" type="checkbox"/> Gender Sensitization
<input checked="" type="checkbox"/> Social Awareness/ Environment	<input checked="" type="checkbox"/> Constitutional Rights/ Human Values/ Ethics



231TL1A3HA	HINDI- III	SEMESTER III
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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, अरुण 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

अनुवाद अभ्यास-III (केवल हिन्दी से अंग्रेजी में)

(पाठ 10 to 20)

Text Books

- 1 प्रकाशक: जवाहर पुस्तकालय सदर बाजार, मथुरा उत्तर प्रदेश-281001 (Unit I)
- 2 आचार्य रामचन्द्र शुक्ल लोकभारती प्रकाशन इलाहाबाद. (Unit II)
- 3 प्रकाशक: विनोद पुस्तक मंदिर आगरा-282002 (Unit III)
- 4 पुस्तक: व्याकरण प्रदीप-रामदेव प्रकाशक: हिन्दी भवन 36 इलाहाबाद-211024 (Unit IV)
- 5 प्रकाशक: दक्षिण भारत प्रचार सभा चेन्नई -17 (Unit V)



Dr. NGPASC

COIMBATORE | INDIA

B.Sc. Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input checked="" type="checkbox"/> Intellectual Property Rights	<input checked="" type="checkbox"/> Gender Sensitization
<input checked="" type="checkbox"/> Social Awareness/ Environment	<input checked="" type="checkbox"/> Constitutional Rights/ Human Values/ Ethics



231TL1A3MA	MALAYALAM- III	SEMESTER III
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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
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Total Credits: 3
Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

<ul style="list-style-type: none"> ◦ Décrire un lieu. ◦ Situer 	<p>A partir d'une recherche de documents, composer une présentation touristique pour un magazine ou un site internet.</p>	<p>Comprendre la description d'un lieu. Décrire une ville ou une région qu'on aime. Interroger sur la situation d'un lieu. Comprendre des indications sur la fréquence d'actions.</p>	<p>Comprendre une présentation de catalogue touristique. Comprendre des pictogrammes. Comprendre la description d'un lieu et d'une situation précise dans un message électronique.</p>
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Unit II 10 h

Se situer dans le temps.	<p>A partir d'une recherche de documents, composer une présentation touristique pour un magazine ou un site internet.</p>	<p>Comprendre la description d'un lieu. Décrire une ville ou une région qu'on aime. Interroger sur la situation d'un lieu. Comprendre des indications sur la fréquence d'actions.</p>	<p>Comprendre une présentation de catalogue touristique. Comprendre des pictogrammes. Comprendre la description d'un lieu et d'une situation précise dans un message électronique.</p>
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Unit III 10 h

<p>Raconter.</p> <ul style="list-style-type: none"> ◦ Décrire les étapes d'une action. 	<p>Raconter une scène insolite à l'oral et à l'écrit.</p>	<p>Comprendre le récit d'un voyage. Raconter ses actions quotidiennes.</p>	<p>Ecrire une biographie à partir d'éléments écrits.</p>
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Unit IV 10 h

<p>Exprimer l'intensité et la quantité.</p> <ul style="list-style-type: none"> ◦ Interroger. 	<p>Raconter une scène insolite à l'oral et à l'écrit.</p>	<p>Comprendre le récit d'un voyage. Raconter ses actions quotidiennes.</p>	<p>Ecrire une biographie à partir d'éléments écrits.</p>
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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 : Regine Mérieux, 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
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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 Mchrawtill 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, Macmillan, 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
234CA1A3CA	DATABASE MANAGEMENT SYSTEMS	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- The functional components of the DBMS and the normalization forms in building an effective database tables
- Queries using Relational Algebra, Relational Calculus and SQL
- The Development of application programs using PL/SQL

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 database, design, modeling and normalization	K1
CO2	Illustrate knowledge on Database Environment	K2
CO3	Demonstrate the DML Commands	K2
CO4	Interpret the concepts of PL/SQL	K3
CO5	Apply the various Composite data types	K3

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input checked="" type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



234CA1A3CA	DATABASE MANAGEMENT SYSTEMS	SEMESTER III
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Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Database Concepts and Normalization 10 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 –Another Example of Normalization.

