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 (3rdCycle)
Dr. N.G.P.- KalapattiRoad, Coimbatore-641048, Tamilnadu, India
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REGULATIONS 2022-23 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 2022-23)

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 Programmes 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 there to 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.

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.

Programme: 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 practical (Credits 5)-Embedded	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
	Industrial Training	1	2	V
IV (8 Credits)	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
	Generic Elective (GE)	1	2	V
V (2 Credits)	NSS/NCC/YRC/RRC/Yoga/Sports/ Clubs	-	2	I - II
		TOTAL CREDITS	142	

CURRICULUM
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										
221TL1A1TA	Language-I	Tamil–I : Ikkala Ilakkiyam	4	1	-	3	50	50	100	3
221TL1A1HA		Hindi-I : Modern Literature								
221TL1A1MA		Malayalam-I : Modern Literature								
221TL1A1FA		French –I: Grammar, Translation and Civilization								
Part- II										
221EL1A1EA	Language-II	Professional English -I	4	-	1	3	50	50	100	3
Part- III										
224AI1A1CA	Core-I	Problem Solving and Programming in C	4	1	-	3	50	50	100	4
224CG1A1CP	Core Practical-I	Programming in C	-	-	4	3	50	50	100	2
224CGIA1CQ	Core Practical-II	Introduction to worksheets	-	-	4	3	50	50	100	2
222MT1A1IC	IDC-I	Numerical Methods and Statistics	4	1	-	3	50	50	100	4
Part-IV										
223MB1A1AA	AECC-I	Environmental Studies	2	-	-	-	50	-	50	2
Part-V										
224CG1A1XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports/ Clubs	-	-	-	-	50	-	50	1
		Total	**18**	**3**	**9**	-	-	-	**700**	**21**

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BOS - 4th 05-8-2022
AC - 13th 6-09-2022
GB - 18th 10-9-2022

Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Second Semester										
Part–I										
221TL1A2TA	Language-I	Tamil - II : Ara Ilakkiyam	4	1	-	3	50	50	100	3
221TL1A2HA		Hindi- II: Modern								
221TL1A2MA		Malayalam - II: Modern								
221TL1A2FA		French- II: Grammar, Translation And Civilization								
Part– II										
221EL1A2EA	Language-II	Professional English -II	4	-	1	3	50	50	100	3
Part– III										
224CA1A2CA	Core-II	Data Structures	4	1	-	3	50	50	100	4
224CG1A2CA	Core-III	Operating Systems	4	-	-	3	50	50	100	4
224CG1A2CP	Core Practical-III	Operating Systems	-	-	4	3	50	50	100	2
222MT1A2IC	IDC-II	Discrete Mathematics	4	1	-	3	50	50	100	4
Part–IV										
221TL1A2AA	AECC-II	Basic Tamil	2	-	-	-	50	-	50	2
221TL1A2AB		Advance Tamil								
223CR1A2AA		Human Rights and Women's Rights								
Part–V										
224CG1A2XA	Extension Activity	NSS/NCC/ YRC/RRC/ Yoga/Sports/ Clubs	-	-	-	-	50	-	50	1
		Total	**22**	**3**	**5**	-	-	-	**700**	**23**

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BoS - 5th 03.12.2022 | AC - 14th 19.01.23 | GB - 19th 30.01.23

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Dr.V. Rajendiran
CHAIRMAN
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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Third Semester										
Part–I										
221TL1A3TA	Language-I	Tamil–III	3	1	-	3	50	50	100	3
221TL1A3HA		Hindi-III								
221TL1A3MA		Malayalam-III								
221TL1A3FA		French –III								
Part II										
221EL1A3EA	Language-II	Professional English -III	3	1	-	3	50	50	100	3
Part–III										
224CA1A3CA	Core -IV	Database Management Systems	4	-	-	3	50	50	100	4
224CT1A3CP	Core Practical-IV	Java Programming	3	-	4	3	50	50	100	5
224CG1A3CA	Core-V	Computer Networks	3	-	-	3	50	50	100	3
224CG1A3SP	SEC Practical-I	SQL-PL/SQL	-	-	4	3	50	50	100	2
222MT1A3IC	IDC-III	Operations Research	4	-	-	3	50	50	100	4
		Total	**20**	**2**	**8**	-	-	-	**700**	**24**

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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Fourth Semester										
Part–I										
221TL1A4TA	Language-I	Tamil -IV	3	1	-	3	50	50	100	3
221TL1A4HA		Hindi-IV								
221TL1A4MA		Malayalam-IV								
221TL1A4FA		French-IV								
Part-II										
221EL1A4EA	Language-II	Professional English -IV	3	1	-	3	50	50	100	3
Part--III										
224CG1A4CA	Core -VI	Cloud and Virtualization	4	-	-	3	50	50	100	4
224DA1A4EP	Embedded Practical	Python for Data Science	3	-	4	3	50	50	100	5
224CG1A4CB	Core-VII	Artificial Intelligence	3	-	-	3	50	50	100	3
224CG1A4SP	SEC Practical - II	Virtualization Tools	-	-	4	3	50	50	100	2
225BP1A4IA	IDC-IV	Industrial Psychology	4	-	-	3	50	50	100	4
		Total	**20**	**2**	**8**	-	-	-	**700**	**24**

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17.10.2023	13.12.2023	05.01.2024

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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Fifth Semester										
Part–III										
224CG1A5CA	Core-VIII	Digital Technologies	4	1	-	3	50	50	100	5
224IT1A5CB	Core-IX	Cyber Security and Ethics	4	1	-	3	50	50	100	4
224CG1A5CB	Core-X	Software Testing	4	1	-	3	50	50	100	5
224CG1A5CP	Core Practical-V	Digital Technologies	-	-	4	3	50	50	100	2
224CG1A5SP	SEC Practical-III	Selenium Automation Testing	-	-	4	3	50	50	100	2
224CG1A5DA	DSE –I	Process Management	4	1	-	3	50	50	100	4
224CG1A5DB		Machine Learning Principles								
224CG1A5DC		Infrastructure Management								
224CG1A5TA	IT	Industrial Training	-	-	-	3	50	50	100	2
Part–IV										
224CG1A5GA	GE	Smart Living with IoT	2	-	-	3	50	-	50	2
		Total	**18**	**4**	**8**	-	-	-	**750**	**26**

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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Sixth Semester										
Part - III										
224CG1A6CA	Core - XI	Client Relationship Management	4	-	-	3	50	50	100	4
224AI1A6CA	Core - XII	Natural Language Processing	4	-	-	3	50	50	100	4
224CG1A6SP	SEC Practical-IV	ServiceNow Automation	-	-	4	3	50	50	100	2
224CG1A6CV	Core - XIII	Project and Viva-Voce	-	-	8	3	50	50	100	4
224CG1A6DA	DSE –II	Data Mining	4	-	-	3	50	50	100	4
224CG1A6DB		Cognitive Computing								
224CG1A6DC		Design and Architecture of Internet of Things								
224CG1A6DD	DSE - III	Principles of Deep Learning	4	-	-	3	50	50	100	4
224CG1A6DE		IT Infrastructure Library								
224CG1A6DF		Human Computer Interaction								
Part – IV										
223BC1A6AA	AECC - III	Innovation, IPR and Entrepreneurship	2	-	-	-	50	-	50	2
		Total	**18**	**-**	**12**	**-**	**-**	**-**	**650**	**24**
								***Grand Total**	**4200**	**142**

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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	224CG1A5DA	Process Management
2	224CG1A5DB	Machine Learning Principles
3	224CG1A5DC	Infrastructure Management

Semester VI (Elective II)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	224CG1A6DA	Data Mining
2	224CG1A6DB	Cognitive Computing
3	224CG1A6DC	Design and Architecture of Internet of Things

Semester VI (Elective III)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	224CG1A6DD	Principles of Deep Learning
2	224CG1A6DE	IT Infrastructure Library
3	224CG1A6DF	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	224CG1A5GA	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	224CG1ASSA	Software Project Management
2	224CG1ASSB	Data Center Management

UG - REGULATION (R4)

(Students admitted in the AY 2022-23)

(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 and Artificial Intelligence and Machine Learning.

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 2022–25 refers to students belonging to a 3 year Degree programme admitted in 2022 and completing in 2025.

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 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 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 organized 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) : 50 Marks

End Semester Exams (ESE) : 50 Marks

Total :100 Marks

i) Distribution of Internal Marks

S.No.	Particulars	Distribution of Marks
1	CIA I (2.5 Units) (On completion of 45th working day)	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**

Assignment Rubric
(Maximum -20 marks converted to 5 marks)

Criteria	4 marks	3 Marks	2 Marks	1 MArk
Language	Excellent spelling and Grammar	Good spelling and Grammar	Reasonable spelling and Grammar	Bad spelling and Grammar
Style	Outstanding style beyond usual college level	Attains College level style	Approaches College level style	Elementary form with little or no variety in

				sentence structure
Referencing	Good use of wide range of reference sources	Moderate use of suitable reference materials	Shows signs of plagiarism & using sources without referencing	No reference material used
Development	Main points well developed with high quality and quantity support	Main points developed with quality and quantity supporting details	Main points are present with limited details and development	Main points lack detailed development
Critical thinking/Problem solving	Advanced attempt to interpret the process, content/ analyse and solve the problem	Proficient attempt to interpret the process, content/ analyse and solve the problem	Adequate attempt to interpret the process, content/ analyse and solve the problem	Limited attempt to interpret the process, content/ analyse and solve the problem

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, 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.

Components for Skill Enhancement

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

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

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

ii) Distribution of External Marks

Total	:	50
Written Exam	:	50

Marks Distribution for Practical course

Total	:	100
Internal	:	50
External	:	50

i) Distribution of Internals Marks

S.No.	Particulars	Distribution of Marks
1	Experiments/Exercises	15
2	Test 1	15
3	Test 2	15
4	Observation Notebook	05
	Total	**50**

ii) Distribution of Externals Marks

S.No.	Particulars	External Marks
1	Materials and methods/ Procedures/Aim	10
2	Experiment/ Performance/ Observations/ Algorithm	10
3	Results/ Calculations/ Spotters/ Output	10
4	Inference/Discussion/ Presentation	10
5	Record	6
6	Viva- voce	4
	Total	**50**

A) Mark Distribution for Project/Internship/Industrial Training

Total	**:**	**100**
Internal	**:**	**50**
External	**:**	**50**

i) Distribution of Internal Marks

S.No.	Particulars	Internal Marks
1	Review I	20
2	Review II	20
3	Attendance	10
	Total	**50**

ii) Distribution of External Marks

S.No	Particulars	External Marks
1	Project Work/Internship/ Industrial training presentation	40
2	Viva -voce	10
	Total	**50**

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	

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 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)/Awards	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.

Sports and Games

The Student can earn extra credit based on their Achievement in sports in University/ State / National/ International.

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 V 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 etc.

Awards/ Recognitions/fellowships

Regional/ State / National level awards/ Recognitions/Fellowships

100 % CIA Courses :

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

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

Modalities for Implementing Internal Assessment Marks:

- Student pertaining to 2022 Batch (2022-25) UG programme for the above mentioned courses shall secure a minimum of 40% out of the maximum marks in the continuous internal assessment (CIA) i.e., 20 marks out of 50 marks.
- Students who have not acquired the minimum marks shall be allowed to reappear to improve their marks in the exam components only within the time duration of the programme, in the forthcoming semesters.

