B.SC. COMPUTER SCIENCE

HOLY CROSS COLLEGE (AUTONOMOUS)
Affiliated to Bharathidasan University
Nationally Accredited (3rd Cycle) with 'A' Grade by NAAC
College with Potential for Excellence.
Tiruchirapalli - 620002.

DEPARTMENT OF COMPUTER SCIENCE

Programme: B.Sc. Computer Science

PO No.	Programme Outcomes *Upon completion of the B.Sc. Degree Programme, the graduate will be able to*
PO-1	Understand the basic and advanced concepts of computer science research and career growth.
PO-2	Acquire analytical, creative and problem solving practical skills to meet the industry standards.
PO-3	Apply knowledge of computing principles to solve real time problems.
PO-4	Equip themselves with Empowered professional and ethical attitude and communicate effectively and work as a team.
PO-5	Implement independent projects of their own choice using latest tools.

Use words that show the outcomes will be fulfilled following the completion of the Programme.

PSO No.	Programme Specific Outcomes *Upon completion of these courses the student would*
PSO-1	quire academic excellence with professional skill for higher studies and research.
PSO-2	Achieve greater heights in various sectors of IT Industrythrough analytical design and implementation skills.
PSO-3	Identify and apply computing practices to succeed as an employee or an entrepreneurial pursuit.
PSO-4	Be ethically and professionally responsible with the ability to relatecomputer applications to broader social context for the growth of the nation.
PSO- 5	eate, select and apply modern tools and techniques to analyze and develop a successful software sy stem.

The (Intended) Programme Outcomes and the Programme Specific Outcomes should come before the first paper of the first semester only.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI-620 002.
DEPARTMENT OF COMPUTER SCIENCE
CHOICE BASED CREDIT SYSTEM
BACHELOR OF COMPUTER SCIENCE (2019-2022)
(For Candidates admitted from June 2019 onwards)

Semester	Part	Course	Title of the Course	Code	Hrs / Wk	Credits	Marks
I	I	Language	Tamil Paper I / Hindi Paper I / French Paper I	U19TL1GEN01/ U18HN1HIN01/ U16FR1FRE01	6	3	100
	II	English	English I	U15EL1GEN01	6	3	100
	III	Major Core-1	Problem Solving using C	U19CS1MCT01	5	4	100
	III	Major Core-2	Problem Solving using C Lab	U19CS1MCP02	3	3	100
	III	Allied-1 (Compulsory)	Principles of Digital Computers	U18CS1ACT01	3	2	100
	III	Allied-2 (Compulsory)	Applied Mathematics I	U15MA1ACT05	4	3	100
	IV	Environmental Studies	Environmental Studies	U15RE2EST01	1	1	100
	IV	Value Education	Ethics/ Bible Studies/ Catechism	U15VE2LVE01/ U15VE2LVB01/ U15VE2LVC01	1	-	-
	VI		Service Oriented Course		1	-	-
		Internship/Field Work/Field Project 30 hours- **Extra Credit**		U18SP1ECC01	-	-	-
			TOTAL		**30**	**19**	**700**
II	I	Language	Tamil Paper II / Hindi Paper II / French Paper II	U19TL2GEN02/ U18HN2HIN02/ U16FR2FRE02	5	3	100
	II	English	English II	U15EL2GEN02	6	3	100
	III	Major Core-3	Data Structures and Algorithms	U19CS2MCT03	5	5	100
	III	Major Core-4	Data Structures Lab	U19CS2MCP04	5	4	100
	III	Allied-3 (Compulsory)	Applied Mathematics II	U15MA2ACT11	4	3	100
	IV	Skill-based Elective-1	Soft Skill Development	U15RE2SBT01	2	2	100
	IV	Skill-based Elective-2	Sustainable Rural Development and Student Social Responsibility	U18RE2SBT02	1	1	100
		Industrial Relations	Recent Technologies in IT	U19CS2IRT01	1	1	100
	IV	Value Education	Ethics I/ Bible Studies I/ Catechism I	U15VE2LVE01/ U15VE2LVB01/ U15VE2LVC01	1	1	100
	VI		Service Oriented Course		1	-	-
		Internship/Field Work/Field Project 30 hours- **Extra Credit**		U18SP2ECC02			
			TOTAL		**31**	**23**	**900**
III	I	Language	Tamil Paper III / Hindi Paper III / French Paper III	U15TL3TAM03/ U15HN3HIN03/ U16FR3FRE03	6	3	100
	II	English	English III	U15EL3GEN03	6	3	100
	III	Major Core-5	Database Systems	U19CS3MCT05	5	5	100
	III	Major Core-6	Database Systems Lab	U19CS3MCP06	5	5	100
	IV	Allied-4 (Optional)	Allied Optional Paper I Applied Mathematics III	U15MA3AOT13	4	3	100
	IV	Skill-based Elective-3	UI/UX Design and Animation Lab using Open Source Tools	U19CS3SBP03	2	2	100
	IV	Gender Studies	Gender Studies	U15WS3GST01	1	1	100
	IV	Value Education	Ethics II/ Bible Studies II/ Catechism II	U15VE4LVE02/ U15VE4LVB02/ U15VE4LVC02	1	-	-
	VI		Service Oriented Course		-	-	-
		Internship/Field Work/Field Project 30 hours- **Extra Credit**		U18SP3ECC02/ U18SP3ECC03	-	-	-
			TOTAL		**30**	**22**	**700**

Semester	Part	Course	Title of the Course	Code	Hrs / Wk	Credits	Marks
IV	I	Language	Tamil Paper IV / Hindi Paper IV / French Paper IV	U15TL4TAM04/ U15HN4HIN04/ U16FR4FRE04	5	3	100
	II	English	English IV	U15EL4GEN04	6	3	100
	III	Major Core-7	Operating Systems	U18CS4MCT07	5	5	100
	III	Major Elective-1	Shell Programming Lab/ Open Source Tools Lab / Web Application Development Tools Lab	U19CS4MEP01/ U19CS4MEP02/ U18CS4MEP03	5	5	100
	III	Allied-5 (Optional)	Basics of Electronics	U15PH4AOT04	4	4	100
	III	Allied-6 (Optional)	Electronics Practicals	U15PH4AOP05	4	3	100
	IV	Value Education	Ethics II/ Bible Studies II/ Catechism II	U15VE4LVE02/ U15VE4LVB02/ U15VE4LVC02	1	1	100
	VI		Service Oriented Course		-	1	100
		Internship/Field Work/Field Project 30 hours- **Extra Credit**		U18SP4ECC02/ U18SP4ECC04	-	-	-
			TOTAL		**30**	**25**	**800**

Semester	Part	Course	Title of the Course	Code	Hrs / Wk	Credits	Marks
V	III	Major Core-8	JAVA Programming	U18CS5MCT08	5	4	100
	III	Major Core-9	Software Engineering Concepts	U18CS5MCT09	5	4	100
	III	Major Core-10	Computer Organization and Architecture	U18CS5MCT10	5	4	100
	III	Major Core-11	JAVA Programming Lab	U18CS5MCP11	5	4	100
	III	Major Elective-2	Bigdata Technologies and Tools / Business Process Outsourcing/ Artificial Intelligence and Expert Systems	U18CS5MET04/ U18CS5MET05/ U19CS5MET06	5	5	100
	IV	Non Major Elective-1	Multimedia Lab	U18CS5NMP01	2	2	100
	IV	Skill Based Elective-4	Online Course	U19OC5SBT04	2	2	100
	IV	Value Education	Value Education	U15VE6LVE03/ U15VE6LVB03/ U15VE6LVC03	1	-	-
		Internship/Field Work/Field Project 30 hours- **Extra Credit**		U18SP5ECC02/ U18SP5ECC05	-	-	-
			TOTAL		**30**	**25**	**700**
VI	III	Major Core-12	Computer Networks	U18CS6MCT12	5	4	100
	III	Major Core-13	Internet Of Things	U19CS6MCT13	5	4	100
	III	Major Core-14	Computer Graphics	U18CS6MCT14	5	4	100
	III	Major Core-15	C# and .Net Programming Lab	U19CS6MCP15	4	4	100
	III	Major Elective-3	Introduction to Cloud Computing / Pervasive Computing / Cyber Security	U19CS6MET07/ U19CS6MET08/ U19CS6MET09	4	4	100
	IV	Non Major Elective-2	Animation Lab	U18CS6NMP02	2	2	100
	IV	Skill Based Elective-5	Python Programming Lab	U19CS6SBP05	2	2	100
	IV	Skill Based Elective-6	Research Methodology	U15DS6SBT06	2	2	100
	IV	Value Education	Ethics III/ Bible studies III/ Catechism III	U15VE6LVE03/ U15VE6LVB03/ U15VE6LVC03	1	-	100
	V	Extension Activity	RESCAPES-Impact Study of Project		-	1	100
		Internship/Field Work/Field Project 30 hours- **Extra Credit**		U18SP6ECC02/ U18SP6ECC06	-	-	-
			TOTAL		**30**	**27**	**1000**
VI			ED: Extra Credit (Mini Project)	U18CS6ECP01		2	100
			GRAND TOTAL		**181**	**142**	**4800**

For Candidates admitted from 2015 onwards)

HOLY CROSS COLLEGE (Autonomous), Tiruchirappalli - 620 002.

PG & RESEARCH DEPARTMENT OF TAMIL

First Year - Semester – I

Course Title	தமிழ்த்தாள் - 1
Total Hours	**90**
Hours/Week	**6 Hrs Wk**
Code	**U19TL1GEN01**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objectives:

தமிழ் இலக்கியப் பரப்பையும், பாரம்பரியத்தையும் அறிமுகப்படுத்துதல்.

- To find out the ways to handle the Tamil language effectively and productively.
- To introduce the tradition and grammar of Tamil language.
- To encourage the creative development.
- Creating curiosity to live a better life .
- Helps in creating healthy thoughts.