Unit II Structured Query Language 8 h

Oracle9i: An introduction – SQL* plus Environment - Structured Query Language (SQL). Oracle Tables (DDL): Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

Unit III Working with Tables 10 h

Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from Table – Arithmetic Operations – Restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions – Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

Unit IV Fundamentals of PL/SQL 10 h

PL/SQL: History – Fundamentals – Block Structure – Comments – Data Types –Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Exceptions – Types of Exceptions.

Unit V PL/SQL Composite Data Types and Named Blocks 10 h

PL/SQL Composite Data Types: PL/SQL Records – PL/SQL Tables – PL/SQL Varrays. Named Blocks: Procedures – Functions – Packages –Triggers.



Text Books

- 1 Nilesh Shah, 2016, "Database Systems Using ORACLE", 2nd Edition. PHI.

References

- 1 Arun Majumdar & Pritimoy Bhattacharya, 2007, "Database Management Systems", TMH.
- 2 Kevin Loney, George Koch, and the Experts at TUSC, 2002, "Oracle 9i: The Complete Reference", TMH, Copy Right .



Course Code	Course Name	Category	L	T	P	Credit
234CT1A3EP	JAVA PROGRAMMING	CORE PRACTICAL	3	-	4	5

PREAMBLE

This course has been designed for students to learn and understand

- The object-oriented paradigm in the Java programming language.
- The multithreading, exception handling concepts.
- The swing programming and database concepts.

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.	K2
CO2	Observe the basics and different types of Inheritance	K2
CO3	Acquire the knowledge in Packages, Exceptions concepts and String handling.	K3
CO4	Demonstrate Multithreading and Collections concepts.	K3
CO5	Apply Swing and JDBC concepts to create Java Applications.	K3

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



234CT1A3EP	JAVA PROGRAMMING	SEMESTER III
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Total Credits: 5

**Total Instruction Hours: 36 L +
48 P h**

Syllabus

Unit I Class and Methods 7 L h

Object Oriented Programming - Data types, Variable, Arrays, and Constants - Operators - Control statements. Class, Members, and Methods - Class instantiation - Access modifiers - Method overloading - Constructors - Static members and methods.

1. Program to understand class, methods and objects.
2. Program to implement method overloading.
3. Program to distinguish the different types of constructors.
4. Program to demonstrate static members and methods

Unit II Inheritance 7 L h

Inheritance: Basics - Types - Super keyword - Method overriding - Abstract class - Final methods and classes - Interfaces

5. Program to illustrate different types of inheritance.
6. Program to implement method overriding.
7. Program to demonstrate abstract class.
8. Program to defend multiple inheritance using interface.

Unit III Packages, Exceptions, and Strings 7 L h

Java built-in packages - User defined packages - Exception handling fundamentals - Built-in exceptions - User-defined exceptions - String handling using String, StringBuffer, and StringBuilder classes

9. Program to create user-defined package.
10. Program to implement exception handling.
11. Program to apply string handling functions.



Unit IV Multithreading and Collections**7 L h**

Multithreading: Thread Life Cycle - Thread Creation - Thread Priorities. Collections overview - Collection Interfaces and Classes: Stack, Queue, ArrayList, LinkedList.

12. Program to demonstrate multithreading.

13. Programs to implement ArrayList.

14. Programs to implement (i) Stack (ii) Queue.

Unit V Swing and JDBC**8 L h**

MVC architecture - Basics of Swing - Difference between AWT and Swing - Swing packages - A simple swing application - Event handling - Accessing databases with Java DataBase Connectivity (JDBC).

15. Develop a Swing application to manipulate student database records.

Text Books

- 1 Herbett Schildt, 2022, "Java: The Complete Reference", Twelfth Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi.
- 2 Paul Deitel and Harvey Deitel, 2015, "Java How to Program", Tenth Edition Deitel & Associates, Inc Publications.