Distribution of Internal Marks for AECC & AEEC (Theory)

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

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

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

Question paper pattern AECC & AEEC

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

Question paper pattern		Total Marks - 50	
Basic Tamil		**Advanced Tamil**	
Section -A		**Section -A**	
Choose the correct answer	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 Test : [1 ½ Hours-2.5 Units] - 25 Marks

SECTION	MARKS	DESCRIPTION	TOTAL	Remarks
Section – A	8 x 0.5 = 04 Mark	MCQ	25 Marks	Marks secured will be converted to 15 marks
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			

Model Test: [3 Hours-5 Units] - 50 Marks

SECTION	MARKS	DESCRIPTION	TOTAL	Remarks
Section – A	5 x 1 = 05 Marks	MCQ	50 Marks	Marks secured will be converted to 15 marks
Section - B	5 x 3 = 15 Marks	Answer ALL Questions (Either or Type Questions) Each Questions Carry Equal Marks		
Section - C	5 x 6 = 30 Marks			

End Semester Examination: [3 Hours-5 Units] - 50 Marks

SECTION	MARKS	DESCRIPTION	TOTAL
Section – A	5 x 1 = 05 Marks	MCQ	50 Marks
Section - B	5 x 3 = 15 Marks	Answer ALL Questions (Either or Type Questions) Each Questions Carry Equal Marks	
Section - C	5 x 6 = 30 Marks		

Course Code	Course Name	Category	L	T	P	Credit
221TL1A1TA	TAMIL- I : IKKALA ILAKKIYAM	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					✓

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

221TL1A1TA	TAMIL- I: IKKALA ILAKKIYAM	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **மறுமலர்ச்சிக் கவிதைகள்** 13 h

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

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

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

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

ஈ) 'உன்னை அறிந்தால்' எனத் தொடங்கும் பாடல் - கண்ணதாசன்

Unit II **புதுக்கவிதைகள்** 13 h

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

Unit III **பெண்ணியம்** 09 h

1. தொலைந்து போனேன் - தாமரை

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

Unit IV சிறுகதைகள் 15 h

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

Unit V பயிற்சிப் பகுதி 10 h

அ. இலக்கணம்

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

ஆ. படைப்பாக்கம்

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

Text Book

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

References

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

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

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

Dr.N.G.P. Arts and Scien... Coll...
APPROVED
BOS - 4th 5-8-22
AC - 13th 6-09-22
GB - 18th 10-09-22

Course Code	Course Name	Category	L	T	P	Credit
221TL1A1HA	HINDI- I: MODERN LITERATURE	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	Apply the knowledge writing critical views on fiction	K3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

MAPPING WITH PROGRAMME OUTCOMES

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

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

221TL1A1HA	HINDI- I: MODERN LITERATURE	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I 13 h

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

Unit II 13 h

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

Unit III 12 h

व्याकरण : शब्द विचार (संज्ञा, सर्वनाम,विशेषण)

Unit IV 12 h

अनुच्छेद लेखन

Unit V 10 h

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

Text Books

1 प्रकाशक: सुमित्र प्रकाशन 204 लीला अपार्ट्मेंट्स, 15 हेस्टिंग्स रोड'अशोक नगर इलाहाबाद-211001

2 प्रकाशक: गोविन्द प्रकाशनसदर बाजार, मथुरा उत्तरप्रदेश-281001

3 पुस्तक: व्याकरण प्रदिप – रामदेवप्रकाशक: हिन्दी भवन 36 टेगोर नगर इलाहाबाद-211024

4 पुस्तक: व्याकरण प्रदिप – रामदेवप्रकाशक: हिन्दी भवन 36 इलाहाबाद-211024

5 प्रकाशक: दक्षिण भारत प्रचार सभा चेनैई -17

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AC - 13th 6-09-22
GB - 18th 10-09-22

Course Code	Course Name	Category	L	T	P	Credit
221TL1A1MA	MALAYALAM- I: MODERN LITERATURE	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	Apply the knowledge writing critical views on fiction.	K3
CO4	Build creative ability.	K3
CO5	Expose the power of creative reading	K2

MAPPING WITH PROGRAMME OUTCOMES

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

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

221TL1A1MA	MALAYALAM- I: MODERN LITERATURE	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **Novel** 14 h

Pathummayude Adu

Unit II **Novel** 10 h

Pathummayude Adu

Unit III **Short Story** 14 h

Nalinakanthi

Unit IV **Short Story** 10 h

Nalinakanthi

Unit V **Practical Application** 12 h

Expansion of ideas, General Essay and Translation

Text Books

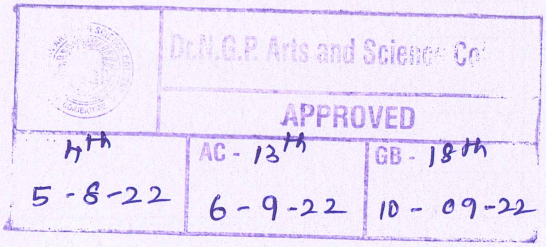
1 Vaikkam Muhammed Basheer, "Pathummayude Adu" (NOVEL), DC Books & Kottayam

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

References

1 Malayala Novel Sahithyam.

2 Malayala Cherukatha Innale Innu.



Course Code	Course Name	Category	L	T	P	Credit
221TL1A1FA	FRENCH- I: GRAMMAR, TRANSLATION AND CIVILIZATION	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	Evaluate the Plural, Articles and the Hobbies	K3
CO4	Measure the Cultural Activity in France	K3
CO5	Select the sentiments, life style of the French people and the usage of the conditional tense	K2

MAPPING WITH PROGRAMME OUTCOMES

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

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

221TL1A1FA	FRENCH- I: GRAMMAR, TRANSLATION AND CIVILIZATION	SEMESTER I

Total Credits: 3
Total Instruction Hours: 60 h

Syllabus

Unit I Salut I Page 10 12 h

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

Unit II Enchanté I Page 20 12 h

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

Unit III J'adore I Page 30 12 h

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

Unit IV J'adore I Page 30 14 h

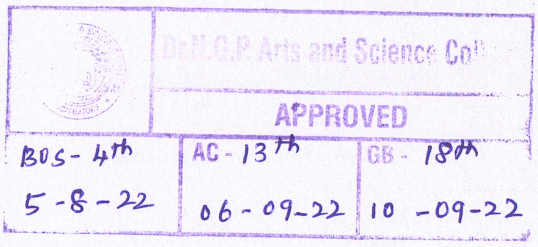
Objectifs de Communication	Tâche	Activités de réception et de production orale
• Présenter quelqu'un	Dans un café, participer à une soirée de rencontres rapides et remplir de taches d'appréciation	• Exprimer ses goûts. • Comprendre une demande laissée sur un répondeur téléphonique. • Parler de ses projets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

Unit V Practical Application 10 h

Make in Own Sentences

Text Book

1 Regine Merieux, Yves Loiseau, "LATITUDES - 1" (Page No: 9-55) (Methode de Français), Goyal Publisher & Distributors Pvt.Ltd., 86 UB Jawahar Nagar (Kamala Nagar), Delhi-7 Les Editions Dider, Paris, 2008- Imprime en Roumanie par Canale en Janvier 2012.



Course Code	Course Name	Category	L	T	P	Credit
221EL1A1EA	PROFESSIONAL ENGLISH- I	LANGUAGE- II	4	-	1	3

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

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

221EL1A1EA	PROFESSIONAL ENGLISH- I	SEMESTER I

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I Genre Studies 12 h

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

NiyiOsundare: 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- Annotations

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/EFLListening 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 NiyiOsundare." 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.

4. Rudzka, Brygida -Ostyn, 2003. Word Power: Phrasal Verbs and Compounds: A Cognitive Approach, Mouton de Gruyter, New York, United States.

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Course Code	Course Name	Category	L	T	P	Credit
224AI1A1CA	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	✓	✓	✓	✓	

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

224AI1A1CA	PROBLEM SOLVING AND PROGRAMMING IN C	SEMESTER I

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Introduction to Programming and Problem Solving 12 h

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

Unit II C Language Fundamentals 12 h

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

Unit III Decision Making and Arrays 12 h

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

Unit IV Strings, Functions and Pointers 12 h

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

Unit V Structures and Files 12 h

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

Text Books

1 Ashok N. Kamthane, (2009), "Programming and Data Structures", (1st 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.

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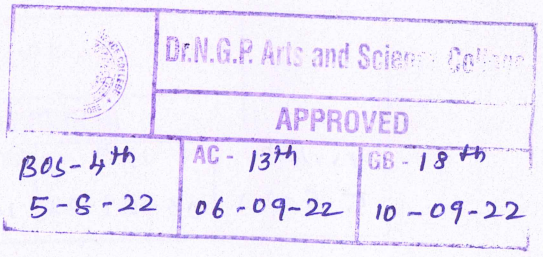
5-8-22	06-09-22	10-09-22

224CG1A1CP	CORE PRACTICAL : PROGRAMMING IN C	SEMESTER I

Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Program using formatted I/O statements and expressions.
2	Program to demonstrate arithmetic operations.
3	Program 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

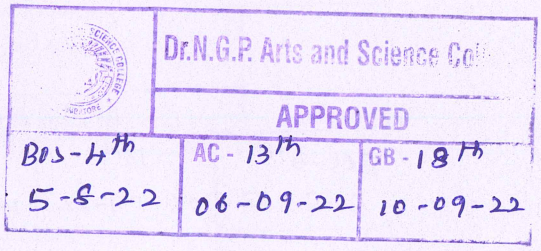


224CG1A1CQ	CORE PRACTICAL : INTRODUCTION TO WORKSHEETS	SEMESTER I

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	Demonstrate the ease of creating charts.
5	Sort data 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	Generate 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
222MT1A1IC	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	✓	✓	✓	✓	

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

222MT1A1IC	NUMERICAL METHODS AND STATISTICS	SEMESTER I

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

Course Code	Course Name	Category	L	T	P	Credit
223MB1A1AA	ENVIRONMENTAL STUDIES	AECC	2	-	-	2

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

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

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", New Delhi: Prentice-Hall of India. (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. Kappor, 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.

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223MB1A1AA	ENVIRONMENTAL STUDIES	SEMESTER I

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

Unit I Introduction to Environmental studies & Ecosystems 5 h

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

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

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

Unit III Biodiversity and Conservation 5 h

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

Unit IV Environmental Pollution, Environmental Policies & Practices 5 h

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

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

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

Text Books

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

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

References

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

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

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

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

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

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

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

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Course Code	Course Name	Category	L	T	P	Credit
221TL1A2TA	TAMIL - II: ARA ILAKKIYAM	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

221TL1A2TA	TAMIL - II: ARA ILAKKIYAM	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **அற இலக்கியம்** 13 h

1. இலக்கிய வரலாறு- பதினென்கீழ்க்கணக்குநூல்கள்

2.திருக்குறள்

அ. அறன்வலியுறுத்தல்- அ. எண் 04

ஆ. நட்பாராய்தல் - அ. எண் 80

இ. நாடு- அ. எண் 74

ஈ. குறிப்பறிதல்- அ. எண் 110

Unit II **அற இலக்கியம்** 13 h

1. நாலடியார் - அறிவுடைமை

2. மூதுரை - ஔவையார் - 10 பாடல்கள்-6,7,9,10,14,16,17,23,26,30

3. இனியவைநாற்பது- பூதஞ்சேந்தனார் - முதல் 10 பாடல்கள்

Unit III **அறநெறிக் கட்டுரைகள்** 09 h

1. இலக்கியவரலாறு - தமிழ் உரைநடையின் தோற்றமும் வளர்ச்சியும்

2. கலைகள்-உ.வே.சா

3. சங்க நெறிகள்- வ.சுப.மாணிக்கம்

Unit IV **அறநெறிக் கட்டுரைகள்** 15 h

1. வீர வணக்கம் - க.கைலாசபதி

2. தமிழர் பண்பாடு - டாக்டர் சோ.நா.கந்தசாமி

3. இணையத் தமிழ் வளர்ச்சி - முனைவர் ப.அர.நக்கீரன்

Unit V **பயிற்சிப் பகுதி** 10 h

1.இலக்கணம்-வழு, வழுவமைதி,வழாநிலை

2.அலுவலகம் சார்ந்த கடிதம் -விண்ணப்பங்கள், வேண்டுகோள்,முறையீடு

3.படைப்பாக்கம்-பொதுத்தலைப்பில் கட்டுரைகள் எழுதுதல்

Text Book

1 தமிழ் மொழிப்பாடம்-2022-2023,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

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Course Code	Course Name	Category	L	T	P	Credit
221TL1A2HA	HINDI - II: MODERN LITERATURE	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	Apply the knowledge writing critical views on fiction	K3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

221TL1A2HA	HINDI – II: MODERN LITERATURE	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I 13 h

आधुनिकपद्य – शबरी(श्रीनरेशमेहता)

Unit II 13 h

उपन्यास: सेवासदन-प्रेमचन्द

Unit III 12 h

कहानी-किरीट- डा उषा पाठक / डा अचला पाण्डेय

पाठ 1.कफ़न, 3. चीफ़ की दावत

Unit IV 12 h

पत्र लेखन: (औपचारिक या अनौपचारिक)

Unit V 10 h

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

Text Books

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

Course Code	Course Name	Category	L	T	P	Credit
221TL1A2MA	MALAYALAM - II: MODERN LITERATURE	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	Apply the knowledge writing critical views on fiction	K3
CO4	Build creative ability	K3
CO5	Expose the power of creative reading	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

221TL1A2MA	MALAYALAM- II: MODERN LITERATURE	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I **Novel** 12 h

Enmakaje: Chapter1- Chapter5

Unit II **Novel** 10 h

Enmakaje: Chapter 6- Chapter 10

Unit III **Novel** 12 h

Enmakaje: Chapter 11- Chapter 15

Unit IV **Autobiography** 14 h

NeermathalamPoothaKalam :Chapter 1- Chapter 10

Unit V **Autobiography** 12 h

NeermathalamPootha Kalam: Chapter 11- Chapter 20

Text Books

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

References

1. MalayalaNovel Sahithyam, DC Books Kottayam, Kerala, India.
2. MalayalaSahithyaCharithram, National Books Kottayam, Kerala, India.