Course Objectives:

CO No.	Course Objectives
CO-1	தமிழ் இலக்கியப் பரப்பையும்,விழுமியங்களையும் அறிமுகப்படுத்துதல்.
CO-2	தமிழ் மொழியின் தொன்மை, தாய்மொழிப்பற்று, தன்னம்பிக்கை சூழல்களை எதிர்கொள்ளும் திறன் முதலியவற்றை அறிந்து கொள்வர்.
CO-3	கவிதையின் வாயிலாக அன்பு உணர்வினை வளர்க்கச் செய்தல்.
CO-4	கலைச்சொற்கள் வாயிலாக பிறமொழிச் சொற்களை ஆராயும் தன்மைப் பெறுவர்.
CO-5	படைப்பாற்றல் திறனை வளர்த்துக்கொள்வர்.

அலகு:1 செய்யுள் **18 Hrs**

1. பாரதியார் கவிதைகள் - தமிழ் கண்ணன் என் சேவகன்
2. பாரதிதாசன் கவிதைகள் - உலகம் உன்னுடையது
3. உமர்கய்யாம் - உமர்கய்யாம் பாடல்கள்
4. பட்டுக்கோட்டையார் - செய்யும் தொழிலே தெய்வம்
5. ந. பிச்சமூர்த்தி – ஒளியின் அழைப்பு
6. வைரமுத்து – ஐந்து பெரிது ஆறு சிறிது
7. சிற்பி – ஒரு கிராமத்து நதி

Key Words (Extra Reading)

1. ந. காமராசு கவிதைகள்
2. தமிழன்பன் கவிதைகள்

அலகு:2 செய்யுள் **18 Hrs**

8. கல்யாண்ஜி -பேசும்பார் என் கிளி
9. நிர்மலா சுரேஷ் -தைலச்சிமிழும் தச்சன் மகனும்
10. இரா. மீனாட்சி -ஒரு கோதை
11. விஜி -குரங்கு மனிதன்
12. பா. சத்திய மோகன் -எங்கெங்கு காணினும்
13. ஹைகூ கவிதைகள்

Key Words (Extra Reading)

1. ந.முத்துக்குமார் கவிதைகள்
2. செனட்ரியூ கவிதைகள்

அலகு:3 **18 Hrs**

தமிழ் இலக்கிய வரலாறு
தமிழாய்வுத்துறை வெளியீடு 20-ஆம் நூற்றாண்டு (தற்காலம்)

Key Words (Extra Reading)

தமிழ் இலக்கிய வரலாறு -மு.வரதராசன்

அலகு:4 **18 Hrs**

படைப்பிலக்கியம் - சிறுகதைத் தொகுப்பு(துறை வெளியீடு)

அலகு:5 **18 Hrs**

பொதுப்பகுதி - கலைச்சொற்கள்

Note: Texts given in the Extra reading /Key words must be tested only through Assignment and Seminars.

Course Outcomes:

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	To evaluate the importance of Tamil in terms of patriotism, self- discipline and unity.	PSO 1	U
CO-2	To evaluate poems and enrich knowledge in religious faith, preserving nature, social atrocities against women and resistance.	PSO 2	E
CO-3	To enhance the creative spirit among the youth through the present Tamil literatures	PSO 2	AN
CO-4	To be aware about human rights and humanism through short stories	PSO 3	AP
CO-5	To learn the culture of different languages	PSO 4	U

பார்வை நூல்கள் **பாட நூல்கள்**

செய்யுள் - தமிழாய்வுத்துறை வுத்துறை வெளியீடு

தமிழ் இலக்கிய வரலாறு - தமிழாய்வுத்துறை வெளியீடு

சிறுகதைத் தொகுப்பு - தமிழாய்வுத்துறை வெளியீடு

கலைச்சொற்கள் - தமிழாய்வுத்துறை வெளியீடு

(for candidates admitted from June 2019 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS), Tiruchirapalli – 620002
PG AND RESEARCH DEPARTMENT OF ENGLISH
I YEAR UG – SEMESTER I
PART II – ENGLISH 1 - GENERAL ENGLISH I

HOURS : 6 **CODE : U15EL1GEN01**
CREDIT : 3 **MARKS: 100**

OBJECTIVES

- Students learn to use LSRW skills and advanced communication skills in the context required in their daily life.
- The students learn to analyze and express their self and their concern and responsibilities to the world around.
- The students learn how English is used in literary writing so as to imbibe the spirit of using the standard language for communication.

UNIT I - I, ME, MYSELF

Listening for **s**pecific information in instructions and directions
Speaking about oneself, family and friends, likes, dislikes, strengths, weaknesses, profession, talents, emotions, feelings, incidents, reactions, opinions, views, aim, vision.
Reading for comprehension of routine work.
Writing -Paragraph guided
Grammar- Articles, Prepositions, Punctuation
Vocabulary-Meanings, Synonyms, Antonyms
Composition –GuidedCreative writing

TEXTS

This is the Photograph of me by Margaret Atwood - Poem **(Internal Testing)**
1. *The Mayonnaise Jar*
2. *In Prison* by Jawaharlal Nehru (edited)
3. An extract from Shakespeare's *Othello* Act V Scene II

UNIT II -MY FAMILY AND FRIENDS

Listening to identify the persons/ places/ things from descriptions
Speaking -Describing incidents, favorite places, traits of a person, analyzing the nature of a person.
Reading to get specific information and to analyze characters
Writing -Letters (personal),paragraphs-family profile and history
Grammar -adjectives and verbs
Vocabulary-synonyms and antonyms in context
Composition - Guided paragraph

TEXTS

Night of the Scorpion by Nissim Ezekiel - Poem **(Internal Testing)**
1. *The Old Folks at Home* by Alphonse Daudet (edited)
2. *Will you, Daddy?* (Story from Reader's Digest)
3. An extract from Shakespeare's *King Lear Act I Scene I*

UNIT III -THE WORLD AROUND ME
Listening To identify specific information
Speaking –Discussing and expressing opinions
Reading To infer meaning
Writing Descriptive and Diary writing
Grammar Uses of 'be' Verbs – subject verb concord
Vocabulary Coining new words with Prefix and suffix- converting one part of speech to another
Composition - Essay writing

TEXTS
Snake by D.H. Lawrence – Poem **(Internal Testing)**
1. *Floating Fantasy* by Vinu Abraham (Prose)
2. *Discovery by Herman Ould* (Play)
3. *A Handful of Dates* by Tayeb Salih (Short story)

UNIT IV - MY CONCERN AND RESPONSIBILITIES
Listening to short speeches and getting main concern- Global comprehension
Speaking Expressing opinions, concerns and responsibilities
Reading To detect one's perspective
Writing Debate and Dialogue
GrammarSentence patterns (5 basic types)
VocabularyAppropriate words in the context ,coinage of new words , use of phrases
Composition-Imaginative writing

TEXTS
I have a Dream by Martin Luther King Jr - **(Internal Testing)**
1. *What I have lived for?* by Bernard Russell
2. *Three days to see* by Helen Keller(edited)
3. An extract from Shakespeare's *The Merchant of Venice Act IV Scene I*

UNIT V - MY PROFESSIONAL WORLD
Listening to short profile to get details –global comprehension
Speaking Discussion on secrets of success learnt from success stories
Reading to infer meaning – to trace the development and analyze the ratio of development
Writing resume and E-mail writing
Grammar- Four Types of sentences
Vocabulary-Idioms and phrases- meaning
Composition – Formal and imaginative writing

TEXTS
Profile of a successful personality **(Internal Testing)**
1. Extract from a profile and an Interview of IndraKrishnamoorthyNooyi
2. *The Verger* by Somerset Maugham
3. Profile of Bill Gates

PRESCRIBED BOOK:
English for Communication –PoGo publication Trichy.

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(For the candidates admitted from June 2018 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
SEMESTER – I

Course Title	**PART – I LANGUAGE HINDI – I PROSE, SHORT STORY AND GRAMMAR –I**
Total Hours	**90**
Hours/Week	**6Hrs/Wk**
Code	**CODE: U18HN1HIN01**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objective : To enable the students to understand the importance of human values and patriotism

Course Objectives (CO):

The learner will be able to:

CO No.	**Course Objectives**
CO -1	Evaluate Self Confidence, Human values
CO- 2	Understand and analyze Gandhian Ideology
CO- 3	Understand Indian Culture, custom
CO- 4	Analyze communal Harmony and Unity in Diversity
CO- 5	Evaluate Friendship

UNIT – I **(18 Hours)**

1. Aatma Nirbharatha
2. Idgah
3. Sangya

Extra Reading (Key Words): Takur ka kuvam, Bhuti Kaki

UNIT- II **(18 Hours)**

1. Mahatma Gandhi
2. Vusne Kaha Tha
3. Sarva Naam

Extra Reading (Key Words): Chandradhar Sharma Guleri, Gandhian Ideology

UNIT- III **(18 Hours)**

1. Sabhyata Ka Rahasya
2. Karva Va Ka Vrat
3. Visheshan

Extra Reading (Key Words): Sabhyata Aur Sanskriti, Yashpal ki Sampoorna khaniyan

UNIT- IV **(18 Hours)**

1. Bharat Ek Hai
2. Sharandhata

3. Kriya

Extra Reading (Key Words): Ramante Tatra Deavata, Badala

UNIT- V **(18 Hours)**

1. Mitrata
2. Vapasi
3. Ling Aur Vachan

Extra Reading (Key Words): Aacharya Ramachandra Shukla,Usha Priyamvadha ki kahaniyan

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

Course Outcomes:

The learner will be able to:

CO No.	Course Outcomes	Cognitive Level
CO -1	Compare human values of present and past generations	E
CO- 2	Test for Gandhian Ideology in the literary works.	U, An
CO- 3	Interpret Indian Culture in a scientific manner	U
CO- 4	Assess casteless and classless India	An
CO- 5	Value the interests of one‟s friend.	E

CO- Course Outcome; R- Remember; U- Understand; Ap- Apply; An- Analyze; E- Evaluate; C- Create

Reference Books :

- GadyaSudha: Edt. Dr. M. SaleemBaig; RakaPrakashan; Ilahabad. U.P.
- Hindi GadyaPrabhakar:Edi. Dr.Hiranmay; ShikshaBharathi; Kashmiri Gate; Delhi .
- KahaniVividha;RajkamalPrakashan; Ilahabad.; New Delhi.
- Vyakaranpradeep; Dr. Ram Dev. M.A; LokBharathiPrakashan ;Illahabad

(For candidates admitted 2016 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2

DEPARTMENT OF FRENCH

SEMESTER I

Course Title	**PART I – LANGUAGE - FRENCH PAPER I** (GRAMMAR & CIVILISATION (ÉCHO A1 2e édition)
Total Hours	90
Hours/Week	6Hrs/Wk
Code	U16FR1FRE01
Course Type	Theory
Credits	3
Marks	100

General Objective: To enable the students to learn the fundamentals of French Grammar and Cultural aspects of France.