References

- 1 E.Balaguruswamy, 2023, "Programming with Java ", Seventh Edition, Tata McGraw Hill Publications.
- 2 Dr. Muneer Ahmad Dar, 2020, "JAVA Programming Simplified: From Novice to Professional", BPB Publications.
- 3 John R. Hubbard, 2020, "Programming with JAVA", Second Edition, Tata McGraw Hill Publications.
- 4 <https://www.javatpoint.com/java-tutorial>



Course Code	Course Name	Category	L	T	P	Credit
234CG1A3CA	COMPUTER NETWORKS	CORE	3	0	0	3

PREAMBLE

This course has been designed for students to learn and understand

- Fundamental concept of computer networks
- IP Addressing and Subnet configuration with protocols
- Routing algorithms and network monitoring

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the need of networks and protocols	K1
CO2	Relate the transmission media and multiplexing	K2
CO3	Examine various IP Addressing	K2
CO4	Implement the routing algorithms for a network	K3
CO5	Apply the CISCO tool to monitor the network devices	K3

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics



234CG1A3CA	COMPUTER NETWORKS	SEMESTER III
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Total Credits: 3

Total Instruction Hours: 36 h

Syllabus

Unit I Need of Network

7 h

Network classifications LAN, MAN, WAN, Data and signals analog and digital, periodic analog signals, digital signals, bit rate, baud rate, bandwidth, Transmission impairments - attenuation, distortion and noise, Data Communication protocols and standards, Network models - OSI model layers and their functions, TCP/IP protocol suite

Unit II Bandwidth Utilization and Multiplexing

7 h

Multiplexing - FDM, TDM, Spread spectrum - Frequency hopping spread spectrum, Direct sequence spread spectrum, Transmission media - guided and unguided media, Switching message, circuit and packet switched networks, Datagram networks and virtual circuit networks

Unit III IP Addressing

7 h

IP Addressing Version 4 - IP Addressing Version 6, Subnetting Advanced VLSM - Switch Basic, VLAN - VTP /CDP - Subnetting Basic Version 4, Network Quiz - Routing Static

Unit IV Routing Algorithms

8 h

Routing algorithms - Congestion Control Algorithms, CISCO IOS / Managing / Password recovery, Routing Dynamic Routing protocols OSPF RIP EIGRP, Network Advanced Routing Dynamic Routing protocols - OSPF RIP EIGRP

Unit V Monitoring Network Devices

7 h

Monitoring Network Devices - Overview of ACL\NAT\WAN\Wireless -The Purpose of Access Lists - Types of ACLs - Creating ACLs - Network Address Translation (NAT) - Purpose of NAT - Operational Flow of NAT - Wide-Area Networking Basics - Connection Types - Encapsulation Types



Text Books

- 1 Behrouz A. Forouzan, 2017, "Data Communication and Networking", 4th Edn., TMH.
- 2 David J. Wetherall, Andrew S. Tanenbaum, 2013, "Computer Networks", 5th Edn., Pearson Education.

References

- 1 Silviu Angelescu, 2010, "CCNA Certification All-in-One For Dummies", 1st Edn., For Dummies, Wiley Publishing Inc.
- 2 W. Stallings, 2017, Data and Computer Communications, 10th Edition, Pearson Education India.
- 3 James J. Kurose, Keith W. Ross, 2010, "Computer Networks", Pearson Education, 7th Edn.,
- 4 <https://community.cisco.com/t5/networking-knowledge-base/dynamic-routing-protocols-ospf-eigrp-ripv2-is-is-bgp/ta-p/4511577>.



234CG1A3SP	SEC-1:SQL-PL/SQL	SEMESTER III
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Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Data Definition Languages (DDL) Commands
2	Data Manipulation Language (DML) Commands
3	Implementation of DCL Commands and Views
4	Queries using Comparison Operators, Logical Operators and Set Operators
5	Queries with built in functions and aggregate functions
6	Queries using Sorting
7	Join Queries- Inner Join, Outer Join Subqueries- With IN clause, With EXISTS clause
8	Creation of student's information table and write PL/SQL Block find the Total, Average marks and Results
9	Write a program in PL/SQL to show the uses of implicit and explicit cursor without using any attribute
10	Create a Database Trigger to check the data validity of Record
11	Implement the concept of Packages using Procedure and Function
12	Implement the concept of Exception Handling

Note: Out of 12 - 10 Mandatory



Course Code	Course Name	Category	L	T	P	Credit
232MT1A3IC	OPERATIONS RESEARCH	IDC	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the Mathematical formulation of LPP
- the method of finding optimized solutions for transportation and assignment problems
- the concept and applications of decision theory and networks

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	identify the feasible solution using Graphical method	K1
CO2	illustrate the optimality analysis in Transportation problem	K2
CO3	illustrate the concept behind the travelling salesman problem	K2
CO4	compare various strategies and identify appropriate one	K3
CO5	estimate the project duration for the shortest path using CPM and PERT	K3

MAPPING WITH PROGRAMME OUTCOMES

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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



232MT1A3IC	OPERATIONS RESEARCH	SEMESTER III
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Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Linear Programming Problem 9 h

Definition - Basic requirements -assumptions - advantages and drawbacks - general model of LPP - application areas - formulation-examples-Graphical method- some special cases in LPP.