Course Code	Course Name	Category	L	T	P	Credit
221TL1A2FA	FRENCH - II: GRAMMAR, TRANSLATION AND CIVILIZATION	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	Evaluate the Plural, Articles and the Hobbies	K3
CO4	Measure the Cultural Activity in France	K3
CO5	Select the sentiments, life style of the French people and the usage of the conditional tense	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

221TL1A2FA	FRENCH- II: GRAMMAR, TRANSLATION AND CIVILIZATION	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I 12 h

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

Unit II 12 h

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

Unit III 12 h

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

Unit IV 14 h

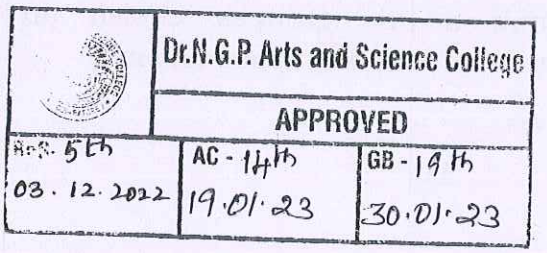
Demander et indiquer une direction. Localiser (près de, en face de ….). Exprimerl'obligationl' Interdit. Conseiller.	Suivre un itinéraire à l'aided'indications par telephone et d'un plan. Par courrierélectronique, donner des informations et des conseils à un ami qui veut voyager.	Comprendre des indications de direction. Comprendre des indications de lieu. Comprendre une chanson. Comprendre de courts messages qui experiment l'obligation ou l'interdiction. Donner des conseils à des personnes dans des situations données.

Unit V 10 h

Make in Own Sentences

Text Book

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



Course Code	Course Name	Category	L	T	P	Credit
221EL1A2EA	PROFESSIONAL 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 competences 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	Learn to appreciate the works of eminent writers from various genres	K1
CO2	Construct and comprehend complex situational talks	K3
CO3	Identify formal and informal communicative context to speak fluently	K3
CO4	Infer the denotative and connotative meanings while reading specialized texts	K2
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

221EL1A2EA	PROFESSIONAL ENGLISH - II	SEMESTER II

Total Credits: 3

Total Instruction Hours: 60 h

Syllabus

Unit I Genre Studies 12 h

John Keats: La Belle Dame Sans Merci - Author's Note - title indications- outline- paraphrasing the poem- context of poem- form- poetic devices- enjambment- techniques- Annotations

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

Charles Lamb: A Dissertation upon Roast Pig- Author's Note - title indications- outline- paraphrasing the Essay- context of Essay- form- devices- Narrative techniques

John Galsworthy: The Silver Box - Author's Note- Plot Summary- Critical Analysis- Themes- Characters- Description - 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 & Directions- Listening to Speeches- Listening to process/event descriptions to identify cause & effects

Unit III Speaking Skills 14 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. <https://www.poetryfoundation.org/poems/44475/la-belle-dame-sans-merci-a-ballad/> (Unit I)
2. <https://sittingbee.com/on-keyhole-morals-a-g-gardiner/> (Unit I)
3. <https://www.gradesaver.com/charles-lamb-essays/study-guide/summary- a-dissertation-upon-roast-pig/> (Unit I)
4. <https://public-library.uk/ebooks/41/61.pdf- The Silver Box- John Galsworthy/> (Unit I)
5. Hart, Steve, Aravind R. Nair, Veena Bhambhani. 2016. Embark: English for Undergraduates. Cambridge University Press, New Delhi, India. (Unit II)
6. Lakshminarayanan. 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
224CA1A2CA	DATA STRUCTURES	CORE	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

224CA1A2CA	DATA STRUCTURES	SEMESTER II

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Introduction to Data Structures and Arrays — 10 h

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

Unit II Stacks and Queues — 12 h

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

Unit III Linked Lists — 12 h

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

Unit IV Trees and Graphs — 14 h

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

Unit V Searching , Sorting and Hashing — 12 h

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

Text Books

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

References

1. Mark Allen Weiss, 2014, "Data Structures and Algorithm Analysis in C++", Third Edition , Pearson education.
2. YashavantKanetker, 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

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Course Code	Course Name	Category	L	T	P	Credit
224CG1A2CA	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

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

224CG1A2CA	OPERATING SYSTEMS	SEMESTER II

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 Niranjan 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

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224CG1A2CP	CORE PRACTICAL : OPERATING SYSTEMS	SEMESTER II

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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Course Code	Course Name	Category	L	T	P	Credit
222MT1A2IC	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

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

222MT1A2IC	DISCRETE MATHEMATICS	SEMESTER II

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: Distribution of marks 80% Problem and 20% Theory.

Text Books

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

References

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

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

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

4 Kenneth H Rosen, 1999, "Discrete Mathematics and its Applications",4th Edition, McGraw-Hill, New Delhi.

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BoS- 5th	AC - 14th	GB - 19th
03.12.2022	19.01.23	30.01.23

221TL1A2AA	PART-IV : BASIC TAMIL	SEMESTER II

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

இளங்கலை 2022 – 23ஆம் 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. ஊர்களின் பெயர்கள் (எண்ணிக்கை 10)

Unit V பயிற்சிப் பகுதி 04 h

பயிற்சிப் பகுதி (உரையாடும் இடங்கள்)

வகுப்பறை, பேருந்து நிலையம், சந்தை – பேசுதல், எழுதுதல்.

Notes:

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

பகுதி – அ 10x2=20

சரியான விடையைத் தேர்வு செய்தல்

பகுதி – ஆ 10x2=20

சரியா? தவறா?

பகுதி – இ 1x10=10

ஒரு பக்க அளவில் விடையளிக்க

குறிப்பு:

- அனைத்து அலகுகளில் இருந்தும் வினாக்கள் அமைதல் வேண்டும்
- பகுதி இ –க்கான வினாக்கள் இது அல்லது அது என்ற அடிப்படையில் அமைதல் வேண்டும்

Text Book

1 அடிப்படைத் தமிழ் - 2022-2023, தொகுப்பு: தமிழ்த்துறை, டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி, கோயம்புத்தூர் – 641048, 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.

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BoS- 5th 03.12.2022	AC - 14th 19.01.23	GB - 19th 30.01.23

221TL1A2AB	PART - IV : ADVANCED TAMIL	SEMESTER II

Total Credits: 2

Total Instruction Hours: 24 h

இளங்கலை 2022– 2023 ஆம் கல்வியாண்டு முதல் சேர்வோர்க்குரியது

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

(பருவத் தேர்வு இல்லை)

Syllabus

Unit I **கவிதைகள்** 06 h

1தமிழ்நாடு - பாரதியார்

2.மனதில் உறுதி வேண்டும் - பாரதியார்

3. இன்பத்தமிழ் - பாரதிதாசன்

4.வேலைகளல்ல வேள்விகள் - 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 எழுதச் செய்தல்

Notes

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

பகுதி – அ

சரியான விடையைத் தேர்வு செய்தல் — 10x1=10

பகுதி – ஆ

கோடிட்ட இடங்களை நிரப்புக. — 10x2=20

பகுதி – இ

இரண்டு பக்க அளவில் விடையளிக்க — 2x10=20

குறிப்பு:

- அனைத்து அலகுகளில் இருந்தும் வினாக்கள் அமைதல் வேண்டும்
- பகுதி இ –க்கான வினாக்கள் இது அல்லது அது என்ற அடிப்படையில் அமைதல் வேண்டும்

Text Book

1 சிறப்புத் தமிழ் - 2022-2023, 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, சென்

4 தமிழ் இணையக் கல்விக்கழகம் - TAMIL VIRTUAL ACADEMY
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Course Code	Course Name	Category	L	T	P	Credit
225CR1A2AA	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	Describing Fundamental Rights	K2
CO3	Impart knowledge on Human Right Violations and Redressal Mechanism.	K4
CO4	Extend a comprehensive knowledge on Rights to Women and Child	K3
CO5	Analyze the knowledge on Civil and Political Rights of Women	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

225CR1A2AA	HUMAN RIGHTS AND WOMEN'S RIGHTS	SEMESTER II

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

Unit I Introduction to Human Rights 04 h

Meaning - Definition - Nature - Content - Legitimacy of Human Rights - Origin and Development of Human Rights - Theories – Principles of Magna Carta – Modern Movements of Human Rights – The Future of Human Rights.

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).

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.

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.

Bos Chairman / HoD
Dept. of Computer Science with Cognitive Systems
Dr. N. G. P. Arts and Science College
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Academic Council
Dr.V. Rajendiran
CHAIRMAN
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Course Code	Course Name	Category	L	T	P	Credit
221TL1A3TA	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

221TL1A3TA	TAMIL - III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **காப்பியங்கள்** 10 h

1. சிலப்பதிகாரம் – வழக்குரை காதை

2. மணிமேகலை – ஆதிரை பிச்சையிட்ட காதை

Unit II **காப்பியங்கள்** 10 h

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

2. பெரிய புராணம் - அதிபத்த நாயனார் புராணம்

Unit III **சிற்றிலக்கியங்கள்** 10 h

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

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

Unit IV **இலக்கிய வரலாறு** 10 h

1.காப்பியங்களின் தோற்றமும் வளர்ச்சியும்

2.சிற்றிலக்கியங்களின் தோற்றமும் வளர்ச்சியும்

3.நாடகத்தின் 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 : மத்திய மற்றும் மாநில அரசு விருது பெற்ற தமிழ்த் திரைப்படங்கள் மட்டும்

Text Book

1 தமிழ் மொழிப்பாடம் - 2022-2023, 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
221TL1A3HA	HINDI - III	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

221TL1A3HA	HINDI – III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

पद्य – काव्य पराशर (भोलानाथ)

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

Unit II 10 h

हिन्दी साहित्य का इतिहास: (साधारण ज्ञान)

Unit III 10 h

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

Unit IV 10 h

संवाद लेखन

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 प्रदिप – रामदेव प्रकाशक: हिन्दी भवन 36 इलाहाबाद-211024 (Unit IV)
5. प्रकाशक: दक्षिण भारत प्रचार सभा चेनैई -17 (Unit V)

Course Code	Course Name	Category	L	T	P	Credit
221TL1A3MA	MALAYALAM - III	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUS ON

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

221TL1A3MA	MALAYALAM - III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **Poetry** 10 h

Kumaranasan

Unit II **Poetry** 10 h

Kumaranasan

Unit III **Poetry** 10 h

Kumaranasan

Unit IV **Poetry** 10 h

Vayalar Ramavarma

Unit V **Poetry** 08 h

Vayalar Ramavarma

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
221TL1A3FA	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

221TL1A3FA	FRENCH - III	SEMESTER III

Total Credits: 3
Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

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

Unit II 10 h

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

Unit III 10 h

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

Unit IV 10 h

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

Unit V 08 h

Make in Own Sentences based on the above Lessons

Text Book

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

Course Code	Course Name	Category	L	T	P	Credit
221EL1A3EA	PROFESSIONAL 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 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	Assume the sentence construction and paragraph development	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

221EL1A3EA	PROFESSIONAL ENGLISH - III	SEMESTER III

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I Listening and Reading 08 h

Listening in casual conversation, Small group and Conference setting - Listening for Factual Information, Detail and Situation - Developing Listening skills- Why do we avoid Listening- Poor Listening - Disadvantages - Poor listening vs Effective Listening - Basics of Reading- efficient and inefficient readers- Advantages – Benefits and Effective reading and comprehension skills- Need for Developing Efficient Reading skills- Four Basic steps of Effective Reading - Stumbling blocks in becoming an effective Reader- Improving Vocabulary power- Strategies for Comprehending and Retaining content- Effective Note Taking while Reading

Unit II Speaking 11 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

CV and Job Applications- How to make your letter stand out?- 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- Key factors- Types- Contents- Format- Evaluation

Unit IV Effective Skills in Language 10 h

Using Word's Effectively- Mastering Spelling Techniques- Structuring Phrases and Clauses- Writing Effective Sentences– Building Effective paragraphs- Revising, Editing and Proof reading

Unit V Soft Skills 08 h

Introduction- What are soft skills?- Importance of soft skills- Attributes- Social soft skills- Thinking- Negotiating- Exhibiting- Identifying- Improving- Will formal training enhance your soft skills? - Soft Skills training -Train Yourself- Practicing soft skills- Measuring attitude – Self-Discovery: Importance of knowing yourself- Process - SWOT analysis – Benefits – Usage – SWOT Analysis grid

Text Books

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

References

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

Course Code	Course Name	Category	L	T	P	Credit
224CA1A3CA	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 concepts, design, modeling and normalization	K1
CO2	Obtain knowledge on database environment	K2
CO3	Know the DML commands	K2
CO4	Learn the concepts of PL/SQL	K3
CO5	Analyze the various composite data types	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

224CA1A3CA	DATABASE MANAGEMENT SYSTEMS	SEMESTER III

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
224CT1A3CP	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

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

224CT1A3CP	JAVA PROGRAMMING	SEMESTER III

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, 2015, "Java: The Complete Reference", Ninth 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, 2010, "Programming with Java A Primer", Second Edition, Tata McGraw Hill Publications.