Course Objectives (CO):

The learner will be able to

CO1	remember alphabets, numbers, nationalities and professions; understand the term Francophone, a brief introduction of France and oneself.
CO2	remember and understand verb conjugation and articles and apply the same in first contact
CO3	remember the pronouns placed after prepositions; analyse and evaluate leisure time activities in France and across the world.
CO4	apply past tense in writing personal diaries; comparison and adjectives in sketching travel journals
CO5	understand the usage of articles and inversion in interrogation and analyse the food habit of the French.

Unit 1 Parcours d‟initiation ; Vous comprenez (15 Hours)

La différence entre le prénom et le nom, les nationalités, les nombres, les professions
La présentation, le genre et le nombre d‟un nom, l‟interrogation et la négation – l‟identité, les lieux de la ville, les mots du savoir-vivre – saluer, remercier – l‟espace francophone.

Extra Reading (Key Words): La carte de la France et La carte du monde francophone

Unit 2 Au travail! (15 Hours)

La conjugaison des verbes du 1er groupe, des accords, les articles – l‟état civil, des personnes et des objets caractéristiques d‟un pays – exprimer ses gouts – première approche de la société française.

Extra Reading (Key Words): *Fiches de renseignement de ses parents*

Unit 3 On se détend! (15 Hours)

La conjugaison des verbes irréguliers, le future proche, les pronoms après une préposition – les loisirs – proposer, accepter, refuser, demander une explication – première approche de l‟espace de France, repérages de quelques lieux de loisirs

Extra Reading (Key Words): Lieux de loisirs que l'étudiant apprécie

Unit 4 Racontez-moi ! ; Bon voyage ! **(30 Hours)**

Le passé composé, la date et l‟heure – les moments de la journée, de l‟année, les événements liés au temps – dire ce qu‟on a fait – les rythmes de vie en France, des personnalités du monde francophone.

La comparaison, les adjectifs démonstratifs et possessifs – les voyages et les transports – négocier une activité, faire les recommandations – les transports en France

Extra Reading (Key Words):La vie des personnalités célèbres

Unit 5 Bon appétit! **(15 Hours)**

L‟emploi des articles, la forme possessive – la nourriture, les repas, la fête – les situations pratiques à l‟hôtel et au restaurant – les habitudes alimentaires en France.
Extra Reading (Key Words): Recette de la crêpe et des tartes

Course outcomes	Cognitive level
Introduce oneself to the class and classify Francophone countries in the world map.	Ap, E
Demonstrate regular verb conjugation	U, Ap
List out pronouns placed after prepositions	R, U
Survey leisure time activities in European countries	An
Develop personal diary	C
Outline the food habits of the French.	An

TEXT BOOKS :

ECHO A1 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D‟APPRENTISSAGE Authors: J. Girardet and J. Pécheur Publication: CLÉ INTERNATIONAL, 2013.

Books for Reference:

La Conjugaison – Nathan
French made easy – Beginners level - Goodwill Publishing House Je
parle français I – Abhay Publications
Le français avec des jeux et des activités - ELI Langue et la
civilisation – I – Mauger Bleu

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc.Computer Science- First Year - Semester – I

Course Title	Major Core 1: Problem Solving using C
Total Hours	75
Hours/Week	5 Hrs/Wk
Code	U19CA1MCT01/ U19CS1MCT01
Course Type	Theory
Credits	4
Marks	100

General Objective:

To understand the concepts of problem solving approaches and to develop programming skills using C language.

Course Objectives:

CO No.	Course Objectives
CO-1	Understand the concepts of Algorithms and create flowcharts for a given problem
CO-2	Apply the basic concepts of C in real-time applications
CO-3	Analyze different types of arrays and apply the concepts for solving problems in real time
CO-4	Understand the concept of memory management
CO-5	Remember the file concept and create files using C

UNIT I **15 Hrs**

INTRODUCTION TO COMPUTER PROBLEM SOLVING

Introduction: Steps involved in Problem Solving Using Computers – Algorithms – Flow Charts – Pseudocode – Evolution of Programming Languages: Introduction – Classification of Programming Languages - Compiler – Interpreter, Loader and Linker.

Extra Reading: Develop Algorithms for real time applications.

UNIT II **15 Hrs**

CONSTANTS, VARIABLES, AND DATA TYPES: Introduction – Character Set – C Tokens – Keywords and Identifiers – Constants – Variables – Data Types – Declaration of Storage Class.

OPERATORS AND EXPRESSIONS: Introduction - Arithmetic Operators - Relational Operators – Logical Operators - Assignment Operators - Increment and Decrement Operators- Conditional Operators

- Bitwise Operators - Special Operators - Arithmetic Expressions - Evaluation of Expressions - Precedence

of Arithmetic Operators - Some Computational Problems.

MANAGING INPUT AND OUTPUT OPERATORS: Introduction - Formatted Input - Formatted Output.

Extra Reading: Basic I/O and Control operations in Python.

UNIT III **15 Hrs**

DECISION MAKING AND BRANCHING: Introduction - Decision Making with if Statement – Simple

if Statement- The if else Statement - Nesting of if...else Statements - The Else if Ladder - Switch Statement - ?: Operator - Goto Statement.

DECISION MAKING AND LOOPING: Introduction – The While Statement - The do Statement – The for Statement - Jumps in Loops.

ARRAYS: Introduction – One-dimensional Array – Two-dimensional Arrays - Initializing Two – dimensional Arrays – Multi-dimensional Arrays.

Extra Reading: Develop multidimensional array programs

UNIT IV **15 Hrs**

HANDLING OF CHARACTER STRINGS: Introduction - Declaring and Initializing String Variables

- Arithmetic Operations on Characters - String- handling Functions - Table of Strings.

USER DEFINED FUNCTIONS: Introduction - Definition of Functions - Function Declaration - Category of functions - No Arguments and No Return Values - Argument but No Return Values - Arguments with Return Values – No Arguments but Returns a Value – Functions that Return Multiple Values –Recursion.

STRUCTURES AND UNIONS : Introduction – Defining a Structure - Declaring Structure Variables – Accessing Structure Members - Structure Initialization - Arrays of Structures - Arrays Within Structures

– Structures Within Structures - Structures and Functions – Unions.

Extra Reading: Create Programs using functions.

UNIT V **15 Hrs**

POINTERS: POINTERS : Introduction - Understanding Pointers - Accessing the Address of a Variable

- Declaring and Initializing Pointers - Accessing a Variable through its Pointer - Chain of Pointers - Pointer Expressions - Pointers and Arrays - Pointers and Character Strings – Arrays of Pointers - Pointers to Functions – Pointers and Structures.

FILE MANAGEMENT IN C: Introduction - Defining and Opening a File - Closing a File - Input/Output Operations on Files - Error Handling during I/O Operations - Random Access to Files - Command Line Arguments. ***Extra Reading: Implement the system and file concepts using emulator.***

COURSE OUTCOMES

1. Understand the concepts of Algorithms and create flowcharts for a given problem.
2. Apply the basic concepts of C in real-time applications.
3. Analyze different types of arrays and apply the concepts for solving problems in real time.
4. Understand the concept of memory management.
5. Comprehend the file concept and create files using C.
6. Write programs for solving complex computational problem.

TEXT BOOKS

1. M. T. Somashekara, “Problem Solving with C”, PHI Learning Private Limited, 2009.
   UNIT:I
2. E. Balagurusamy, “Programming in ANSI C”, Seventh Edition, McGraw Hill Education (India) Private Limited, New Delhi.
   UNIT:II,III,IV,V

BOOKS FOR REFERENCE

1. BrianW. Kernighan and Dennis M. Ritchie, **"**The C programming Language**"**, Prentice-Hall Publishing Company, 2006.
2. Deitel and Deitel, **"**C How to Program**"**, Seventh Edition, Pearson Education Pvt. Ltd., 2013.
3. R.G.Dromey, **"**How to Solve it by Computer**"**, Fifth Edition, Pearson Education Pvt. Ltd., New Delhi, 2007.
4. Kamthane, A.N., **"**Programming with ANSI and Turbo C**"**, Pearson Education Pvt. Ltd., New Delhi, 2006.
5. K R Venugopal , Sudeep R Prasad, **"**Mastering C**"**, Second Edition, McGraw Hill Education Private Limited, 2015.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc.Computer Science- First Year - Semester – I

Course Title	Major Core 2: Problem Solving using C Lab
Total Hours	30
Hours/Week	3 Hrs Wk
Code	U19CA1MCP02 / U19CS1MCP02
Course Type	Practical
Credits	3
Marks	100

General Objective:

Student writes application programs using C for solving real time problems.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Recall the syntax of control structures and solve problems using C
CO-2	Remember the syntax of looping statements and solve problems using C
CO-3	Create programs for arrays and strings using C
CO-4	Develop programs for Functions, Pointers and Structures in C
CO-5	Write programs for creating a file and perform I/O operation on files

EXERCISES

1. Control Statements
2. Loop Statements
3. Arrays (Searching and Sorting)
4. Strings
5. Functions and Pointers
6. Structure and Union
7. Dynamic Memory Allocation
8. Macros and File Handling

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - First Year - Semester – I

Course Title	Allied-1(Compulsory) – Principles of Digital Computers
Total Hours	45
Hours/Week	3 Hrs /Wk
Code	U18CS1ACT01
Course Type	Theory
Credits	2
Marks	100

General Objectives:

To enable the students to understand the basic principles of digital electronics and various microprocessor instructions.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Understand the basic concepts of digital principles.
CO-2	Remembers the number systems.
CO-3	Remembers the concepts of basic computer.
CO-4	Understand the various types of instructions in the microprocessor architecture.
CO-5	Understand shift, rotate and string instructions.