Unit II Transportation Problem 9 h

Formulation- solution - methods for finding initial solution- test for optimality-variations - sensitivity analysis-prohibited and preferred routes - transshipment problem.

Unit III Assignment Problem 10 h

Mathematical model of assignment problem-solution methods-assignment algorithm-special variations -restrictions on assignment.

Unit IV Decision Analysis 10 h

Applications - ingredients of decision problem- types - Bayesian decision rule- Posterior analysis - decision tree analysis.

Unit V Project Network Analysis 10 h

Development- concept-developing the project network - critical path analysis - critical path method- programme evaluation and review technique - analysis of time cost relationship - resource allocation.



Text Books

- 1 Kapoor V K, 2022, "Operations Research: Quantitative Techniques for Management", Ninth Edition, Sultan Chand and Sons, New Delhi

References

- 1 Kanti Swarup, Gupta P K and Man Mohan, 2007, "Operations Research" Fifth Edition, S. Chand & Sons Education Publications, New Delhi
- 2 Gupta P K, Hira D S, 2014, "Operations Research", Seventh Edition, S. Chand & Company Pvt. Ltd, New Delhi
- 3 Hamdy A Taha, 2014, "Operations Research: An Introduction", Ninth Edition, Pearson Education Publishers Private Limited, New Delhi
- 4 Gupta P K and Gupta S P, 2014, "Quantitative Techniques & Operations Research", Sultan Chand and Sons, New Delhi



234CG1ASSA	SOFTWARE PROJECT MANAGEMENT	SEMESTER III
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Total Credit: 1

Syllabus

Unit I INTRODUCTION

Introduction - Why is Software Project Management Important? What is a Project? Software Projects versus Other Types of Project - Contract Management and Technical Project Management-Activities Covered by Software Project Management-Plans- Methods and Methodologies - Some Ways of Categorizing Software Projects - Project Charter - Stakeholders - Setting Objectives - The Business Case - Project Success and Failure -What is Management? Management Control- Project Management Life Cycle - Traditional versus Modern Project Management Practices

Unit II SELECTION OF AN APPROPRIATE PROJECT APPROACH

Introduction, Build or Buy? Choosing Methodologies and Technologies -Software Processes and Process Models - Choice of Process Models -Structure versus Speed of Delivery - The Waterfall Model - The Spiral Model - Software Prototyping - Other Ways of Categorizing Prototypes -Incremental Delivery - Atern/Dynamic Systems Development Method -Rapid Application Development - Agile Methods - Extreme Programming (XP) - Scrum - Lean Software Development - Managing Iterative Processes - Selecting the Most Appropriate Process Model

Unit III RISK MANAGEMENT

Introduction-Risk-Categories of Risk, Risk Management Approaches, A Framework for Dealing with Risk- Risk Identification-Risk Assessment-Risk Planning-Risk Management-Evaluating Risks to the Schedule-Boehm's Top 10 Risks and Counter Measures-Appling the PERT Technique-Monte Carlo Simulation-Critical Chain Concepts.

Unit IV MONITORING AND CONTROL

Introduction-Creating the Framework-Collecting the Data-Review-Visualizing Progress-Cost Monitoring-Earned Value Analysis- Prioritizing Monitoring-Getting the Project Back to Target-Change Control-Software Configuration Management (SCM)

Unit V SOFTWARE QUALITY

Introduction-The Place of Software Quality in Project Planning- Importance of Software Quality-Defining Software Quality-Software Quality Models-ISO 9126, Product and Process Metrics-Product versus Process Quality Management-Quality Management Systems-Process Capability Models-Techniques to Help Enhance Software Quality-Testing-Software Reliability-Quality Plans.