2 Schildt, 2010, "The Complete Reference Java", Eighth Edition, Tata McGraw Hill Publications.

3 C. Xavier, 2010, "Programming with JAVA 2", SciTech Publication, Chennai.

4 Instructional Software Research and Development (ISRD) Group, 2007, "Introduction to Object Oriented Programming through Java", Tata McGraw-Hill Publishing Company Limited, New Delhi.

Course Code	Course Name	Category	L	T	P	Credit
224CG1A3CA	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

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

224CG1A3CA	COMPUTER NETWORKS	SEMESTER III

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 SilviuAngelescu, 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.

224CG1A3SP	SEC PRACTICAL - I: SQL-PL/SQL	SEMESTER III

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
222MT1A3IC	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					✓

COURSE FOCUSES ON

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

222MT1A3IC	OPERATIONS RESEARCH	SEMESTER III

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 - transhipment 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 Book

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", Nineth 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

224CG1ASSA	SOFTWARE PROJECT MANAGEMENT	SEMESTER III

Total Credit: 1

Syllabus

Unit I INTRODUCTION TO SOFTWARE PROJECT MANAGEMENT

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-Applying 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.

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

224CG1ASSB	DATE CENTER MANAGEMENT	SEMESTER III

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

BoS Chairman / HoD
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Dr.N.G.P. Arts and Science College
APPROVED
6th 10.06.23 | AC - 14th 14.07.23 | GB - 20th 05.08.23

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

Course Code	Course Name	Category	L	T	P	Credit
221TL1A4TA	TAMIL - IV	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

221TL1A4TA	TAMIL - IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **எட்டுத்தொகை** 10 h

1. நற்றிணை – குறிஞ்சித் திணை
   I.பா.எண் : 01 – கபிலர்
   II.பா.எண் : 88 – நல்லந்துவனார்
   III.பா.எண் : 102 – செம்பியனார்
2. குறுந்தொகை – முல்லைத்திணை
   I.பா.எண் : 65 – கோவூர்கிழார்
   II. பா.எண் : 167 – கூடலூர்கிழார்
   மருதத்திணை
   I.பா.எண் : 08 – ஆலங்குடி வங்கனார்
   II.பா.எண் : 61 – தும்பிசேர்கீரனார்
   III.பா.எண் :196 – மிளைக் கந்தன்
   நெய்தல் திணை
   I.பா.எண் : 57 – சிறைக்குடி ஆந்தையார்

Unit II **எட்டுத்தொகை** 08 h

1. கலித்தொகை – பாலைக்கலி
   I.பா.எண் : 09 – பெருங்கடுங்கோ
2. அகநானூறு – மருதத்திணை
   I.பா.எண் : 86 – நல்லாவூர்கிழார்
3. புறநானூறு - I.பா.எண் : 188 – பாண்டியன் அறிவுடை நம்பி
   II.பா.எண் : 192 – கணியன் பூங்குன்றனார்
   III.பா.எண் : 279 – ஒக்கூர் மாசாத்தியார்
   IV.பா.எண் : 312 – பொன்முடியார்

Unit III **பத்துப்பாட்டு** 10 h

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

Unit IV **இலக்கிய வரலாறு** 10 h

1. எட்டுத் தொகை நூல்கள்
2. பத்துப்பாட்டு நூல்கள்

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

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

II.பயிற்சிப் பகுதி

சங்கப் பாடல்கள் குறித்து திறனாய்வு செய்தல்

Note: பயிற்சிப் பகுதியில் வினாக்கள் அமைத்தல் கூடாது

Text Book

1 செய்யுள் திரட்டு - மொழிப் பாடம் - 2022- 23
தொகுப்பு: தமிழ்த்துறை, டாக்டர் என்.ஜி.பி. கலை அறிவியல் கல்லூரி,
வெளியீடு : நியூ செஞ்சுரி புக் ஹவுஸ், சென்னை – 600 098. (Unit I- V)

References

1 பேராசிரியர் புலவர் சோம. இளவரசு, எட்டாம் பதிப்பு -2014, தமிழ் இலக்கிய வரலாறு - மணிவாசகர் பதிப்பகம், சென்னை.
2 பேராசிரியர் முனைவர் பாக்கியமேரி, முதற் பதிப்பு- 2013, இலக்கணம் -இலக்கிய வரலாறு - மொழித்திறன் -பூவேந்தன் பதிப்பகம், சென்னை.
3 தமிழ் இணையக் கல்விக்கழகம்.<http://www.tamilvu.org/>

Course Code	Course Name	Category	L	T	P	Credit
221TL1A4HA	HINDI - IV	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

221TL1A4HA	HINDI- IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

नाटक

Unit II 10 h

एकांकी

Unit III 10 h

काव्य मंजरी

Unit IV 10 h

सूचना लेखन

Unit V 08 h

अनुवाद अभ्यास- III

Text Books

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

Course Code	Course Name	Category	L	T	P	Credit
221TL1A4MA	MALAYALAM- IV	LANGUAGE - I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUS ON

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

221TL1A4MA	MALAYALAM- IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I **Drama** 10 h

Saketham- Sreekandan Nair

Unit II **Drama** 10 h

Saketham- Sreekandan Nair

Unit III **Drama** 10 h

Saketham- Sreekandan Nair

Unit IV **Screen Play** 10 h

Perumthachan- Vasudevan Nair

Unit V **Screen Play** 08 h

Perumthachan- Vasudevan Nair

Text Books

1 Nair, Sreekandan C.N. 2023. Saketham, Drama. DC Books Kottayam, Kerala, India. (Unit I to III)

2 Nair, Vasudevan M.T. 1994. Perumthachan- Screenplay. DC Books Kottayam, Kerala, India. (Unit IV & V)

Reference

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

Course Code	Course Name	Category	L	T	P	Credit
221TL1A4FA	FRENCH - IV	LANGUAGE- I	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

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

COURSE OUTCOMES

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

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

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

221TL1A4FA	FRENCH - IV	SEMESTER IV

Total Credits: 3
Total Instruction Hours: 48 h

Syllabus

Unit I 10 h

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

Unit II 10 h

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

Unit III 10 h

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

Unit IV 10 h

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

Unit V 08 h

Make in Own Sentences based on the above Lessons

Text Book

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

Course Code	Course Name	Category	L	T	P	Credit
221EL1A4EA	PROFESSIONAL ENGLISH - IV	LANGUAGE- II	3	1	-	3

PREAMBLE

This course has been designed for students to learn and understand

- the skill-based learning for better communication
- the prevalent issues logically and present coherently
- the ideas accurately and clearly

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Develop the ability to appreciate ideas and think critically	K1
CO2	Integrate academic success into practical life skills	K2
CO3	Express challenges of a competitive environment and select the profession that best suits them	K2
CO4	Discuss with confidence in conversations, to initiate, sustain and close a conversation	K3
CO5	Identify a sense of social commitment	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

221EL1A4EA	PROFESSIONAL ENGLISH - IV	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 48 h

Syllabus

Unit I Career 08 h

Leadership- Everyday leadership- Everyday leaders motivation- Qualities of a good leader- Professionalism- Creativity- Practical Application- Ways to become more creative- Six Thinking hats techniques

Unit II Art of Promoting 11 h

Selling your skills- Neuromarketing as a tool for influencing leaders- Using neuromarketing and psychology to get ahead- Recruiters and Clients decision making skills- Three steps to use neuromarketing for a successful life- Attention- storytelling- Perception and reputation- Recognize opportunities and openings before the competition- observation– Matching yourself with your leaders

Unit III Facing Challenges 10 h

Introduction-Panicky people- Negative people- Positive people- Facing challenges and taking initiatives – Importance of youth to face challenges and take initiative Benefits of Facing challenges- Facing challenges in life

Unit IV Effective Decision Making 10 h

Decision Making Process- Methods of Decision Making- Steps in DM- Theoretical Approaches to individual Decision Making- Optimizing Decision Theory- The Subjective Expected Utility Model- Steps to Effective Decision- Making- Effective Decision Making in Terms- Methods for team decision making- Confusion and decision making- Decision making styles

Unit V Practising Corporate Social Responsibility (CSR) 09 h

Corporate Social Responsibility (CSR)- definitions- Goal- Areas- Need- Benefits - Argument in favour/against of CSR- Factors that promote CSR – Limitations for implementing- India and Corporate Social Responsibility- Activities carried out by Companies in India- List of projects for funding under CSR- Implementation of CSR commitments

Text Books

1 Sharma, Prashant. 2022. Soft Skills. BPB Publications, 3rd Edition, New Delhi, India. (Unit I & II)

2 Alex. 2013. Managerial Skills. S. Chand Publishing, New Delhi, India. (Unit III to V)

3 Alex. 2009. Soft Skills. S. Chand Publishing, New Delhi, India. (Unit II)

4 E H McGrath S J. 2011. Basic Managerial Skills for All, 9th Edition, New Delhi, India. (Unit III)

References

1 Adair J. 1986. Effective Team Building: How to make a winning team. Pan Books, London, United Kingdom.

2 Dhanavel S P. 2010. English and Soft Skills, Orient Blackswan, Hyderabad, India.

3 Singh S R. 2011. Soft Skills. APh Publishing Corporation, New Delhi, India.

4 Lakshminarayanan K R, Murugavel T. 2015. Managing Soft Skills. Scitch Publications, Chennai, India.

Course Code	Course Name	Category	L	T	P	Credit
224CG1A4CA	CLOUD AND VIRTUALIZATION	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Fundamentals of cloud computing and cloud concepts
- Configuring and managing the virtual networks
- Hypervisor and data center

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 cloud computing	K1
CO2	Learn the cloud services	K2
CO3	Describe the virtualization	K3
CO4	Learn the configure of virtual machine	K3
CO5	Relate the data center architecture	K3

MAPPING WITH PROGRAMME OUTCOMES

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

224CG1A4CA	CLOUD AND VIRTUALIZATION	SEMESTER IV

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Introduction to Cloud Computing 10 h

Introduction: Definition of Cloud – Evolution of Cloud Computing – Types of Cloud: Public cloud - Private cloud - Community cloud - Hybrid cloud -Underlying principles of Parallel & Distributed Computing – Cloud Characteristics – Advantages of Cloud.

Unit II Cloud Services 10 h

Three Service Models: Infrastructure as a Service (IaaS) - Platform as a Service (PaaS) - Software as a Service (SaaS) - Benefits of Cloud Computing - Pros and Cons of Cloud Computing - Cloud Vendors - Traditional Infrastructure Setup and Challenges – Amazon Web Service- IBM cloud - Google cloud-Azure.

Unit III Virtualization 10 h

Introduction to vSphere and the Software - Defined Data Center Creating Virtual Machines - VCenter Server - Configuring and Managing - Virtual Networks Configuring and Managing Virtual Storage - Virtual Machine Management - Resource Management and Monitoring.

Unit IV Hypervisor 9 h

Virtual Machines: vSphere HA - vSphere Fault Tolerance - Protecting Data vSphere DRS - Network Scalability - vSphere Update Manager and Host Maintenance - Storage Scalability - Securing Virtual Machines.

Unit V Datacenter 9 h

Data center overview - Components - Provisions - Need of Data Center - Data Center Architecture - Different Racks - Data Center Architecture for Cloud Computing - Role of Data center in Cloud Computing.

Text Books

1 Course Material, Tata Consultancy services

References

1 Surbhi Rastogi, (2021), Cloud Computing Simplified: Explore Application of Cloud, Cloud Deployment Models, Service Models and Mobile Cloud Computing, BPB.