UNIT – I **9Hrs**

DIGITAL PRINCIPLES: Definitions for Digital Signals – Digital Waveforms - Digital Logic – Moving and Storing Digital Information - Digital Computers.

Extra Reading /Key words:*Analog to Digital conversion, Digital to Analog Conversion*

UNIT - II **9Hrs**

NUMBER SYSTEMS: Binary, Decimal, Octal, Hexadecimal – Conversion from one to another – Complements – ASCII – Excess 3 – Gray – Parity Generator and Checker - Sum of Product and Product of Sum – Don't Care conditions - Multiplexers – De multiplexers.

Extra Reading /Key words:*Boolean Algebra Concept, Examples on Boolean Laws*

UNIT - III **9Hrs**

PROGRAMMING THE BASIC COMPUTER: Introduction – Machine Language – Assembly

Language – The Assembler –Programming Arithmetic and Logic Operations.

Extra Reading /Key words: *Encoder, Decoder*

UNIT - IV **9Hrs**

MICROPROCESSOR ARCHITECTURE: Machine Language Instructions – Assembler Instruction Format – Data Transfer Instructions – Arithmetic Instruction Format – Data

Transfer Instructions –Arithmetic Instructions – Branch Instructions – Loop Instructions – NOP and HLT Instruction – Flag Manipulation Instruction.

Extra Reading /Key words: *Interrupt Instruction, Processor Control Instruction*

UNIT - V **9Hrs**

LOGICAL INSTRUCTION: Shift and Rotate Instruction – Byte and String Manipulation: String Instruction - REP Prefix

Extra Reading /Key words: Queue, *Complex Instruction*

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the basic concepts of digital principles.	PSO 3	R, U
CO-2	Differentiate various number systems.	PSO 1	R
CO-3	Discuss various arithmetic and logical operations.	PSO 3	U
CO-4	Write assembly language programs using various instructions.	PSO 5	R, C
CO-5	Explain various logical instructions.	PSO 3	An
CO-6	Experience acquisition on the complete digital system design cycle using logic gates	PSO 5	R,C

References

Text Books:

1.Albert Malvino, Donald. P.Leach , **"Digital Principles and Applications"**, 2002, Tata McGraw- Hill Publishing Company Limited, New Delhi.(UNIT I & UNIT II)

2. M. Morris Mano, "Computer System Architecture", Pearson Publications, Third Edition (UNIT III)

3.Yu-Cheng Liu and Glenn A. Gibson, "Microcomputer Systems: The 8086/8088 family, 2001, Second Edition, Prentice-Hall of India(UNIT IV & UNIT V)

Reference Books:

1.Mehta V. K., "Principles of Electronics, S. Chand and company Ltd, New Delhi, 7th edition (2001).

2.Vijayendran V, "Introduction to Integrated Electronics, S. Viswanathan Pvt., Ltd.(2011).

3. Ram B., "Fundamentals of microprocessors and microcomputer, Dhanapat. Rai& sons, New Delhi, Fifth Edition(2001).

4.Charles M. Gilmore, "Microprocessors Principles and application", Tata McGrawhill Publishing Co. Ltd., Second Edition., 2005.

5.Sedha R. S., "A text book of applied Electronics", S. Chand & company Ltd., New Delhi (2002).

(For candidates admitted from 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
Affiliated to Bharathidasan
University Nationally Accredited (3rd cycle)
with „A‟ Grade by NAAC College with
potential for Excellence Tiruchirappalli -
620002
First Year - Semester - I

Course Title	**ALLIED 2 : APPLIED MATHEMATICS I (for BCA and B.Sc. Computer science students)**
Total Hours	**60**
Hours / Week	**4**
Code	**U15MA1ACT05**
Course type	**Theory**
Credits	**3**
Marks	**100**

General Objective:

To enable the students to understand the concept of mathematical logic. To provide sufficient knowledge of statistics which enables them to compute various statistical measures

Course Objectives(CO) :
The learner will be able to

CO No.	Course Objectives
CO – 1	Understand the concept of logic and truth table
CO – 2	Understand WFF, Tautology and derivation of equivalence of formula
CO – 3	Evaluate measures of central tendency
CO – 4	Evaluate dispersion , Skewness, kurtosis
CO – 5	Evaluate Correlation and regression

UNIT 1: MATHEMATICAL LOGIC **12 Hrs**

Introduction – Notations – Negation – Conjunction – Disjunction - Conditional and bi- conditional Statements – Statement Formulas – Truth Table

Extra Reading/ Keywords: Symbolic logic, Formal logical system

UNIT II : MATHEMATICAL LOGIC (CONTINUED) 12 Hrs

Well formed formulae – Tautology – Equivalence of formulae – Truth table - Truth table method – Replacement Process

Extra Reading/ Keywords:*Logical operations, Logical equations, Tautologies*

UNIT III: MEASURES OF CENTRAL TENDENCY 12 Hrs

Mean – Median – Mode (Excluded: Graphic location of mode & median, Deciles &Percentile)

Extra Reading/ Keywords: *Geometric and harmonic mean, Appropriate and Positional measures, Deciles and percentile, Lorenz curve*

UNIT IV: DISPERSION, SKEWNESS & KURTOSIS 12 Hrs

Range – Quartile deviation – Mean deviation &Standard deviation – Karl Pearson‟s Coefficient of Skewness – Kurtosis.

Extra Reading/ Keywords: *Co-efficient of variation, Method of moments, Bowley's co-efficient of skewness, Sheppard's correction for moments, Kelly's co-efficient*

UNIT V : CORRELATION AND REGRESSION 12 Hrs

Karl Pearson‟s Coefficient of Correlation – Spearman‟s Rank Correlation Coefficient – Regression- Lines of Regression (Excluded Graphic method & standard error of estimate).

Extra Reading/ Keywords: *Index number, Time reversal test and factor reversal test, Least square method, Concurrent deviation method*

Note: Tests given in the Extra Reading /Key Word: must be tested only through assignment andseminars.

Course Outcomes (CO):
The learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO –1	Recall logic and truth table	**PSO - 3**	**R,U**
CO –2	Recognize WFF, Tautology and Summarize equivalence of formula.	**PSO - 5**	**U,Ap**
CO –3	Compute measures of central tendency	**PSO - 2**	**U,E**
CO –4	Calculate and compare dispersion , Skewness, kurtosis	**PSO - 4**	**E**
CO –5	Evaluate Correlation and regression	**PSO - 1**	**E**
CO – 6	Enable the students to understand the concept of mathematical logic. To provide sufficient knowledge of statistics which enables them to compute various statistical measures- Skill Development	**PSO - 4**	**R,U, Ap**

TEXT BOOKS:

1. Treatment and content as in G.S.S. BHISHMA RAO, Discrete structure and graph theory(2006) , Scitech Publications Pvt Ltd., Hydrabad, for Units I & II
   UNIT I : Chapter 1 : Sections 1- 5
   UNIT II : Chapter 1 : Sections 6- 8

2. Treatment and content as in R.S.N. PILLAI & BHAGAVATHI (2007) , Statistics Theory &practice ,S.Chand and Company Ltd., for Units III , IV , V
   UNIT III : Chapter 9 (Relevant portions only)
   UNIT IV : Chapter 10 & 11 (Relevant portions only)
   UNIT V : Chapter 12 & 13 (Relevant portions only)

REFERENCE BOOKS :

1. J.N.Kapur&H.C..Saxena(2003), "MATHEMATICAL STATISTICS",
2. Shukla M.C(2000), "STATISTICS", S .Chand and S.Chand and Company, New Delhi.company, New Delhi.
3. Vittal .P.R.,(2004), "BUSINESS STATISTICS", Margham publishers, Chennai

(For candidates admitted from 2018 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.Sc./B.Com/B.R.SC/B.C.A/ B.B.A DEGREE EXAMINATION
SEMESTER I / V

Course Title	**ENVIRONMENTAL STUDIES**
Total Hours	**15**
Hours/Week	**1**
Code	**U18RE1EST01/ U18RE5EST01**
Course Type	Theory
Credits	**1**
Marks	**100**

General Objectives:
The Student will be able to understand the concept of ecosystem, biodiversity, conservation, disaster management, analyse the prospects of natural resources, evaluate the effect and control of pollution

Course Objectives:
The student will be able to

1. understand the prospects of the various natural resources.
2. analyse the concept and need for biodiversity
3. evaluate the effect of the different types of pollution.
4. understand the need for disaster management
5. understand the Environment and Social Issues

Unit I – Awareness and Natural Resources **3hrs**
Awareness of Environmental issues and management strategies – need of the hour
Renewable and non-renewable resources - uses, present status and management of forest, water, land and energy resources.
Extra reading (Key Words):*Non renewable sources- location in India*

Unit II – Ecosystems and Biodiversity **3hrs**
Ecosystem – concepts, structure and types – concept of food chains and food web – causes and effects of weakening food chains - Biodiversity – concept of genetic, species and ecological biodiversity – ecological and economic values – India, a megadiversity country, hotspots – threats to biodiversity and conservation measures
Extra reading (Key Words): *Red list (any 10 plants and animals)*

Unit III – Environmental Pollution **3hrs**
Causes, effects and control of water, and air pollution – global warming – ozone depletion – nuclear hazards. Population growth at national and global level
World food production – effects of modern agriculture on land ecosystems – GMOs and related issues .Environmental pollution and diseases – malaria, chikungunya
Extra reading (Key Words): *Environmental factors affecting human behaviour*

Unit IV – Disaster Management **3hrs**
Bomb Threat – Earthquake – Explosion – Hazardous material spill / release – campus shooting – Terrorist incidence – Financial emergency – a sudden health emergency, unexpected loss of

income, death in the family or other family emergency. Rent in arrears and risk of eviction. Natural disasters

Extra reading (Key Words): *Causative factors of any 2 disasters*

Unit V – Environment and Social Issues **3hrs**

Rich – poor wide – at national and global levels

Urbanization – slums

Changing value systems – AIDS Family welfare programs

Extra reading (Key Words): *Scholarships and funds benefitting the welfare of the family*

Note: Texts given in the Extra reading /Key words must be tested only through Assignment and Seminars.