Dr. NGPASC

COIMBATORE | INDIA

B.Sc. Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

Text Books

- 1 Bob Hughes, Mike Cotterell, Rajib Mall,(2018),"Software Project Management" TMH, 6th Edition

References

- 1 Shailesh Mehta, 2017 "Project Management and Tools & Technologies – An overview", SPD, 1st Edition



234CG1ASSB	DATA CENTER MANAGEMENT	SEMESTER III
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Total Credit: 1

Syllabus

Unit I INTRODUCTION TO DATA CENTER

Data center Architecture - Data center - Data center prerequisites - Required Physical Area for Equipment and Unoccupied Space - Required power to run all the devices - Required cooling and HVAC Required weight- Required Network bandwidth - Budget Constraints - Selecting a Geographic Location Safety from Natural hazards - Safe from Manmade disaster - Availability of local Technical talent, Abundant and Inexpensive Utilities - Selecting an Existing building.

Unit II DATA CENTER DESIGN

Data Center design - Characteristics of an Outstanding Design - Guidelines for Planning a Data Center - Data Center structures - Raised Floor Design and Deployment, Design and Plan against Vandalism

Unit III NETWORK INFRASTRUCTURE IN A DATA CENTER

Modular Cabling Design -Points of Distribution (PODs) - Internet Access- ISP Network Infrastructure - ISP WAN Links

Unit IV DATA CENTER MAINTENANCE

Network Operations Center (NOC) -Network Monitoring -Monitoring Requirements - SNMP -In-Band and Out-of-Band Monitoring -Data-Center Physical Security - Data-Center Logical Security - Data-Center Cleaning -Approved Cleaning Supplies - Floor Surface Cleaning -Subfloor and Above-Ceiling Plenum Cleaning - Equipment Cleaning

Unit V POWER DISTRIBUTION IN A DATA CENTER

Estimating Your Power Needs- Uninterruptible Power Supply (UPS)- Generators-Power Conditioning - Single-Phase and Three-Phase Power -Power Distribution Units (PDUs) - Electrostatic Discharge (ESD)



Text Books


- 1 Kailash Jayaswal,(2016),"Administering Data Centers: Servers, Storage and Voice over IP", y Wiley Publishing, Inc.

References

- 1 Mauricio Arregoces, Maurizio Portolani, 2003 "Data Center Fundamentals", Cisco Press

[Signature]

Bos Chairman / HoD
Dept. of Computer Science with Cognitive Systems
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 Dr.N.G.P Arts and Science College		
APPROVED		
Reg. 8m	AC - 17m	GB -
3.4.2024	17.4.2024	



Dr.NGPASC

COIMBATORE | INDIA

B.Sc. Computer Science with Cognitive Systems (Students admitted during the AY 2023-24)

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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231TL1A4TA	TAMIL - IV	SEMESTER IV
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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 - கோலூர்கிழார்

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 - நல்லாலூர்கிழார்

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.
பேராசிரியர் முனைவர் பாக்கியமேரி, முதற் பதிப்பு- 2013,
- 2 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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231TL1A4HA	HINDI- IV	SEMESTER IV
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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 छोडकर) 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 चेन्नई -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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231TL1A4MA	MALAYALAM- IV	SEMESTER IV
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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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231TL1A4FA	FRENCH - IV	SEMESTER IV
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Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I

10 h

° Décrire quelqu'un. ° Comparer	En milieu professionnel, recruter quelqu'un et justifier son choix.	S'exprimer sur les styles de vêtements. Reconnaître des personnes à partir de descriptions.	Comprendre la description de personnes dans un extrait de roman.
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Unit II

10 h

Exprimer l'accord ou le désaccord. ° Se situer dans le temps.	En milieu professionnel, recruter quelqu'un et justifier son choix.	Décrire des personnes. Comprendre des personnes qui expriment leur accord ou leur désaccord.	Comprendre des différences de points de vue exprimés dans un message électronique. Raconter un souvenir.
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Unit III

10 h

° Parler de l'avenir.	Discuter de l'organisation d'un voyage de groupe puis préparer une fiche projet et la compléter.	Comprendre une chanson. Echanger sur ses projets de vacances.	Comprendre le message d'une carte d'anniversaire.
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Unit IV

10 h

° Exprimer des souhaits. ° Décrire quelqu'un.	Discuter de l'organisation d'un voyage de groupe puis préparer une fiche projet et la compléter.	Discuter du programme de la soirée à venir. Addresser des souhaits à quelqu'un.	Comprendre le message d'une carte d'anniversaire.
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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

<input checked="" type="checkbox"/>	Skill Development	<input type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input checked="" type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