2 Rittinghouse, John W., and James F. Ransome, (2017), Cloud Computing: Implementation, Management and Security, (2nd Edn.), CRC Press.

Course Code	Course Name	Category	L	T	P	Credit
224DA1A4EP	PYTHON FOR DATA SCIENCE	EMBEDDED 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 Python tools to perform Data Analysis	K2
CO2	Apply NumPy library to understand complex data structures	K3
CO3	Apply Pandas library to analyze, clean and explore datasets	K4
CO4	Analyze advanced features of pandas library to perform data manipulation	K2
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

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

224DA1A4EP	PYTHON FOR DATA SCIENCE	SEMESTER IV

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 the Python World: Python - The Programming Language - Data Structures - Functional programming

Practical

1.Programs using functions.

2.Programs using tuples.

3.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.

Practical

4.Programs using aggregate functions.

5.Programs for array manipulation.

6.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

Practical

7.Programs using DataFrame

8.Programs to deal with missing values

9. 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

Practical

10. Programs to implement data transformation

11. Programs to implement string manipulation

12. 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

Practical

13. Programs to visualize data using Bar Charts, Pie charts

14. Programs to visualize data using Advanced Charts

15.Project using Advanced libraries

Text Books

1 Fabio Nelli, (2018), "Python Data Analytics with Pandas, NumPy and Matplotlib", (2nd 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
224CG1A4CB	ARTIFICIAL INTELLIGENCE	CORE	3	-	-	3

PREAMBLE

This course has been designed for students to learn and understand

- The fundamental of artificial intelligence
- The basics of knowledge representation and reasoning
- Demonstrate working knowledge of reasoning in the presence of uncertain information

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 artificial intelligence.	K1
CO2	Understand and implement the informed and uninformed search techniques in AI.	K2
CO3	Explain the formal methods of knowledge representation	K2
CO4	Apply the logic and reasoning techniques to AI Application	K3
CO5	Recognize the importance of various AI expert systems	K2

MAPPING WITH PROGRAMME OUTCOMES

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

224CG1A4CB	ARTIFICIAL INTELLIGENCE	SEMESTER IV

Total Credits: 3

Total Instruction Hours: 36 h

Syllabus

Unit I Introduction and Problem Solving Methods in AI 7 h

Introduction to 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: Cryptarithmetic problems

Unit III Knowledge Representation 7 h

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

Unit IV Logic in AI 7 h

Overview – Propositional Logic –First Order Logic – Prolog: Logic Programming – Symbolic Logic – Conversion: English to Prolog – Terminologies – Variables and Operators – Inference Process - Tracing Model of Execution – List Structures – Operations - Drawbacks of Prolog – Applications of Prolog.

Unit V Applications of AI 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: Introduction – Knowledge Representation – Expert System Shells - Knowledge Acquisition - Applications of Expert Systems - Examples of Expert systems.

Text Books

1 Lavika Goel, (2021), "Artificial Intelligence – Concepts and Applications ", (1st Edn.),Wiley India Pvt. Ltd.

2 Deepak Khemani,2013, "Artificial Intelligence", Tata Mc Graw Hill Education.

References

1 Ivan Brako,2011,PROLOG: Programming for Artificial Intelligence,3rd edition Pearson.

2 Stuart Russel and Peter Norvig 2022,"AI – A Modern Approach", 3nd Edition, Pearson Education.

224CG1A4SP	SEC - II : Virtualization Tools	SEMESTER IV

Total Credits: 2
Total Instructions Hours: 48 h

S.No	Contents
1	Create an class time table and stored it on the cloud with doc, and pdf format using docs.google.com
2	Create a resume in using standard template in google or zoho cloud
3	Develop a Google app engine program to generate n even numbers and deploy it to google cloud
4	Create an account in AWS and MS Azure
5	Install Virtual box / VMware Workstation on windows OS
6	Create a procedure to transfer the files from one virtual machine to another virtual machine
7	Study and implement Storage as a Service
8	Backup an local drive to OneDrive
9	Exploring AWS services for databases
10	Working with hypervisors
11	Implement the cloud services in Microsoft Azure
12	Develop a Guestbook Application using Google App Engine

Note: Out of 12 - 10 Mandatory

Course Code	Course Name	Category	L	T	P	Credit
225BP1A4IA	INDUSTRIAL PSYCHOLOGY	IDC	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Increase awareness of the scientific method and develop a basic understanding of statistics and statistical analyses.
- Increase awareness of important psychometric properties of personnel and psychological testing materials and their applications.
- Design and conduct research in simulated work settings.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Describe the history of the field of industrial and organizational psychology.	K1
CO2	Explain the decision making process	K2
CO3	describe and perform the process of an Organizational Design and Structure	K3
CO4	describe the current trends in industrial and organizational psychology	K4
CO5	explain factors that influence motivation and morale	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

225BP1A4IA	INDUSTRIAL PSYCHOLOGY	SEMESTER IV

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 Behaviour - 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 Behaviour - Group Formation and Development - Decision Making Process - Individual Influences - Group Decision Process - Group Dynamics.

Unit III Organizational Design and Structure 10 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 10 h

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

Case Study on Social Conversation Skills.

Note: Case studies related to the above topics to be discussed (Examined internal only).

Text Books

1 Nelson, Quick and Khandelwal, 2012, ORGB: An innovative approach to learning and teaching Organizational Behaviour. A South Asian Perspective,

Cengage Learning.

2 Luthans, Fred,2008, Organizational Behavior, McGraw Hill.

References

1 Landy, F. J. & Conte, J. M., 2013, Work in the 21st Century: An Introduction to Industrial and Organizational Psychology, 4th Ed. New York: Wiley.

2 Robbins, Stephen,2018, Organizational Behavior, Prentice Hall, India.

3 UdaiPareek, 2017, Understanding Organizational Behavior, Oxford University Press.

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

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

Course Code	Course Name	Category	L	T	P	Credit
224CG1A5CA	DIGITAL TECHNOLOGIES	CORE	4	1	-	5

PREAMBLE

This course has been designed for students to learn and understand

- Digital Primer used in digital marketing
- Digital marketing in Industries
- Automatix and Bot Concepts

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Examine the basic concepts of digital primer.	K1
CO2	Describe the necessity of using digital for industries	K2
CO3	Illustrate Arts of RPA	K3
CO4	Demonstrate the values of Automation in Enterprise	K2
CO5	Identify Task Bots	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

224CG1A5CA	DIGITAL TECHNOLOGIES	**SEMESTER V**

Total Credits: 5

Total Instruction Hours: 60 h

Syllabus

Unit I Digital Primer 12 h

Digital Primer - Digital Metaphors on Cloud 9 - Introduction to Big Data -Social Media and Digital Marketing - Artificial Intelligence - Unchain the Block chain - Internet of Everything-Immersive Technology.

Unit II Digital for Industries 12 h

Digital for Industries - Manufacturing and Hi-tech-Banking and Financial Services - Insurance and Healthcare - Retail - Travel and Hospitality - Communications, Media and Information Services -Government.

Unit III Automatix and Art of RPA 12 h

Introduction - Setting the Context - RPA Prelude - RPA Demystified - RPA Vs BPM RPA Implementations - RPA in Industries - RPA Tools - Automatix - Art of RPA.

Unit IV Automation Anywhere 12 h

Automation Anywhere - Getting Started with AA Enterprise-Exploring AA Enterprise - AA Enterprise -Architecture.

Unit V Task Bots 12 h

Knowing the Bots - More About Task Bots - AA Enterprise - All About Recorders - Designers -Meta Bots- Cognitive RPA.

Text Books

1. Richard Murdoch "Robotic Process Automation: Guide to Building Software Robots, Automate Repetitive Tasks Become an RPA Consultant", Richard Murdoch & RPA Ultra, First Edition 2018.
2. Vaibhav Srivastava, "Getting Started with RPA using Automation Anywhere", bpb Publications, First Edition 2021,

References

1. Kelly Wibbenmeyer, "The Simple Implementation Guide to Robotic process Automation (RPA): How to Best Implement RPA in an Organization", Kelly Wibbenmeyer PhD Publications, First Edition 2018.
2. Alok Mani Tripathi ," Learning Robotic Process Automation- Create software robots and automation business processes with the leading RPA Tool UIPath", Packt Publications, First Edition 2018,

Course Code	Course Name	Category	L	T	P	Credit
224IT1A5CB	CYBER SECURITY AND ETHICS	CORE	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- The objective of this course is to focus on the models, tools, and techniques for enforcement of security.
- Develop an understanding of security policies as well as protocols to implement such policies
- Will gain familiarity with computer network, defenses against them.

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Learn the foundations of Cyber security and threat landscape	K3
CO2	To equip students with the technical knowledge and skills needed to protect and defend against cyber threats and Mobile threats.	K3
CO3	To expose students to governance, regulatory, legal, economic, environmental, social and ethical contexts of cyber security	K4
CO4	To systematically educate the necessity to understand the impact of cyber crimes and threats with solutions in a global and societal context	K4
CO5	To select suitable ethical principles and commit to professional responsibilities and human values and contribute value and wealth for the benefit of the society	K5

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

224IT1A5CB	CYBER SECURITY AND ETHICS	SEMESTER V

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Introduction to Cyber Security 12 h

Cyber Security and Cybercrime Definition and Origins of Cybercrime of the World - Cybercrime and Information Security- Classifications of Cybercrime with Cyber Security, Cybercrime and the Indian IT Act,2000. Global Perspective on Cybercrimes. Cyber Offences & Cybercrime: Cyber Offences - Introduction to Cybercrime - Cyber Security Strategic Attacks

Unit II Computer Crime and Security 12 h

Computer Crime hacking and Security-Computer as Commodities - Theft of Intellectual Property. Identity Theft and Identity Fraud: Typologies of Internet Theft/ Fraud- Prevalence and Victimology- Physical Methods of Identity Theft- Virtual or Internet Facilitated Methods- Crimes Facilitated by Identity Theft/Fraud

Unit III Cyberattacks and Security Breach 12 h

Attacks that Inflict Damage- Impersonation-Data Theft-Malware-Web Service Attacks-Malvertising-Advanced Attacks- Identifying Security Breach: Identifying-Detecting Convert Breaches. Recovering from a security Breach: Reinstall Damage software-Stolen Information. Resetting your Device

Unit IV Cyberspace and Cyber Law 12 h

Aspects in Cyber Law - Security Aspects of Cyber Law- Intellectual Property Aspects in Cyber law and Evidence- Criminal Aspects in Cyber Law-Global Trends in Cyber Law. Legal framework for Electronic Data Interchange Law. Cybercrime and Cyber Security: Cyberspace-Cyber law - Cyber Security Policy.Case Study : Cyber Security Threats in Payment Gateway

Unit V Overview of Ethics 12 h

Ethics : Human values and Professional Ethics- Ethics in the Business World- Corporate Social Responsibility- Fostering Corporate Social Responsibility and Good Business Ethics- Improving Business Ethics- Ethical Considerations in Decision Making- Ethics in Information Technology. Professional Codes of Ethics- Professional Organizations- Certifications and Licensing- Encouraging Ethical Use of IT Resources among Users

Text Books

1 Nilakshi Jain , Ramesh Menon, "Cyber Security and Cyber Laws" , Publications : Wiley India Pvt. Ltd., First Edition 2021

2 Marjie T.Britz ,"Computer Forensics and Cyber Crime" , Second Edition ,2022 Pearson

3 Joseph Steinberg, "Cybersecurity for Dummies",Edition 2020 – Wiley Publication.

References

1 George Reynolds , "Ethics in Information Technology", Cengage Learning Publication, 6th Edition, 2019

2 Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. 2010

3 https://www.ugc.gov.in/pdfnews/5457035_Cyber-Security-Final.pdf

4 Cyber Ethics 4.0, Christoph Stuckelberger, Pavan Duggal, by Globethic

Course Code	Course Name	Category	L	T	P	Credit
224CG1A5CB	SOFTWARE TESTING	CORE	4	1	0	5

PREAMBLE

This course has been designed for students to learn and understand

- Basic Concepts of Selenium
- Selenium Web Driver and Elements
- Selenium Grid

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Learn about basics of Selenium	K1
CO2	Understand the Selenium Web Driver and Elements	K2
CO3	Apply the Selenium Elements	K3
CO4	Demonstrate the Test Automation Framework	K3
CO5	Analyzing the Advance Selenium Tools	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

224CG1A5CB	SOFTWARE TESTING	**SEMESTER V**

Total Credits: 5

Total Instruction Hours: 60 h

Syllabus

Unit I Software Testing 14 h

Introduction to Software Testing-Testing Methodologies-Testing Types-Software Development Lifecycle-Software Testing Lifecycle- Manual and Automation Testing-Defect Lifecycle Management Protocol -Requirement Traceability Matrix Preparation-Project Closure.