Course Outcomes:

1. Explain the importance of the various natural resources.
2. Analyze the concepts, structure and types of ecosystem. Add note on the biodiversity concepts
3. Evaluate the effect of the different types of pollution
4. Explains the various disaster management.
5. Discuss the need of environment and the social issues

REFERENCES:

Agarwal, K.C. (2001). Environmental Biology, Nidi Publication Ltd. Bikaner.

Chairas, D.D. (1985). Environmental Science. The Benjamin Cummings Publishing company., Inc.

Clarke George, L. (1954). Elements of Ecology. Hohn Wiley and SONS, Inc.

Hodges, L. (1977). Environmental Pollution, II Edition. Holt, Rinehart and Winston, New York. Krebs, C.J. (2001).Ecology.VI Edition.Benjamin Cummings.

Nebel, B.J. and Wright, R.T.(1996). Environmental Science, Prentice Hall, New Jersey

Odum, E.P.(2008) Fundamentals of Ecology.Indian Edition. Brooks / Cole.

Sharma, B.K. and Kaur (1997). Environmental Chemistry. Goel Publishing House, Meerut. Sharma, B.K. and Kaur, (1997). An Introduction to Environmental Pollution. Goel Publishing House, Meerut.

Sinhe, A.K. Boojh, R. and Vishwanathan, P. N. (1989). Water Pollution Conservation and Management, Gyansdaya Prakashan, Nainital.

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A/B. Sc/B.Com /B.C.A-DEGREE COURSES
LIFE ORIENTED EDUCATION
ETHICS – I: RELIGIONS AND VALUE SYSTEMS

HRS / WK :1 **CODE:U15VE2LVE01**
CREDITS : 1 **MARKS : 100**

OBJECTIVES:

- To enable the students to understand and appreciate all Religions and Culture
- To help the students to becom
- To aware of the negative forces of religions.

UNIT – I: RELIGION

God – Faith, Religion, Definition, Nature, Characteristics and Basic values of different religions. Impact of Globalization on religion – Importance of worship in holy places – celebration, Communion (come-union) – Socialization

UNIT – II: DIFFERENT RELIGIONS

Basic characteristics and basic thoughts of different religions: Buddhism, Christianity, Hinduism, Islam, Jainism and Sikhism

UNIT – III: UNITY OF RELIGION

Unity of Vision and Purpose- Respect for Other Religions, Inter Religious Co-operation, Religious Pluralism as a fact and Religious Pluralism as a value

UNIT – IV: FUNDAMENTALISM, COMMUNALISM AND SECULARISM

Meaning and impact of Fundamentalism, Communalism, Violence and Terrorism – Tolerance – Secularism – Individualism

UNIT – V: VALUE SYSTEMS

Value and Value Systems - Moral Values -Individuals and the need to stand for values in the context of Globalization – Consumerism - Will power to live up to your values - Healthy body for empowerment – Physical health and Mental hygiene, food and exercises

REFERENCES:

1. Social Analysis (a course for all first year UG students), 2001. Department of Foundation Courses, Loyola College, Chennai-34.
2. Special topics on Hindu Religion, 2001.Department of Foundation Courses, Loyola College, Chennai-34.
3. Religion: the living faiths of the world, 2001. Department of Foundation Courses, Loyola College, Chennai-34.
4. Sydney Am Meritt, 1997. Guided meditations for youth.
5. Marie Migon Mascarenhas,1986. Family life education- Value Education, A text book for College students.

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.Sc/B.Com /B.C.A-DEGREE COURSES
LIFE ORIENTED EDUCATION

BIBLE STUDIES – I: NEW TESTAMENT

HRS / WK : 1 **CODE: U15VE2LVBO1**
CREDIT : 1 **MARKS : 100**

OBJECTIVE:

- To enable the students to develop the passion for the Word of God – Jesus and inculcate the thirst of Missionaries being a disciple of Christ.

UNIT – I: BIBLE – THE WORD OF GOD

- Books of the Bible – Division into Old Testament and New Testament – History of the Bible-
- Messianic Prophecies (Isaiah 9:6,40:3,53:1-12,61:1-3,Micah 5:2)
- The Birth and Ministry of John the Baptist (Luke 1:1-80,Mat 3:1-17,14:1-12)
- The Birth, Passion, Death and Resurrection of Jesus (Luke 1:26-80,2:1-52,John 1 :18-21)

UNIT – II: MINISTRY OF JESUS

- Miracles (Mark 2:1-12,Luke 4:38-41,6:6-11,7:1-17,8:26-56,John 2:1-12)
- Parables (Luke 6:46-49,8:4-15,10:25-37,15:1-32)
- Preaching
  - Sermon on the mount (Mat 5-7)
  - Lord‟s Prayer (Luke 11: 1-13)
  - Kingdom of God (Mat 13: 24-50)
- Prayer life of Jesus (Luke 5:12-16,John 11:41-45,17:1-26,Mark 14:32-42)
- Rich and Poor (Luke 16: 19-31,21:1-4)
- Women Liberation (John 4:1-30,8:1-4)
- Women in the New Testament
- Martha & Maria (Luke 10: 38- 42, John 11: 1-46)

UNIT – III: CHURCH – BIRTH AND GROWTH

- Early Church
- Birth (Acts 2:1-41)
- Unity and sharing (Acts 2:42-47,4:1-37,5:1-11)
- Witnessing life (Acts 3:1-26,5:12-42,8:26-40, 16:20-34)
  - Comparison between early Church and present Church.

UNIT – IV: DISCIPLES AND APOSTLES

- Mother Mary (Mother of Jesus) (Luke 1: 27-35, John 2: 1-12, 19:35, Acts 1: 13-14)
- St. Peter (Luke 22:1-7,Acts 2:1-41,12:1-17)
- St. Andrew (Mat 4:18-20,John 1:35-42,6:1-14)
- St. Stephen (Acts 6,7)
- St. Paul (Acts 8,9,14,17,26 and 28)
- St. Thomas (John 20:24-31)

UNIT – V: ST. PAUL‟S LETTERS AND THE MESSAGE

- I & II Corinthians
- Galatians
- Ephesians
- Philippians
- I & II Timothy
- Titus

REFERENCES:

1. Holy Bible
2. John Stott, 1994, **“Men with a Message”**, Angus Hudson Ltd. London.

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS)
TIRUCHIRAPPALLI -2 B.A/B. Sc /B.Com/ B.C.A-DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – I: GOD OF LIFE

HRS / WK : 1 **CODE: U15VE2LVC01**
CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To enable the students to know God and his Salvific acts through Holy Bible
- To enable the students to know about the Paschal Mystery

UNIT – I: CREATION AND COVENANT

Study from petty catechism - Genesis - God revealed himself in creation -God who preserves creation through covenants

(Pentateuch) -Our response to God‟s covenant -Reason for its success and failure - The relationship of God with Israel -Image of God in Old Testament-God and me

UNIT – II: GOD OF THE PROPHETS

God‟s care for the humanity through Prophets-Major (Isaiah, Jeremiah) Minor (Amos) and Women (Deborah) Prophets-Their life and mission - Theology of Prophets - Concept of sin and collective sins expressed by prophets and God‟s saving love.

UNIT – III: GOD OF WISDOM

God experience through wisdom Literature, its origin and growth

UNIT – IV: SYNOPTIC GOSPELS

Synoptic Gospels and John‟s Gospel – Author –historical background –Chief message of each Gospel and for whom it was written - A few passages for the study of parallelism in the Synoptic Gospels.

UNIT – V: LUKE‟S GOSPEL

Study of Luke‟s Gospel in detail – speciality of the Gospel – main emphasis of the message
– meaning and blessing of suffering and paschal joy in one‟s life - Passion – Paschal Mystery

REFERENCES:

1. Catechism of the Catholic Church published by Theological Publications in India for the Catholic Hierarchy of India, 1994
2. The Holy Bible Revised Standard Version with Old and New Testaments Catholic Edition for India.
3. Vaazhvin Vazhiyil – St. John‟s Gospel- Fr. Eronimus
4. God‟s Word nourishes A catholic approach to the Scriptures Dr. Silvano Renu Rita, O.C.V.
   STD and Dr. Mascarenhas Fio S.J. D.mim. Catholic Bible I
   Documents of Vatican II – St. Paul‟s Publications, Bombay 1966.

(For Candidates admitted from 2015 onwards)

HOLY CROSS COLLEGE (Autonomous), Tiruchirappalli - 620 002.

PG & RESEARCH DEPARTMENT OF TAMIL

First Year - Semester – II

Course Title	தமிழ்த்தாள் - **II**
Total Hours	**75**
Hours/Week	**5 Hrs Wk**
Code	**U19TL2GEN02**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objectives:

இறைச்சிந்தனை வழி மாணவர்களை ஒருமுகப்படுத்துதல்.