231EL1A4EA	ENGLISH - IV	SEMESTER IV
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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
234CG1A4CA	CLOUD AND VIRTUALIZATION	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Fundamentals of Cloud Computing
- Distributed Systems
- Data center architecture

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand fundamentals of Cloud Computing	K1
CO2	Summarize Distributed Systems	K2
CO3	Interpret virtualization	K3
CO4	Demonstrate hybrid cloud	K3
CO5	Understand data center architecture	K3

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input checked="" type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



234CG1A4CA	CLOUD AND VIRTUALIZATION	SEMESTER IV
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Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Cloud Computing 10 h

Cloud Fundamentals - Benefits of Cloud Computing - Types of Cloud - Cloud Computing Services - Cloud Computing Architecture - Virtualization and Cloud Computing - Grid Computing vs Cloud Computing - Security Concerns

Unit II Distributed Systems 10 h

Overview of Computing Paradigm - Recent trends in Computing - Grid Computing - Cluster Computing, Distributed Computing - Utility Computing - Cloud Computing - Evolution of Cloud Computing - Benefits of Cloud Computing

Unit III Virtualization 10 h

Definition - Need of Virtualization - Virtualization Technologies - Uses of Virtualization - Planning for Virtualization - Virtualization Pitfalls

Unit IV Hybrid Cloud 9 h

Hybrid Cloud Fundamentals - Benefits of a Hybrid Cloud - Key Considerations for Hybrid Cloud - Components of Hybrid Cloud - Hybrid Cloud Deployment Models - Managing Hybrid Cloud Environments

Unit V Data Center 9 h

Data Center Overview - Data Center Evolution - Modern Business Requirements for Data Center - Making Agile Data Center - Data Center Transformations -Future of Data Centers



Text Books

- 1 George Coulouris, Jean Dollimore, Tim Kindberg & Gordon Blair ,2017" Distributed Systems: Concepts and Design", 5th Edition, Pearson

References

- 1 Venkata Josyula, Malcolm Orr ,Greg Page, 2012," Cloud Computing: Automating the Virtualized Data Center" 1st Edition, Cisco Press
- 2 Brian J.S. Chee and Curtis Franklin, Jr, 2019," Cloud Computing: Technologies and Strategies of the Ubiquitous Data Center", 1st Edition, CRC Press



Course Code	Course Name	Category	L	T	P	Credit
234DA1A4EP	PYTHON FOR DATA SCIENCE	CORE PRACTICAL	3	-	4	5

PREAMBLE

This course has been designed for students to learn and understand

- Concepts and process of data analysis
- Basic packages to perform scientific computing with Python
- Data visualization techniques for effective analysis

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 Analysis and basics of Python	K2
CO2	Apply NumPy library to perform basic operations like indexing, iterating and handling arrays	K3
CO3	Implement Pandas library to analyze, clean and explore datasets to prepare them for analysis	K3
CO4	Apply advanced features of Pandas library to perform data manipulation	K3
CO5	Implement Matplotlib library to visualize the data in different forms	K3

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human values/ Ethics



234DA1A4EP	PYTHON FOR DATA SCIENCE	SEMESTER IV
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Total Credits: 5

Total Instruction Hours: 84 h

Syllabus

Unit I Introduction to Data Analysis and Python 17 h

Introduction to Data Analysis: Data Analysis - Knowledge Domains of the Data Analyst - Understanding the Nature of the Data - The Data Analysis Process - Quantitative and Qualitative Data Analysis - Open Data - Introduction to Python - The Programming Language - Data Structures - Functional programming

- a) Programs using functions.
- b) Programs using tuples.
- c) Programs using sets.

Unit II NumPy Library 17 h

NumPy: N-dimensional array - Basic Operations - Indexing, Slicing and Iterating - Conditions and Boolean Arrays - Shape and Array Manipulation - Copies of Objects - Vectorization - Broadcasting - Structured Arrays- Reading and Writing Array Data on Files.

- a) Programs using aggregate functions.
- b) Programs for array manipulation.
- c) Programs for reading and writing in files.