Unit II Basics of Selenium 12 h

Introduction to Selenium-History of selenium-selenium features-Uses and Benefits of selenium-Limitations and challenges - Complexities of selenium in web application - Selenium Components-Selenium IDE Features - Selenium Download and Installation-Creating Scripts using Firebug and Its Installation- Locator Types.

Unit III Selenium WebDriver and Selenium Elements 11 h

Selenium WebDriver Installation with Eclipse - Firefox Driver-Chrome Driver-Internet Explorer Driver - Microsoft Edge Driver-Safari Driver-Web Element-Accessing the various attributes of Web Elements-Object repository

Unit IV Selenium Framework 12 h

Handling Alerts -Pop-ups- Handling Web Tables-Frame- Dynamic Elements- Robot API-AutoIT -TestNG-Test Automation Framework- Handling radio button-Handling Dropdowns- Form submission -Explicit and Implicit Wait - Quit

Unit V Selenium Grid 11 h

Selenium Grid Introduction: Selenium grid Architecture- Selenium Server- Selenium grid test-Command line for selenium gird -Transition Testing - States, State Graph, State Testing. Case Study: Prepare a Test Design and Requirement Traceability Matrix for an Application/Website.

Text Books

1 Pinakin Ashok Chaubal," Selenium Framework – Design in Keyword-Driven Testing", BPB Publication, First Edition,2020.

2 Srinivasan Desikan, Gopalaswamy Ramesh, "Software Testing Principles and Practices", Pearson Publication, Twenty Eighth Edition,2019

References

1 Dorothy Graham, "Foundations of Software Testing", ISTQB Certification, 4th Edition2020,

224CG1A5CP	CORE PRACTICAL : DIGITAL TECHNOLOGIES	**SEMESTER V**

Total Credits: 2
Total Instruction Hours: 48 h

S.No	Contents
1	Creating bots for automatic software installation
2	Creating bots for automatic software patch installation
3	Creating bots for file transfer
4	Creating bots for automatic file backup
5	Find Unicorn Name Generators
6	Find Movie Rating
7	Implement Amazon Data Scraping
8	Email Automation
9	Transferring Data from one system to another
10	Password Generator
11	Forms Processing
12	Extracting data from PDFs, scanned documents and other formats
13	Generating mass emails
14	Create and deliver invoices

Note: Out of 14 - 10 Mandatory

224CG1A5SP	SEC PRACTICAL: SELENIUM AUTOMATION TESTING	**SEMESTER V**

Total Credits: 2
Total Instruction Hours: 48 h

S.No	Contents
1	Write a script to open google.com and verify that title is Google and verify that it is redirected to google.co.in
2	Write a script to open google.co.in using chrome browser (ChromeDriver)
3	Write a script to open google.co.in using internet explorer (InternetExplorerDriver)
4	Write a script to create browser instance based on browser name
5	Write a script to search for specified option in the listbox
6	Write a script to print the content of list in sorted order.
7	Write a script to print all the options. For duplicates add entry only once. Use HashSet.
8	Write a script to close all the browsers without using quit() method.
9	Write a script to handle all locators and return web element for any locator.
10	Write a script to handle all locators containing dynamic wait and return web element for any locator.
11	Write a script to open a Firefox browser using selenium web driver.
12	Write a script to print a message to display that the website is opened successfully wait for 5 seconds and close the browser.
13	Write a script to upload a file with send keys method by using web driver.
14	Write a script to access a link in selenium web driver by linktext() and partialLinktext()
15	Write a script to Locate a Link by Selecting Multiple Items in a Dropdown

Note: Out of 15 - 10 Mandatory

Course Code	Course Name	Category	L	T	P	Credit
224CG1A5DA	PROCESS MANAGEMENT	DSE-1	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Software and software Engineering
- Basics of Agile and Scrum
- Principles of DevOps and Design thinking

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understanding the concept of software engineering process	K2
CO2	Describe agile principles and methodologies	K2
CO3	Identify the scrum values and events	K3
CO4	Learn the methods and principles of DevOps	K4
CO5	Apply the design thinking concepts	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

224CG1A5DA	PROCESS MANAGEMENT	**SEMESTER V**

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Software and Software Engineering 14 h

The Nature of Software - The Unique nature of WebApps - Software Engineering-Software Process - Software engineering practice - Software myths - Software Process Model - A Generic Process Model - Process Assessment and Improvement.

Unit II Agile 12 h

Agile - understanding Agile Value - Agile Manifesto - Principles of Agile -Agile Methodologies - Advantages and Disadvantages of Agile - Agile anti - Patterns- Scaled Agile Framework - UX - foundations of lean UX - Principles of lean UX.

Unit III Scrum 11 h

Definition of Scrum - Uses of Scrum - Scrum Theory - Scrum Values - The Scrum Team - Scrum Events - Scrum Artifacts - Artifact Transparency.

Unit IV DevOps 12 h

Introduction to DevOps-methodologies, principles-strategies-Automation, Performance Measurement through KPIS and Metrics - Agile and DevOps-Agile Infrastructure-Velocity-Lean Startup UPS.

Unit V Design Thinking 11 h

Introduction to Design Thinking - Lean Thinking - Actionable strategy - The Problem with complexity - Vision and Strategy - Defining Actionable Strategy Act to Learn -Leading Teams to Win.

Text Books

1 Roger S. Pressman, "Software Engineering a practioners Approach " 7th edition 2010.

2 Ken Schwaber and Jelf Sutherland,"The scrum Guide", 2017.

References

1 Len, Bass, Ingo weber liming Zhu "DevOps A Software Architect's perspective ", Pearson publications,2016.

2 https://www.techtarget.com

3 Jonny Schneider, "Understanding Design thinking Lean and Agile", O' Reilly publications,2017

Course Code	Course Name	Category	L	T	P	Credit
224CG1A5DB	MACHINE LEARNING PRINCIPLES	DSE-1	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Bayesian Decision Theory and Classification Algorithms
- Clustering algorithms
- Deep Learning Architectures and Combining Multiple Learners

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understanding the concept of classification and clustering	K2
CO2	Learn classification algorithms	K1
CO3	Analyze Clustering Algorithms	K4
CO4	Apply Deep learning Applications	K3
CO5	Illustrate Multiple Learners	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

224CG1A5DB	MACHINE LEARNING PRINCIPLES	**SEMESTER V**

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Bayesian Decision Theory and Normal Distribution 14 h

Machine perception - feature extraction - classification – clustering - linear and logistic regression - Types of learning - Bayesian decision theory – classifiers - discriminant functions and decision surfaces - univariate and multivariate normal densities - Bayesian belief networks.

Unit II Classification Algorithms 12 h

Perceptron and backpropagation neural network - k-nearest-neighbor rule. Support vector machine: multicategory generalizations - Regression. Decision trees: classification and regression tree -random forest.

Unit III Component analysis and Clustering Algorithms 12 h

Principal component analysis - Linear discriminant analysis - Independent component analysis. k-means clustering - fuzzy k-means clustering – Expectation - maximization algorithm - Gaussian mixture models - auto associative neural network.

Unit IV Deep Learning Architectures and Applications 12 h

Convolution neural network (CNN) -Layers in CNN -CNN architectures. Recurrent Neural Network - Applications: Speech-to-text conversion-image classification - time series prediction.

Unit V Combining Multiple Learners 10 h

Generating diverse learners - model combination schemes - voting – error - correcting output codes - bagging - boosting - mixture of experts revisited - stacked generalization - fine-tuning an ensemble – cascading.

Text Books

1 Francois Chollet,"Deep Learning with Python", Manning Publications, Shelter Island, New York, 2018.

2 Tom M. Mitchell," Machine Learning", McGraw-Hill Education (India) Private Limited, 2013

References

1 Navin Kumar Manaswi," Deep Learning with Applications using Python", Apress, New York, 2018.

2 Ethem Alpaydin, "Introduction to Machine Learning", 3rd Edition, MIT Press, 2014.

3 Kevin P. Murphy," Machine Learning: A Probabilistic Perspective", MIT Press, 2012.

Course Code	Course Name	Category	L	T	P	Credit
224CG1A5DC	INFRASTRUCTURE MANAGEMENT	DSE-I	4	1	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Windows 10 Client OS
- Managing Systems with SCCM
- Monitoring Systems with SCOM

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the windows 10 Client OS	K2
CO2	Illustrate the SCCM	K1
CO3	Demonstrate the Client/Server troubleshooting in SCCM	K2
CO4	Understand the SCOM Setup and Installation	K2
CO5	Apply the Client /Server troubleshooting in SCOM	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

224CG1A5DC	INFRASTRUCTURE MANAGEMENT	**SEMESTER V**

Total Credits: 4

Total Instruction Hours: 60 h

Syllabus

Unit I Windows 10 Client OS 12 h

Introducing Windows 10 - Overview of Deploying Windows 10-Configure Devices and Drivers - Perform Post installation Configuration Tasks - Managing Apps in Windows

Unit II Introduction to SCCM 12 h

System Center Configuration Manager Overview - SCCM Features and Capabilities - SCCM Setup and Installation - Configuration Manager Basics- Deploying SCCM Client - User and Device Collections in SCCM

Unit III Managing Systems with SCCM 12 h

Application Management using SCCM - Operating System Deployment using SCCM - Endpoint Protection using SCCM - Troubleshooting SCCM Server - Troubleshooting SCCM Clients - Creating Reports using SCCM Reports

Unit IV Introduction to SCOM 12 h

System Center Operations Manager Overview - SCOM Features and Capabilities -SCOM Setup and Installation - Operations Manager Basics - Deploying SCOM Clients- Management Packs in SCOM

Unit V Monitoring Systems with SCOM 12 h

Managing and Administering SCOM Environment -Managing Alerts using SCOM- Creating Custom Management Packs and Alerts - Troubleshooting SCOM Server - Troubleshooting SCOM Clients - Creating Reports using SCOM Reporting

Text Books

1 Woody Leonhard, Ciprian Rusen, "Windows 10 All-in-One for Dummies" Dummies, 4th edition, 2021,

2 Kerrie Meyler , Gerry Hampson ,Saud Al-Mishari, Greg Ramsey, Kenneth van Surksum,"System Center Configuration Manager Current Branch" , Michael Gottlieb Wiles , Pearson, 2018.

References

1 Kevin Greene," Getting Started with Microsoft System Center Operations Manager", Packt Publishing,2016

224CG1A5GA	SMART LIVING WITH IOT	**SEMESTER** V

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

Unit I Introduction to Internet of Things 5 h

Definition and Scope - Characteristics- IoT Architecture: Architecture Overview and Design Principles - Importance and features of IoT

Unit II IoT Components 5 h

Hardware Components: Sensors - Actuators- Devices - Gateways- Arduino - Raspberry Pi- Basic of Networking: The Connected devices.

Unit III Logical design of IoT 5 h

IoT functional Blocks- IoT communication Models-IoT Communication Protocols- IoT Enabling Technologies - IoT Applications.

Unit IV Cloud Technologies 5 h

Cloud computing - Role of Cloud in IoT- Security Aspects in IoT

Unit V Real Time Applications 4 h

IoT based Smart Doorbell System - Baby Monitoring System using Arduino - Vehicle Tracking System based on GPS - IoT based Smart Farming System - Safety Monitoring System for Manual Wheelchairs

Text Books

1 Arshdeep Bahga, Vijay Madisetti, Internet of Things, "A Hands-on Approach", University Press, 2015

2 Raj Kamal, "Internet of Things: Architecture and Design", McGraw Hill, First edition, 2016.

References

1 Srinivasa K G, Siddesh G M, Hanumantha Raju R," Internet of Things", First edition, 2022.

2 David Hanes, Gonzalo Salgueiro Patrick Grossetete, Rob Barton, Jerome Henry, "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", First edition, Pearson Education Publication, 2017.