- To harmonize the students in Religious thoughts.
- To Introduce the specialties of Tamil laureates
- To infuse the friendly nature instudents
- To improvise good habits among students

Course Objectives:

CO No.	Course Objectives
CO-1	இறைச்சிந்தனை வழி மாணவர்களை ஒருமுகப்படுத்துதல்.
CO-2	மதநல்லிணக்கத்தை உருவாக்குதல்.
CO-3	ஆளுமைத்திறனை வளர்த்தல்
CO-4	படைப்பாற்றல் திறனை ஊக்கப்படுத்துதல்.
CO-5	பிழையின்றி எழுதவும் படிக்கவும் மாணவர்களை தயார்ப்படுத்துதல்.

அலகு:1செய்யுள் **15 Hrs**

1. தேவாரம் - சுந்தரர் (திருமழப்பாடி)
2. திருவாசகம் - மாணிக்கவாசகர் (குயில் பத்து)
3. திருமந்திரம் - திருமூலர்
4. திருப்பாவை - ஆண்டாள்
5. நாலாயிர திவ்யப்பிரபந்தம் - குலசேகராழ்வார் (பெருமாள் திருமொழி)

Key Words (Extra Reading)

1. அற்புதத்திருவந்தாதி - காரைக்கால் அம்மையார்
2. திருவாய்மொழி - நம்மாழ்வார்

அலகு:2 செய்யுள் **15 Hrs**

6. மீனாட்சியம்மை பிள்ளைத்தமிழ் - குமரகுருபரர்
7. இரட்சணிய யாத்திரிகம் (சிலுவைப்பாடு) - எச்.ஏ.கிருட்டிணப்பிள்ளை
8. வேதநாயக சாஸ்திரியார் பாடல்கள் - - வேதநாயசாஸ்திரியார்
9. நபிகள்நாயக மான்மியமஞ்சரி - செய்குதம்பிப்பாவலர்

Key Words (Extra Reading)

1. நந்திக்கலம்பகம்
2. குற்றாலக்குறவஞ்சி –திரிகூடராசப்பக்கவிராயர்
3.

அலகு:3 **15 Hrs**

தமிழ் இலக்கிய வரலாறு –

பல்லவர்காலம்

நாயக்கர்காலம்

அலகு:4 **15 Hrs**

படைப்பிலக்கியம் - புதினம்

கல்கி - பார்த்திபன் கனவு

Key Words (Extra Reading)

வில்லோடு வா நிலவே – வைரமுத்து

அலகு:5 **15 Hrs**

கடிதம் எழுதுதல்

Note: Texts given in the Extra reading /Key words must be tested only through Assignment and Seminars.

Course Outcomes:

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	to evaluate the religious works and the growth of religious literature	PSO 1	U
CO-2	to bring-out the similarities in religious teachings and to ensure unity	PSO 2	AN
CO-3	to learn about the personalities about the Kings and their personalities	PSO 2	AP
CO-4	to enrich literature by reading, increase creativity and strengthen the vocabulary	PSO 3	U
CO-5	To learn the art of writing	PSO 4	U

பார்வை நூல்கள்

செய்யுள் - தமிழாய்வுத்துறை வெளியீடு

தமிழ் இலக்கிய வரலாறு - தமிழாய்வுத்துறை வுத்துறை வெளியீடு

கல்கி - பார்த்திபன் கனவு

- பயிற்சி ஏடு

நாவல கடித இலக்கியம்

(For the candidates admitted from June 2018 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
SEMESTER – II

Course Title **Total Hours**	**PART – I LANGUAGE** **HINDI – II DRAMA , NOVEL AND GRAMMAR –II** **75**
Hours/Week	**5Hrs/Wk**
Code	**CODE: U18HN2HIN02**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objective : To enable the students to appreciate and critically evaluate the prescribed literary works.

Course Objectives (CO):

The learner will be able to:

CO No.	**Course Objectives**
CO -1	Critically evaluate moral values in the drama
CO- 2	Critically appreciate and evaluate the novel in an ethical perspective.
CO- 3	Understand and apply tense and case
CO- 4	remember and apply adverbs and prepositions
CO- 5	comprehend the usage of conjunctions and interjections

UNIT – I **(15 Hours)**

1. Ashad ka ek dhin
2. Gaban
3. Kaal

Extra Reading (Key Words): Mohan Rakesh, Laharon Ke Rajahams

UNIT- II **(15 Hours)**

1. Ashad ka ek dhin
2. Gaban
3. Karak

Extra Reading (Key Words): *Premchand, Nirmala*

UNIT- III **(15 Hours)**

1. Ashad ka ek dhin
2. Gaban
3. Kriya Visheshan

Extra Reading (Key Words): Seva Sadhan, Aadhe Adhure

UNIT- IV **(15 Hours)**

1. Ashad ka ek dhin
2. Gaban
3. Sambandha Bodhak

Extra Reading (Key Words): Andhere Bandh Kamare, Mispal

UNIT- V **(15 Hours)**

1. Ashad ka ek dhin
2. Gaban
3. Yojak(Samuchaya Bhodak) Aur Dhyodak (Vismyadhi Bhodak) *Extra Reading (Key Words): Poos Ki Raat, Shatranj Ke Khiladi*

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

Course Outcomes:

The learner will be able to:

CO No.	Course Outcomes	Cognitive Level
CO -1	Appraise moral values in the Society	E
CO- 2	Distinguish necessity and luxury	E
CO- 3	To make use of present, past and future tense and build stories.	U, Ap
CO- 4	Utilize adverbs and prepositions in a text.	R, Ap
CO- 5	Rephrase using conjunctions and interjections.	U

CO- Course Outcome; R- Remember; U- Understand; Ap- Apply; An- Analyze; E- Evaluate; C- Create

Reference Books :

- Ashadka ek dhin : Mohan Rakesh;Rajpal and Sons,Delhi.
- Nirmala: Premchand;Sri Jwalaji Books Educational Enterprises,New Delhi.
- Vyakaran pradeep; Dr. Ram Dev. M.A; LokBharathiPrakashan ;Illahabad.
- Manak Hindi Vyakaran: ChandraBhan „Rahi";SreyaPrakashan, Illahabad

(For candidates admitted 2016 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2

DEPARTMENT OF FRENCH
SEMESTER II

Course Title	**PART I – LANGUAGE - FRENCH PAPER II** (GRAMMAR, CIVILISATION & TRANSLATION (ÉCHO A1 2e édition)
Total Hours	75
Hours/Week	5 Hrs/Wk
Code	U16FR2FRE02
Course Type	Theory
Credits	3
Marks	100

General Objective: To enable the students to learn French Grammar and Cultural aspects of France.

Course Objectives (CO):

The learner will be able to

CO1	understand pronominal verbs and apply the same in narrating one‟s own everyday activities.
CO2	remember prepositions and understand climate in France and dwelling place.
CO3	apply past tenses in a biography and analyse relationships and family structure in France
CO4	understand object pronouns and evaluate savoir-vivre in France.
CO5	understand the usage of relative pronouns and secondary tenses and remember SOS and evaluate French style

Unit 1 Quelle journée ! (15 Hours)

La conjugaison pronominale, l‟impératif, l‟expression de la quantité – les activités quotidiennes, les achats et l‟argent – demander des nouvelles de quelqu‟un – le comportement en matière d‟achat et d‟argent.

Extra Reading (Key Words): lettre amicale, compléter un dialogue

Unit 2 Qu‟on est bien ici ! (12 Hours)

Les prépositions et les adverbes, les verbes exprimant un déplacement – le logement, la localisation, l‟orientation, l‟état physique, le temps qu‟il fait – demander de l‟aide, exprimer une interdiction – le climat en France, les cadres de vie (ville et campagne)

Extra Reading (Key Words): des affiches et des panneaux

Unit 3 Souvenez-vous ? (12 Hours)

Emplois du passé composé et de l‟imparfait – les moments de la vie, la famille, les relations amicales, amoureuses, familiales – demander/donner des informations sur la biographie d‟une personne – le couple et la famille.

Extra Reading (Key Words): la biographie d‟une personne importante

Unit 4 On s‟appelle ? (12 Hours)

Les pronoms compléments directs et indirects – les moyens de la communication – aborder quelqu‟un, exprimer une opinion sur la vérité d‟un fait – les conseils de savoir-vivre en France.

Extra Reading (Key Words):le savoir vivre en Inde

Unit 5 Un bon conseil ! ; Parlez-moi de vous ! (24 Hours)

L‟expression de déroulement de l‟action, les phrases rapportées – le corps, la santé et la maladie – téléphoner, prendre rendez-vous, exposer un problème – les conseils pour faire face aux situations d‟urgence.

La place de l‟adjectif, la proposition relative, la formation des mots – la description physique et psychologique des personnes, les vêtements et les couleurs – demander/donner une explication – quelques styles comportementaux et vestimentaires en France.

Extra Reading (Key Words): SOS en Inde, les marques internationales des vêtements.

Course outcomes:	**Cognitive level**
Make use of pronominal verbs to sketch one‟s routine.	U, Ap
Illustrate habitat in France.	An
Utilize a biography to identify past tenses.	E
Compare family structure in France and in India.	E
Apprise savoir-vivre in class room.	Ap, An
Examine « Style » in a French context.	An
Relate SOS in India and in France.	E

TEXT BOOKS :

ECHO A1 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D‟APPRENTISSAGE Authors: J. Girardet and J. Pécheur Publication: CLÉ INTERNATIONAL, 2013.

Books for Reference:

La Conjugaison – Nathan
French made easy – Beginners level - Goodwill Publishing House Je parle français II - Abhay Publications
Le français avec des jeux et des activités – ELI Langue et la civilisation – I – Mauger Bleu

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

(for candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), Tiruchirapalli – 620002

PG AND RESEARCH DEPARTMENT OF ENGLISH

I YEAR UG – SEMESTER II

PART II – ENGLISH 2 - GENERAL ENGLISH II

HOURS : 6 **CODE : U15EL2GEN02**

CREDIT : 3 **MARKS: 100**

OBJECTIVES

- Students learn to use LSRW skills and advanced communication skills in the context required in their daily life.
- The students learn to analyze and express their self and their concern and responsibilities to the world around.
- The students learn how English is used in literary writing so as to imbibe the spirit of the standard language for communication.