Unit III Pandas Library 17 h

Pandas Data Structures: Series - DataFrame - Index Object - Functionalities on Indexes - Operations Between Data Structures - Function Application and Mapping - Sorting and Ranking - Correlation and Covariance - Not a Number Data - Hierarchical Indexing and Leveling

- a) Programs using DataFrame
- b) Programs to deal with missing values
- c) Programs to find Correlation and Covariance



Unit IV Data Manipulation using Pandas

17 h

Data Preparation - Concatenating - Data Transformation - Removing Duplicates- Mapping - Discretization and Binning - Permutation - String Manipulation - Built -in Methods - Regular Expressions - Data Aggregation - Group Iteration - Advanced Data Aggregation

- a) Programs to implement data transformation
- b) Programs to implement string manipulation
- c) Programs to implement data aggregation

Unit V Data Visualization with Matplotlib

16 h

Matplotlib Architecture - Pyplot - The plotting Window - Using the keyword args - Adding Elements to the Chart - Line Charts - Histograms - Bar Charts - Pie Charts - Advanced Charts

- a) Programs to visualize data using Bar Charts, Pie charts
- b) Programs to visualize data using Advanced Charts
- c) Project using Advanced libraries

Text Books

- 1 Fabio Nelli, 2023, "Python Data Analytics with Pandas, NumPy and Matplotlib", (3rd Edn.), Apress.

References

- 1 Wes Mckinney, 2017, "Python for Data: Data Wrangling with Pandas, NumPy, and IPython", (2nd Edn.), O'Reilly
- 2 Jake VanderPlas, 2016, "Python Data Science Handbook", (1st Edn.), O'Reilly
- 3 RehanGuha, 2021 " Machine Learning Cookbook with Python ", (1st Edn.), BPB Publications.
- 4 Dipanjan Sarkar, Raghav Bali, Tushar Sharma, 2018, "Practical Machine Learning with Python", (1st Edn.), Apress



Course Code	Course Name	Category	L	T	P	Credit
234CG1A4CB	ARTIFICIAL INTELLIGENCE	CORE	3	-	-	3

PREAMBLE

This course has been designed for students to learn and understand

- Fundamentals of Artificial Intelligence
- Knowledge Representation and Reasoning
- Applications of Artificial Intelligence and Expert Systems

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Identify problem characteristics and search strategies	K1
CO2	Understand informed and uninformed search techniques	K2
CO3	Interpret formal methods of knowledge representation	K2
CO4	Understand First-Order Logic, Prolog Facts and Rules	K3
CO5	Interpret Artificial Intelligence and Expert Systems	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/>	Skill Development	<input checked="" type="checkbox"/>	Entrepreneurial Development
<input checked="" type="checkbox"/>	Employability	<input type="checkbox"/>	Innovations
<input type="checkbox"/>	Intellectual Property Rights	<input type="checkbox"/>	Gender Sensitization
<input type="checkbox"/>	Social Awareness/ Environment	<input type="checkbox"/>	Constitutional Rights/ Human Values/ Ethics



234CG1A4CB	ARTIFICIAL INTELLIGENCE	SEMESTER IV
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Total Credits: 3

Total Instruction Hours: 36 h

Syllabus

Unit I Problem Solving Methods in Artificial Intelligence 7 h

Introduction to Artificial Intelligence (AI), Problems and Techniques - State Space Search-
Production System - Problem characteristics - Control Strategy - Issues in the design
Problem - Search Strategies

Unit II Informed and Uninformed Search Strategies 7 h

Generate-and-Test Method - Hill Climbing Method - Best First Search and A* Search -
Constraint Satisfaction Problem: Cryptarithmic problems

Unit III Knowledge Representation 7 h

Ontologies, Objects and Events - Representations and Mappings - Forward versus
Backward Chaining - Slot and Filler Structures - Issues and Developments in Knowledge
Representation

Unit IV Logic in Artificial Intelligence 7 h

Overview - Propositional Logic - First-Order Logic - Modern Artificial Intelligence
Language and Tools: MATLAB Introduction - Features, Session - Variables - Vectors and
Matrices - Operators - Loops - Strings - MATLAB for Machine Learning

Unit V Applications of Artificial Intelligence and Expert Systems 8 h

Game Playing: Minimax Search Procedure - Alpha-Beta Cutoff -Text Analysis and Mining:
Text Classification - Information Retrieval - Information Extraction - Expert systems:
Knowledge Representation - Expert System Shells - Knowledge Acquisition - Applications
- Case Studies: Intelligence Biometric Systems - Voice Recognition



Text Books

- 1 Lavika Goel, 2021, "Artificial Intelligence - Concepts and Applications ", 1st Edition, Wiley India Pvt. Ltd.
- 2 Deepak Khemani, 2018, "Artificial Intelligence", 6th Edition Tata Mc Graw Hill Education.