Bos Chairman / HoD
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Coimbatore - 641 048

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CHAIRMAN
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Course Code	Course Category	Course Name	L	T	P	Exam (h)	Max Marks			Credits
							CIA	ESE	Total	
Sixth Semester										
Part - III										
224CG1A6CA	Core - XI	Client Relationship Management	4	-	-	3	50	50	100	4
224AI1A6CA	Core - XII	Natural Language Processing	4	-	-	3	50	50	100	4
224CG1A6SP	SEC Practical-IV	ServiceNow Automation	-	-	4	3	50	50	100	2
224CG1A6CV	Core - XIII	Project and Viva-Voce	-	-	8	3	50	50	100	4
224CG1A6DA	DSE –II	Data Mining	4	-	-	3	50	50	100	4
224CG1A6DB		Cognitive Computing								
224CG1A6DC		Design and Architecture of Internet of Things								
224CG1A6DD	DSE - III	Principles of Deep Learning	4	-	-	3	50	50	100	4
224CG1A6DE		IT Infrastructure Library								
224CG1A6DF		Human Computer Interaction								
Part – IV										
223BC1A6AA	AECC - III	Innovation, IPR and Entrepreneurship	2	-	-	-	50	-	50	2
		Total	**18**	**-**	**12**	**-**	**-**	**-**	**650**	**24**
								***Grand Total**	**4200**	**142**

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

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	224CG1A5DA	Process Management
2	224CG1A5DB	Machine Learning Principles
3	224CG1A5DC	Infrastructure Management

Semester VI (Elective II)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	224CG1A6DA	Data Mining
2	224CG1A6DB	Cognitive Computing
3	224CG1A6DC	Design and Architecture of Internet of Things

Semester VI (Elective III)

List of Elective Courses

S. No.	Course Code	Name of the Course
1	224CG1A6DD	Principles of Deep Learning
2	224CG1A6DE	IT Infrastructure Library
3	224CG1A6DF	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	224CG1A5GA	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	224CG1ASSA	Software Project Management
2	224CG1ASSB	Data Center Management

Course Code	Course Name	Category	L	T	P	Credit
224CG1A6CA	CLIENT RELATIONSHIP MANAGEMENT	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- User Interface, Lists and Forms
- User Interface (UI) Customization, Data and Relationships
- Concept of Tasks and Workflows

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand various User Interface	K1
CO2	Interpret User Interface (UI) Customization	K2
CO3	Illustrate Data and Relationships	K3
CO4	Summarize User Interface (UI) and Data Policies	K2
CO5	Understand User Administration and Security	K2

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

224CG1A6CA	CLIENT RELATIONSHIP MANAGEMENT	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I User Interface 10 h

Versions – Frames - Important application menus and modules - Content Frame - User Interface (UI) Settings and Personalization - Lists and Forms: List V2 versus List V3, Lists and Tables - Forms

Unit II User Interface Customization 10 h

Instance - Custom Themes - UI - Impacting System Properties - Configuring Service Portal UI - Custom Homepage - Styling Pages and Widgets - War Room page - Styling the Content Management System

Unit III Data and Relationships 10 h

One to many relationships - many to many relationships - one to one relationship - Custom Relationships - Database table inheritance - Tasks and Workflows: Important Task fields – Journals - activity formatter - task table - Workflows - Service Level Agreements - Approvals - Assignments - Creating Task fields

Unit IV User Interface and Data Policies 09 h

Policies - Reverse if false - Scripting - UI Policy Order - Data Policies - Conversion between data and UI Policies - Data Policies versus Access Control Lists

Unit V User Administration and Security 09 h

Users - Groups and Roles - Emails and Notifications - User Preferences - Access Control Lists - Security Rules - Introduction to Scripting: Client-side versus Server - Side APIs, Integrated development environment

Text Books

1 Tim Woodruff, 2018, "Learning Service Now: Administration and Development on the Now Platform for Powerful IT Automation", 2nd Edition, Packt Publishing Ltd

References

1 Ashish Rudra Srivastava ,2017, "ServiceNow Cook Book",1st Edition, Packt Publishing Ltd.

2 Andrew Kindred,2018, "Mastering ServiceNow Scripting",1st Edition, Packt Publishing Ltd

3 www.servicenow.com/lpdem/demonow.html

Course Code	Course Name	Category	L	T	P	Credit
224AI1A6CA	NATURAL LANGUAGE PROCESSING	CORE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Fundamental concepts of NLP.
- Various NLP techniques to solve real-time problems.
- Linguistic data from various language resources.

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 Language Processing.	K2
CO2	learn text processing to write structured programs.	K2
CO3	recall the various types of tagging and classifications of texts.	K3
CO4	apply information extraction techniques.	K3
CO5	explore the NLP applications for processing linguistic information.	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

224AI1A6CA	NATURAL LANGUAGE PROCESSING	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Language Processing 10 h

Computing with Language: Introduction - Texts and Words, Texts as Lists of Words, Statistics, Automatic Natural Language Understanding - Accessing Text Corpora - Lexical Resources - WordNet.

Unit II Text Processing and Structured Programs 10 h

Accessing Text from the Web and Disk – Strings - Text Processing with Unicode- Regular Expressions and its Applications- Normalizing Text – Segmentation - Formatting Lists – Sequences - Functions - Program Development.

Unit III Tagging and Classification 10 h

Introduction - Tagger - Tagged Corpora, Mapping Words to Properties, Automatic Tagging, N-Gram Tagging, Transformation based Tagging - Learning to Classify Text: Supervised Classification - Examples.

Unit IV Information Extraction 9 h

Introduction - Chunking - Developing and Evaluating Chunkers - Recursion in Linguistic Structure - Named Entity Recognition - Relation extraction - Analyzing Sentence Structure: Grammatical Dilemmas, Use of Syntax, Context-Free Grammar, Parsing.

Unit V Managing Linguistic Data 9 h

Natural Language Understanding - Propositional Logic - First Order Logic - Semantics of English Sentences - Discourse Semantics - Corpus Structure - Corpus Life cycle - Acquiring Data - Working with XML - Working with Toolbox Data.

Text Books

1 Steven Bird, Ewan Klein & Edward Loper, 2021, "Natural Language Processing with Python", Reprint, 1st Edition, Shroff Publishers Pvt. Ltd.

References

1 Daniel Jurafsky, 2022, "Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics And Speech Recognition", 1st Edition, Pearson India – Noida.

2 Tanveer Siddiqui, U S Tiwary, 2019, "Natural Language Processing and Information Retrieval", 1st Edition, Oxford University Press.

3 Sunil Patel, 2021, "Getting Started with Deep Learning for Natural Language Processing (NLP)", 1st Edition, BPB - New Delhi.

224CG1A6SP	SEC PRACTICAL: SERVICENOW AUTOMATION	**SEMESTER VI**

Total Credits: 2
Total Hours: 48 h

S.No	List of Experiments
1	Navigation and User Interface
2	Navigating Applications
3	Searching
4	Create a Lists
5	Finding Information in Lists
6	Filters and Breadcrumbs
7	Editing Lists
8	Creating Personal Lists
9	Creating Forms
10	Managing Forms

Course Code	Course Name	Category	L	T	P	Credit
224CG1A6DA	DATA MINING	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Basic Concepts of Data Mining
- Data Visualization and Warehousing
- Online Analytical Processing, Association Rules, Web Mining and Text Mining

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand Supervised and Unsupervised Learning	K1
CO2	Interpret Data Visualization Techniques	K2
CO3	Summarize Online Analytical Processing and Decision Tree	K2
CO4	Illustrate Association Rules, Cluster Analysis and Neural Networks	K3
CO5	Interpret Web Mining and Text Mining	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

224CG1A6DA	DATA MINING	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Basic Concepts in Data Mining 10 h

Introduction - Data Scales - Data Categories - Scales of Measurement-Extended Scales of Measurements - Databases and Data Warehouse - Data Mining - Supervised and Unsupervised Learning - Steps in Data Mining - Applications

Unit II Association Rules, Cluster Analysis 10 h

Association Rules: Measures - Mining, Apriori Principles, FP-Growth Algorithm - Cluster Analysis: Clustering - Cluster Display, Clustering Algorithms: Hierarchical Clustering, K - Means Clustering - Applications

Unit III Online Analytical Processing 9 h

Online Analytical Processing (OLAP): Introduction, Data Cubes and Cuboids, Aggregation Measures, Schemas, Operations, Variants, Mobile OLAP - OLAP vs Statistical Databases - Data Storage, Data warehousing and data mining - Multimedia OLAP - OLAP Software - Decision Trees: Graph Theory - Trees - Induction Algorithm

Unit IV Data Visualization Techniques 10 h

Graphics and Visualization - Summarization vs Visualization – Graphics - One and Multi-Variable Diagram - Datawarehousing: Data Marts - Extract Transform Load - Data Staging - Distributed - Spatial - Indexing-Security

Unit V Introduction to Web Mining and Text Mining 9 h

Web Mining: Web Search Engines and Web Mining, Implementing Web Mining, Web Structure Mining - PageRank Algorithm - Web Query Mining - Text Mining: Introduction, Text Mining Workflow, Term-by-Document Matrix - Text Classification, Metrics, Application

Text Books

1 Rajan Chattamvelli, 2016," Data Mining Methods", 2nd Edition, Narosa Publishing House Pvt. Ltd.

References

1 Pang-Ning Tan, Michael Steinbach, Vipin Kumar, 2020," Introduction to Data Mining", Pearson India Education Services Pvt. Ltd.

Course Code	Course Name	Category	L	T	P	Credit
224CG1A6DB	COGNITIVE COMPUTING	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Foundations of Cognitive Computing
- Business implications in Cognitive Computing
- Process of building Cognitive Applications

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Interpret Cognitive Computing	K1
CO2	Outline design principles of Cognitive Systems	K2
CO3	Develop business implications in Cognitive Systems	K3
CO4	Construct Advanced Analytics in Cognitive Computing	K3
CO5	Experiment Process of Building a Cognitive Application	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

224CG1A6DB	COGNITIVE COMPUTING	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Foundation of Cognitive Computing 10 h

Cognitive Computing as a New Generation - Cognitive Systems, uses, need-Gaining Insights from Data: Domains of Cognitive Computing - Foundation of Cognitive Computing - Understanding Cognition-Two Systems of Judgment and Choice - Understanding Complex Relationships Between Systems: Types of Adaptive Systems - The Elements of a Cognitive System.

Unit II Design Principles for Cognitive Systems 10 h

Components of a Cognitive Systems - Bringing Data into the Cognitive System: Leveraging Internal and External Data Sources, Data Access and Feature Extraction Services, Analytics Services - Machine Learning-Hypotheses Generation and Scoring - Presentation and Visualization Services: Infrastructure.

Unit III Business Implications of Cognitive Computing 9 h

Advantages of New Disruptive Models - Difference with a Cognitive Systems Approach - Meshing Data - Business Knowledge to Plan for the Future - Building Business Specific Solutions - Cognitive Application.

Unit IV Advanced Analytics to Cognitive Computing 10 h

Advanced Analytics: Introduction, Key Capabilities - Predictive Analytics: Business Value of Predictive Analytics - Text Analytics: Business Value of Text Analytics - Image Analytics - Speech Analytics - Advanced Analytics to Create Value

Unit V Process of Building a Cognitive Application 9 h

Cognitive Platform, Objective, Domain - Intended Users and Attributes, Questions and Exploring Insights - Creating and Refining the Corpora: Preparing the Data, Ingesting the Data, Refining and Expanding the Corpora, Governance of Data - Training and Testing

Text Books

1 Judith Hurwitz Marcia Kaufman Adrian Bowles, 2015," Cognitive Computing and Big Data Analytics", 1st Edition, Wiley Publications

2 Vishal Jain, Akash Tayal, Jaspreet Singh, Arun Solanki, 2021, "Cognitive Computing Systems" 1st Edition, Apple Academic Press.

References

1 Kai Hwang, 2017 "Cloud Computing for Machine Learning and Cognitive Applications", 1st Edition, MIT Press.

Course Code	Course Name	Category	L	T	P	Credit
224CG1A6DC	DESIGN AND ARCHITECTURE OF INTERNET OF THINGS	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Basics of Internet of Things
- Various protocols used in IoT
- Data analytics and supporting services

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand concepts of Internet of Things (IoT)	K1
CO2	Illustrate CoAP and MQTT protocols	K2
CO3	Summarize IoT design methodologies	K2
CO4	Interpret data analytics and supporting services	K2
CO5	Outline various IoT applications	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

224CG1A6DC	DESIGN AND ARCHITECTURE OF INTERNET OF THINGS	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Internet of Things 10 h

Evolution - Enabling Technologies - M2M Communication - IoT World Forum (IoTWF) standardized architecture - Internet of Things (IoT) Architecture - Functional Stack – Fog - Edge and Cloud in IoT - Functional blocks of an IoT ecosystem: Sensors, Actuators, Smart Objects.

Unit II Protocols 10 h

IoT Access Technologies: Physical Layer - MAC layer - Topology – Security - IEEE 802.15.4 - 802.11a – LoRaWAN - Network Layer: IP versions - Constrained Nodes - Constrained Networks - 6LoWPAN - Application - Transport Methods: SCADA - Application Layer Protocols: CoAP, MQTT.