UNIT I – SELF

Listening- Specific information from demonstration and instructions, transfer of information.
Speaking - Sharing expressions, dreams and expressing opinions.
Reading -Skimming and Scanning for specific information, reading for local comprehension.
Writing - Story Writing
Grammar - Articles and Sentence Pattern
Vocabulary - Meanings, Synonyms, Antonyms
Composition - Transfer of information: Paragraph to Bar graph/pie chart
General Essay - Courage is the key to success

TEXTS

1. *The Far and the Near* by Thomas Wolfe (Short Story)
2. *The Owl who was a God* by James Thurber (Short Story)
3.*Wings of Fire – Chapter I* by Dr. A.P.J. Abdul Kalam (Prose)

UNIT II – STRENGTHS

Listening - Listening to a process
Speaking - Telephone Etiquette
Reading - Loud reading with pause, intonation and expression in dialogue form
Writing - Writing about oneself (strengths& weaknesses, Have's & Have not's)
Grammar- Subject verb agreement, Prepositions
Vocabulary- One word substitute in the context
Composition- Letter Writing - informal letters
General essay – A bird in hand is worth two in bush.

TEXTS

1. *The Robe of Peace* by O' Henry (Short Story)
2. An extract from *Androcles and the Lion* by George Bernard Shaw (Play)

UNIT III - POSITIVE SHORTCOMINGS

Listening - Listening to facts and opinions and trying to differentiate it
Speaking - Pair Work – about have's & have not's, understanding the strengths and overcoming the weaknesses

Reading - Reading newspapers, articles, magazines, anecdotes for global and specific in analytical thinking
Writing - Filing Complaints, Travelogues
Grammar - Tenses, Direct and Indirect Speech
Vocabulary - Compound words
Composition - Dialogue Writing
General essay – Adversity is the seed of success.

TEXTS
1. *Six Thinking Hats* by Edward de Bono (Prose)
2. *A Cup of Tea* by Katherine Mansfield (Short Story)
3. An Extract from Shakespeare's *As You Like It (Act II Scene I lines 12 -17)*

UNIT IV POTENTIALS

Listening - Listening to the description of personalities, historical places and monuments
Speaking - Group Discussion – Totally controlled, partially controlled, Free
Reading - Parallel Reading, reading for pleasure
Writing - Letter writing – formal letters
Grammar - Adjectives, Degrees of Comparisons
Vocabulary - Idioms and Phrases
Composition - Debates and Discussions
General essay – My potentials

TEXTS
1. *Easy Ways to Avoid an Argument* by Sam Horn (Prose)
2. *Pygmalion* by George Bernard Shaw (Play)
3. My Heart Leaps up when I behold by William Wordsworth (Poem)
4. The Flower by Alfred Lord Tennyson (Poem)

UNIT V ACHIEVEMENTS
Listening - Listening to comparisons and arguments
Speaking - Performance
Reading - In-depth reading
Writing - Script writing of story to play
Grammar - Question Tags
Vocabulary - Homophones
Composition - Essay Writing
General essay - The reward of hard work.

TEXTS
1. *On Saying Please* by A.G. Gardiner (Prose)
2. *A Time of Green* by Anna Stillaman (Play)

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(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc.Computer Science- First Year - Semester – II

Course Title	Major Core - 3: Data Structures and Algorithms
Total Hours	75
Hours/Week	5 Hrs \Wk
Code	U19CA2MCT03/U19CS2MCT03
Course Type	Theory
Credits	5
Marks	100

General Objective:

To impart fundamental knowledge on data structures and algorithms.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Learn the fundamental Concepts of Data Structures
CO-2	Understand the working principles of Linked List, Stack, Queue and Trees.
CO-3	Understanding of various sorting algorithms, including insertion sort, selection sort, merge sort, heap sort and quick sort.
CO-4	Understand the mapping of real-world problems to algorithmic solutions.
CO-5	Study how to balance a Binary Search trees and 2-3 and so on other Trees

UNIT - I **15Hrs**

INTRODUCTION AND OVERVIEW: Introduction - Basic Terminology - Elementary Data Organization - Data Structures - Data Structure Operations. Arrays: Introduction - Linear Arrays - Representation - Traversing, Insertion and Deletion. SEARCHING: Linear Search - Binary Search.

Extra **Extra Reading /Key words:** *two dimensional and multi dimensional array concepts.*

UNIT - II **15Hrs**

LINKED LISTS: Introduction - Linked Lists - Representation of Linked List in Memory - Traversing a Linked List - Searching a Linked List – Memory Allocation, Garbage Collection - Insertion into a Linked List - Deletion from a Linked List.

Extra Reading /Key words: *real time applications of Linked Lists.*

UNIT - III **15Hrs**

STACKS, QUEUES AND RECURSION: Introduction - Stacks – Array Representations of Stacks - Arithmetic Expressions- Polish Notation - Recursion: Factorial Function and Fibonacci Sequence. QUEUES:Representation of Queues - Array Representation of Queues.

Extra Reading /Key words: *Postfix expression, Dequeue.*

UNIT - IV **15Hrs**

TREES: Introduction - Binary Trees - Representing Binary Tress in Memory - Traversing Binary Trees- Binary Search Tree- Searching and Inserting in Binary Search Trees - Deleting in Binary Search

Trees. SORTING: Introduction -Insertion Sort - Selection Sort - Merge Sort - Heap Sort.

Extra Reading /Key words: *Tree Traversals, Binary Search Tree.*

UNIT - V **15Hrs**

GRAPH AND THEIR APPLICATIONS: Introduction- Graph theory terminology- Sequential representation of graphs; Adjacency matrix; Path matrix; - Warshall's Algorithm; Shortest path – linked representation of a Graphs – Operation on Graph – Traversing a Graph.

Extra Reading /Key words: *cyclic and acyclic graph, shortest path.*

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Recall the fundamental Concepts of Data Structures.	PSO 1	R, U
CO-2	Determine the applications of Linked List, Stack, Queue and Trees.	PSO 2	A
CO-3	Grasp various operations and searching methods applied using Binary Tree.	PSO 2	U
CO-4	Demonstrate of various sorting algorithms, including insertion sort, selection sort, merge sort, heap sort and quick sort.	PSO 3	Ap
CO-5	Comprehend various Algorithm Design Strategies.	PSO 4	An

References:

Text Books:

1. Seymour Lipschutz, "Data Structures", Tata McGraw Hill Publishing Company Limited, New Delhi, 2008. UnitS: I, II, III, IV & V

Reference Books:

1. Ellis Horowitz, SartajSahni and Dinesh Mehta, "Fundamentals of Data Structures in C++", University Press (India) Pvt. Ltd., Hyderabad, 2007.
2. Yashavant P. Kanetkar, "Data Structures Through C++", BPB Publications, 2003.
3. A. Chitra and P.T. Rajan, Data Structures, Tata McGraw – Hill Publishing Company Limited, New Delhi
4. Jean Paul Tremblay and Paul G. Sorenson, An Introduction To Data Structures with Applications, Tata McGraw-Hill, Second Edition
5. S.E. Goodman and S.T. Hedetniemi, "Introduction to the Design and Analysis of Algorithms", Tata McGrawHill, International Edition, 1987

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc.Computer Science- First Year - Semester – II

Course Title	Major Core - 4: Data Structures Lab
Total Hours	75
Hours/Week	5 Hrs Wk
Code	U19CA2MCP04 / U19CS2MCP04
Course Type	Practical
Credits	4
Marks	100

General Objective:

Student learns to develop C program for implementing different kind of Data Structures.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Remember stack concepts and develop programs using C.
CO-2	Understand the concepts of Queue and develop programs using C.
CO-3	Insert and delete nodes into and from a linked list using C.
CO-4	Develop C programs for implementing different sorting techniques.
CO-5	Develop C programs for searching an element in an array.
CO-6	Find the shortest path in a graph using C.

EXERCISES

1. Operations on Stack and Conversion of expressions.
2. Operations on Queue.
3. Operations on Linked List.
4. Operations on Binary tree and Traversals.
5. SORTING:
    a. Bubble Sort.
    b. Insertion Sort.
    c. Selection Sort.
    d. Heap Sort.
    e. Quick Sort.
6. SEARCHING:
    a. Linear Search.
    b. Binary Search.
7. Dijkstra’s Algorithm to find the Shortest Path.

(For candidates admitted from 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
Affiliated to Bharathidasan University Nationally Accredited (3rd cycle) with „A‟ Grade by NAAC College with potential for Excellence Tiruchirappalli - 620002
First Year - Semester - II

Course Title	**ALLIED-3 APPLIED MATHEMATICS- II (For BCA & Computer Science students)**
Total Hours	**60**
Hours / Week	**4**
Code	**U15MA2ACT11**
Course type	**Theory**
Credits	**3**
Marks	**100**

General Objective:

To provide an understanding of basic concepts in Operations Research Techniques for Analysis and Modeling in computer applications

Course Objectives(CO) :
The learner will be able to

CO No.	Course Objectives
CO – 1	Understand LPP and solving LPP using graphical and simplex method.
CO – 2	Understand Transportation problem and Evaluation of its initial basic feasible solution using North west corner rule, Least cost method, Vogel method.
CO – 3	Evaluate assignment problem using Hungarian algorithm.
CO – 4	Understand problem of sequencing and processing n jobs through 2 machines and 3 machines
CO – 5	Understand Network basic concepts, Rule of network construction and evaluation of PERT and CPM

UNIT I:

LINEAR PROGRAMMING PROBLEM **12 Hrs**

Introduction –Mathematical formulation of the Problem – Solving LPP by graphical method – General LPP - Canonical and standard forms – Simplex method.**(Simple problems only)**

Extra Reading/ Keywords: *Integer linear programming, Mixed integer programming Karmarkar's algorithm.*

UNIT II:

TRANSPORTATION PROBLEM **12 Hrs**

Introduction – Mathematical Formulation –Initial basic feasible solution by North West Corner Rule – Least cost method – Vogel‟s approximation method- Unbalanced and maximization transportation problems.**(Initial basic feasible solution problems only)**

Extra Reading/ Keywords: *Modified distribution method (MODI), Russell's approximation method*

UNIT III:

Assignment problem **12 Hrs**

Assignment Problem – Hungarian method – Unbalanced AP – Maximization in AP.