References

- 1 Ivan Bratko, 2011, "PROLOG: Programming for Artificial Intelligence", 3rd Edition Pearson.
- 2 Stuart Russel and Peter Norvig, 2022, "AI - A Modern Approach", 3rd Edition, Pearson Education.



234CG1A4SP	SEC PRACTICAL: VIRTUALIZATION TOOLS	SEMESTER IV
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Total Credits: 2
Total Hours: 48 h

S.No	List of Experiments
1	Installing and Using Workstation Player
2	Changing Workstation Player Preference Settings
3	Creating Virtual Machines in Workstation Player
4	Installing and Upgrading VMware Tools
5	Starting and Stopping Virtual Machines in Workstation Player
6	Changing the Virtual Machine Display
7	Configuring and Managing Virtual Machines
8	Configuring and Managing Devices
9	Configuring Network Connection
10	Configuring Virtual Machine Option Setting
11	Configuring Virtual Machine Hardware Settings



Course Code	Course Name	Category	L	T	P	Credit
235BP1A4IA	INDUSTRIAL PSYCHOLOGY	IDC	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- the industrial psychology for motivation and Attitude
- the group behavior and group dynamics
- the common personality measurement tools

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Recall the role of industrial and organizational psychology and cultural differences.	K1
CO2	Outline the group decision making process.	K2
CO3	Develop the process of an Organizational Design and Structure.	K3
CO4	Infer the cultural changes and resistance to change	K2
CO5	Identify the factors that influence personality and personality traits.	K3

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input checked="" type="checkbox"/> Social Awareness/ Environment	<input checked="" type="checkbox"/> Constitutional Rights/ Human Values/ Ethics



235BP1A4IA	INDUSTRIAL PSYCHOLOGY	SEMESTER IV
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Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Overview of Industrial Psychology 9 h

Meaning and Nature of Industrial Psychology - Role of Industrial Psychology - Organizational Attitude - Motivation and Work Behavior - Theory X and Y - McClelland's Need Theory - Herzberg's Two Factor Theory - Cultural Differences in Motivation

Unit II Work Teams and Groups 9 h

Groups and Work Teams - Group Behavior - Group Formation and Development - Decision Making Process - Individual Influences - Group Decision Process - Group Dynamics.

Unit III Organizational Design and Structure 12 h

Key Organizational Design Process - Structural Differentiations - Forces Reshaping Organizations - Leadership vs Management - Leadership Theories - Emerging Issues in Leadership

Unit IV Organizational Culture and Managing Change 10 h

Functions of Organizational Culture - Organizational Socialization - Assessing Cultural Values and Fit - Cross Cultural Issues - Forces for Change in Organization - Resistance to Change - Lewin's Change Model.

Unit V Personality Theory and Emerging Trends 8 h

Meaning, Application of Personality Theory in Organization - Traits - Common personality Measurement Tools - Complexity - Challenges and Choices in the future.

Note: Case studies (Examined internal only).

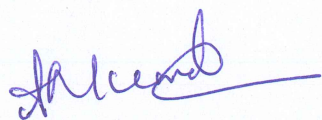


Text Books


- 1 Nelson, Quick and Khandelwal, 2024, ORGB: An innovative approach to learning and teaching Organizational Behavior, 7th edition, Cengage learning.
- 2 Fred Luthans, 2020, Organizational Behavior, 14th edition, McGraw Hill.

References

- 1 Landy, F. J. & Conte, J. M., 2023, Work in the 21st Century: An Introduction to Industrial and Organizational Psychology, 6th Ed., New York: Wiley.
- 2 Stephen Robbins, 2022, Organizational Behavior, 18th edition, Prentice Hall, India.
- 3 UdaiPareek, 2021, Understanding Organizational Behavior, 4th edition, Oxford University Press




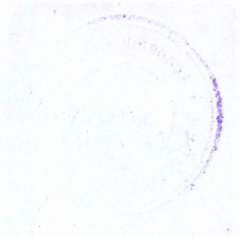
Bos Chairman / HoD
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09.11.2024	26.11.2024	



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D.M.G.R. Arts and Science Coll.		
APPROVED		
AC - 13	13	13
13	13	13



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