Unit III Design and Development 10 h

Design Methodology - Embedded computing logic – Microcontroller - System on Chips - Building blocks of IoT: Overview - Hardware platforms: Raspberry pi, Arduino Board.

Unit IV Data Analytics and Supporting Services 9 h

Structured versus Unstructured Data - Data in Motion versus Data at Rest – Challenges - Data Acquiring - Organizing in IoT/M2M - Supporting Services: Computing using a Cloud Platform for IoT/M2M Applications – Services - Everything as a service and Cloud Service Models.

Unit V Applications 9 h

Home automations – Infrastructures – Buildings – Security – Industries - IoT electronic equipment's - Industry 4.0 concepts.

Text Books

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry,2017,"IoT Fundamentals: Networking Technologies, Protocols and Use Cases for Internet of Things"1st Edition, Cisco Press.

2. Arshdeep Bahga, Vijay Madisetti, 2015, "Internet of Things – A hands-on approach " ,1st Edition, Universities Press

References

1. Olivier Hersent, David Boswarthick, Omar Elloumi, 2012,"The Internet of Things – Key applications and Protocols"1st Edition, Wiley Publications.

2. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stamatis, Karnouskos, Stefan Avesand. David Boyle , 2014 ,"From Machine-to-Machine to the Internet of Things – Introduction to a New Age of Intelligence", 1st Edition, Elsevier.

3. Dieter Uckelmann, Mark Harrison, Michahelles and Florian(Eds),2011,"Architecting the Internet of Things", Springer

Course Code	Course Name	Category	L	T	P	Credit
224CG1A6DD	PRINCIPLES OF DEEP LEARNING	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Fundamentals of Neural Networks
- Deep Learning Architecture
- Convolutional Neural Network and Sequence-based Models

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the architecture of Neural Networks	K1
CO2	Learn the Convolutional Neural Network	K2
CO3	Demonstrate Sequence-based Models	K3
CO4	Summarize the Deep Learning Architecture and GAN	K2
CO5	Experiment the various Deep Learning scenarios	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

224CG1A6DD	PRINCIPLES OF DEEP LEARNING	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Fundamentals of Neural Networks 10 h

Introduction - Understanding the Biological Neuron - Exploring the Artificial Neuron - Early Implementation of ANN - Types of Activation Functions - Architectures of Neural Networks - Learning Process in ANN - Deep Neural Network

Unit II Convolutional Neural Networks 10 h

Building Blocks - Typical Convolutional Neural Network (CNN) - CNN Architectures: LeNet-5, AlexNet, VGG-16, ResNet - Object Detection - Transfer Learning - Pre-processing Tasks in Computer Vision

Unit III Sequence-based Models 9 h

Sequence Data - Recurrent Neural Network (RNN): Data Preparation, Vanishing Gradient Problem and RNN - Long Short-Term Memory - Gated Recurrent Units - Bi-directional Models, Language Modelling and Sequence Models

Unit IV Deep Learning Architecture 10 h

Encoder - Decoder Architecture - Attention Mechanism -Transformer Architecture: Multi-Headed Attention, Transformer Modes - Generative Adversarial Networks (GAN): Examples, Basic concepts, DCGAN, StyleGAN, BiGAN, Applications.

Unit V Reinforcement Learning 9 h

Introduction - OpenAI Gym - Deep Q-Networks - Deep Deterministic Policy Gradient – Case Studies: Disease Detection from X-ray images - Recognizing Cats with very deep Convolutional Neural Networks - Classification of Horses and Humans using Transfer Learning.

Text Books

1 Amit Kumar Das, SaptarsiGoswami, PabitraMitra, Amlan Chakrabarti, 2021, "Deep Learning" 1st Edition, Pearson

2 Nikhil Buduma, Nicholas Locascio, 2017,"Fundamentals of Deep Learning: Designing Next Generation Machine Intelligence Algorithms", 1st Edition, O'Reilly Media

References

1 Deepak Kemani, 2011, "A First Course in Artificial Intelligence", 1st Edition McGraw Hill.

2 Laurene Fausett, 2017, "Fundamentals of Neural Networks", 1st Edition, Pearson Education.

3 Ian Goodfellow, YoshuaBengio, Aaron Courville, 2017, "Deep Learning (Adaptive Computation and Machine Learning Series", 1st Edition, MIT Press

Course Code	Course Name	Category	L	T	P	Credit
224CG1A6DE	IT INFRASTRUCTURE LIBRARY	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- ITIL Service Life Cycle Model
- Service Management Concepts
- Process, Automation and Event Management

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Interpret ITIL Service Lifecycle	K1
CO2	Discuss types of Service Management Key	K2
CO3	Demonstrate Process and Risk Management	K3
CO4	Illustrate IT Infrastructure Services	K2
CO5	Learn SNOC Event Management	K1

MAPPING WITH PROGRAMME OUTCOMES

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

COURSE FOCUSES ON

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

224CG1A6DE	IT INFRASTRUCTURE LIBRARY	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I ITIL 4 — 10 h

Introduction - Service Life Cycle Model - Components and Phases of a Service Life Cycle - Concept of Service Life Cycle - Service management as a Practice - IT opportunity.

Unit II Key Concepts of Service Management — 10 h

Value and Value Co-Creation - Stakeholders - Products and Services - Service Relationships and Value

Unit III Dimension Model of IT Service Management — 10 h

Organization and People - Information and Technology - Partners and Suppliers - Value Streams and Processes - External factors

Unit IV Service Value System — 09 h

Service Value System (SVS) Overview - Opportunity - Demand and Value - Principles - Governance - Service Value Chain (SVC) - Continual Improvement - Practices

Unit V Management Practices — 09 h

General Management Practices - Service Management Practices - Technical Management Practices

Text Books

1 Clyde Bank Technology, 2017" ITIL For Beginners: The Complete Beginner's Guide to ITIL", 2nd Edition

References

1 Axelos ,2019, "ITIL Foundation", 4th Edition, IT Governance Publishing

2 Peter Farenden, 2012, "ITIL for Dummies ",2011 Edition, John Wiley & Sons

Course Code	Course Name	Category	L	T	P	Credit
224CG1A6DF	HUMAN COMPUTER INTERACTION	DSE	4	-	-	4

PREAMBLE

This course has been designed for students to learn and understand

- Needs of interaction system
- Interaction design techniques and models
- Cognitive aspects of human – machine interaction

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand human machine interaction system.	K1
CO2	Learn interaction styles.	K2
CO3	Illustrate various evaluation techniques in human interaction	K2
CO4	Interpret usability and effectiveness of various models	K2
CO5	Demonstrate Web and Mobile interaction techniques	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

224CG1A6DF	HUMAN COMPUTER INTERACTION	**SEMESTER VI**

Total Credits: 4

Total Instruction Hours: 48 h

Syllabus

Unit I Foundation of Human Computer Interaction 10 h

Context of Interaction - Designing Interactive systems – Users cognition and cognitive frameworks - conceptualizing interaction-Principles, Theories - User Interface: Definition, Importance of good design, Benefits - Human - Centered Development, Evaluation - Human Performance models.

Unit II Interaction Styles 10 h

Graphical User Interface (GUI): Popularity of graphics - direct manipulation - Graphical System - Characteristics - Web user - Characteristics, Principles of User Interface - Interaction styles - Expressive Human, Command Languages - Information search - Data Visualization Design process: Human Interaction with computers, Characteristics - Human Consideration - Human Interaction Speeds and Business Junctions.

Unit III Evaluation of Interaction 10 h

Evaluation Techniques: Assessing user experience - Usability testing - Heuristic evaluation and walkthroughs - analytics predictive models - Cognitive models - Socio-organizational issues and stakeholder requirements - Communication and collaboration models

Unit IV Models and Theories 09 h

Task analysis - Dialog notations and design - Models of the system - Modeling rich interaction - Ubiquitous computing

Unit V Web and Mobile Interaction 09 h

Hypertext – Multimedia - Designing for the web - Direct Selection - Contextual Tools - Overlays - Inlays and Virtual Pages - Process Flow - Transitions: Lookup Patterns, Feedback Patterns - Mobile Apps: Mobile navigation, content and control idioms, Multi-touch gestures, Inter - app integration, Mobile web

Text Books

1. Ben Shneiderman, Catherine Plaisant, Maxine S.Cohen, Steven M.Jacobs, Nicholas Diakopoulos and NiklasElmqvist, 2017 "Designing the User Interface: Strategies for Effective Human-Computer Interaction", 4th Edition, Addison Wesley.

2. Helen Sharp Jennifer Preece Yvonne Rogers, 2019"Interaction Design: Beyond Human Computer Interaction", 5th Edition, Wiley Publications

References

1. Alan Cooper, Robert Reimann, David Cronin, Christopher Noessel,2014"About Face: The Essentials of Interaction Design", 4th Edition, Wiley Publications

2. Preece, Rogers and Sharp,2015 "Interaction Deign", 4th Edition, Wiley Publications

Course Code	Course Name	Category	L	T	P	Credit
223BC1A6AA	INNOVATION, IPR AND ENTREPRENEURSHIP	AECC	2	-	-	2

PREAMBLE

This course has been designed for students to learn and understand

- The role of Entrepreneurship in Economic Development and basics of Intellectual Property Rights, Copy Right Laws, Trade Marks and Patents
- ethical and professional aspects related to intellectual property law context
- Intellectual Property(IP) as an career option

COURSE OUTCOMES

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

CO Number	CO Statement	Knowledge Level
CO1	Understand the concept of innovation, IPR, entrepreneurship and its role in economic development	K2
CO2	Know the value , purpose and process of Patent	K2
CO3	Understand the basics of trademarks and industrial designs	K2
CO4	Acquire knowledge about copyright and copyright law	K2
CO5	Identify Geographical Indications	K2

MAPPING WITH PROGRAMME OUTCOMES

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

OURSE FOCUSES ON

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

223BC1A6AA	INNOVATION, IPR AND ENTREPRENEURSHIP	**SEMESTER** VI

Total Credits: 2

Total Instruction Hours: 24 h

Syllabus

Unit I Introduction to Innovation and Entrepreneurship 05 h

Meaning of Creativity, Invention and innovation - Types of Innovation - Introduction and the need for Intellectual Property Right (IPR) - Kinds of IPR – National and International IPR Policy. Entrepreneurs - Concept, characteristics, Functions, need and types, Entrepreneurial decision process. Role of Entrepreneurship in Economic Development.

Case Study: Jayabharati Viswanath: A case of Ladel to Leather.

Unit II Patents 05 h

Introduction and origin of Patent System in India- Conceptual Principles of Patent Law in India - Process for obtaining patent - Rights granted to a Patentee -Validity of patent- Infringement of Patent.

Case Study: Apple Inc. v. Samsung Electronics Co. Ltd. (2020)

Unit III Trademarks 05 h

Origin of Trade Marks System - Types - Functions - Distinctiveness and Trademarks - Meaning of Good Trademark - Rights granted by Registration of Trademarks - Infringement of trademark.

Case Study: Merck v. Mylan Pharmaceuticals (2016)

Unit IV Copyright 05 h

Introduction and Evolution of Copyright - Objectives and fundamentals of Copyright Law - Requirements for Copyrights - Works protectable under Copyrights - Authorship and Ownership - Rights of Authors and Copyright owners - Infringement of Copyright.

Case Study: J.K. Rowling and Warner Bros. v. Steve Vander Ark (2007)

Unit V Geographical Indications 04 h

Introduction and Concept of Geographical Indications - History - Administrative Mechanism - Benefits of Geographical Indications - Infringement of registered Geographical Indication

Case Study: Darjeeling Tea v. Tea Board of India (2012)

Note: Case studies related to the above topics to be discussed (Examined internal only)

Text Books

1 Nithyananda, K V. 2019, "Intellectual Property Rights" Protection and Management. Cengage Learning India Private Limited, New Delhi, India.

2 Dr.S.S.Khanka, 2020,"Entrepreneurial Development", S Chand and Company Limited, New Delhi, India.

References

1 Ahuja, V K. 2017, "Law relating to Intellectual Property Rights", 3rd Edition, Lexis Nexis, Gurgaon, India.

2 Neeraj, P., & Khusdeep, D. 2014, "Intellectual Property Rights",1st Edition, PHI learning Private Limited, New Delhi,India.

3 http://www.bdu.ac.in/cells/ipr/docs/ipr-eng-ebook.pdf.

4 https://knowledgentia.com/knowledgeate

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