Extra Reading/ Keywords*: Generalised assignment problem, Linear bottleneck assignment problem*

UNIT IV:

Sequencing Problem **12 Hrs**

Introduction – problem of sequencing- Basic terms - Processing n jobs through 2 machines & 3 machines.

Extra Reading/ Keywords*:Job-shop scheduling, Flow-shop scheduling*

UNIT V:

Network Scheduling by PERT/CPM **12 Hrs**

Introduction – Network Basic components – logical sequencing – Rules of network construction – Concurrent activities - Critical path analysis.

Extra Reading/ Keywords*:Critical path analysis in project management, Graphical evaluation and review technique, Precedence diagram method.*

Note: Tests given in the Extra Reading /Key Word: must be tested only through assignment andseminars

Course Outcomes(CO): The learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO – 1	Recognize and relate LPP and solving LPP using graphical and simplex method.	**PSO - 3**	**R,U,E**
CO – 2	Explain Transportation problem and Evaluate its initial basic feasible solution	**PSO -2**	**Ap, E**
CO – 3	Discuss and solve assignment problem using Hungarian algorithm.	**PSO -1**	**E**

CO – 4	Recall and evaluate the problem of sequencing with respect to processing n jobs through 2 machines and 3 machines.	**PSO -5**	**E**
CO – 5	Describe and Construct Network and compute PERT and CPM	**PSO -4**	**R,U,E**
CO – 6	Provide an understanding of basic concepts in Operations Research Techniques for Analysis and Modeling in computer applications Skill Development	**PSO – 2,5**	**U, Ap**

TEXT BOOK:

Treatment and content as in Kanti Swarup, Gupta P.K, Man Mohan (2007),13th revised edition **OPERATIONS RESEARCH**Sultan Chand & Sons, New Delhi.

Unit I : Chapter 2: Sections 2.1 to 2.4 , Chapter 3 : Sections 3.1 to 3.5, Chapter 4: Section 4.3
Unit II : Chapter 10 : Sections 10.1 to 10.3, 10.5,10.9,10.15
Unit III: Chapter 11: Sections 11.1, 11.2, 11.3 (4), 11.4
Unit IV: Chapter 12 : Section 12.1 to 12.5.
Unit V: Chapter 25 : Sections 25.1 to 25.6

REFERENCE BOOKS:

1. S.Kalavathy , (2nd Reprint 2011), OPERATIONS RESEARCH , 3rd edition, Vikas Publishing House Pvt.Ltd, New Delhi.
2. Gupta P.K., Hira S.(2005) , **OPERATIONS RESEARCH**, S.Chand & Co. Limited , New Delhi.

3.Mariappan P.(2001), **OPERATIONS RESEARCH METHODS & APPLICATIONS** New Century Book House Private Limited..

4 Panneer Selvam (2003), **OPERATIONS RESEARCH**, Prentice Hall of India Private Limited, New Delhi.

5.Sharma J.K.(2007), **OPERATION RESEARCH THEORY & APPLICATIONS**, Macmillan India Limited, Chennai.

(For the candidates admitted from 2015onwards)

HOLY CROSS COLLEGE (AUTONOMOUS),
TIRUCHIRAPPALLI B.A/B.Sc./B.Com/B.R.SC/B.C.A/ B.B.A
DEGREE EXAMINATION SEMESTER- II

Course Title	**SKILL – BASED ELECTIVE 1: SOFT SKILL DEVELOPMENT**
Total Hours	**30**
Hours/Week	**2**
Code	**U15RE2SBT01**
Course Type	Theory
Credits	**2**
Marks	**100**

General Objective:

The student understands the need for the development of self esteem, team spirit and communicative skills to prepare themselves for self development.

Course Outcomes:

The student will be able to

1. Understand the importance of self awareness, values and leadership skills in capacity building
2. Understand and analyze the factors affecting interpersonal skills
3. Understand and evaluate the concepts of vision, mission and goals for corporate skills
4. Understand, apply and analyze the importance of body language, time management and stress management
5. Understand the concept and need for self development plan

UNIT I: 6 hrs

Individual Capacity Building

Self awareness- building self-esteem- importance of having a strong self – esteem – developing positive attitude-. Anchoring on principles: Universal principles and values – forming & inculcating values- Leadership skills.

Extra reading / Key Words: *Biographies of any 2 Indian leaders*

UNIT II : 6 hrs

Interpersonal skills

Trust-trustworthiness-interpersonal communication –art of listening, reading and writing – art of writing –building relationship-empathy.

Extra reading / Key Words: *Tips for building relationship*

UNIT III: 6 hrs

Corporate skills

Vision, mission and goals: Concepts, vision setting, goal setting, Individual and Group goals, Concept of synergy, team building, group skills.

Extra reading / Key Words: *Group dynamics and communication skills*

UNIT IV: **6 hrs**

Management skills

Developing Body Language – Practicing etiquette and mannerism –Stress Management – Time Management Prioritization Importance and urgent activities- Time management to move towards life vision.

Extra reading / Key Words: *Polite conversations and dialogue skills*

UNIT V: **6 hrs**

Self Development Plan

Concept and Need for Self Development Plan – Preparing Self Development Plan 9 Format is used to complete the self development Plan), Monitoring and Evaluation of self Development plan – Developing indicators for self development introduction to National Skill Development Mission.

Extra reading / Key Words: *Case study*

Note: Extra reading/Key words are only for internal testing(Seminar/Assignment)

Course Course Outcome:

1. explain the importance of self awareness, values and leadership skills in capacity building
2. analyze the factors affecting interpersonal skills
3. evaluate the concepts of vision, mission and goals for corporate skills
4. apply and analyze the importance of body language, time management and stress management
5. summarize the concept and need for self development plan

REFERENCES:

Alex K.(2012) Soft Skills – Know Yourself & Know the World, S. Chand & Company Ltd., New Delhi Meena K. Ayothi V. (2013). A Book on Development of Soft Skills (Soft Skills: A Road Map to Success), P.R. Publishers & Distributors, Trichy.

Francis Thamburaj S.J. (2009). Communication soft skills for Professional Excellence, 1st Ed., Grace Publishers, Rathan Reddy B.(2005). Team Development and Leadership, Jaico Publishing House, Mumbai.

(For candidates admitted from 2018 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2

B.A./ B.Sc.,/B.Com./BCA & BBA, DEGREE EXAMINATION

SEMESTER II / III

Course Title	**SKILL – BASED ELECTIVE 2: SUSTAINABLE RURAL DEVELOPMENT AND STUDENT SOCIAL RESPONSIBILITY**
Total Hours	**30**
Hours/Week	**2**
Code	**U18RE2SBT02/ U18RE3SBT02**
Course Type	Theory
Credits	**2**
Marks	**100**

General Objective:

The Student will be able to understand the concept of natural resources and resource mapping of villages and strengthen their leadership qualities, keeping in mind their responsibilities towards society.

Course Objectives:

The student will be able to:

1. understand the functioning of NGO‟s and SHG‟s
2. educate themselves about the different farming methods.
3. practice alternative agricultural methods
4. understand the need for social responsibility through NCC.
5. understand the Leadership and Man Management

Unit – I **6hrs**

Village – Survey of natural resources and resource mapping of villages , village level Participating Approach (VLPA) – Role of NGO‟S and SHG‟S – Impact of the Green Revolution.

Extra reading/Key word: *resource mapping tools*

Unit –II **6hrs**

Alternative agriculture models – Traditional Farming – Organic Farming – Zero budget farming – Precision Farming ,Terrace Farming and Kitchen garden.

Extra reading / Key word: *Practices in India*

Unit – III **6hrs**

Elements in Alternative Agriculture models ,Vermi compost, Azolla, Amirthakarasal ,Mulligai Puchiviratti and neem products

Extra reading/Key word*:Government policy for* Alternative Agriculture farming.

Unit IV- **6hrs**

Aims of NCC , MOTTO , Cardinal Principles, Equivalent Rank (Army, Navy ,Airforce)

Extra reading/Key word*: Benefits of being an NCC cadet.*

Unit -V **6hrs**

Leadership and Man Management – duties of citizen, leadership Training – Types, qualities – Discipline, Duty, Moral – Man Management, Civil Defense – Aims, Types, Services, Problems

Extra reading/Key word: *Defense recruitment modes.*

Note: Extra Reading/ keywords are only for Internal Testing (Seminar/ Assignments)

Course Outcome:

1. Explain the functioning of NGO‟s and SHG‟s
2. Summarize themselves about the different farming methods.
3. Explain the alternative agricultural methods
4. Point out the need for social responsibility through NCC.
5. Evaluate the Leadership and Man Management

REFERENCES:

1. Packages of organic practices from Tamil Nadu Center for Indian Knowledge System(CIKS)
2. Tracey, S. and Anne, B. (2008). Sustainable development linking economy, society, environment. OECD insights.
3.www.fao.org.in

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-
2 B.A/B. Sc/B.Com /B.C.A-DEGREE COURSES
LIFE ORIENTED EDUCATION
ETHICS – I: RELIGIONS AND VALUE SYSTEMS

HRS / WK :1 **CODE:U15VE2LVE01**
CREDITS : 1 **MARKS : 100**

OBJECTIVES:

- To enable the students to understand and appreciate all Religions and Culture
- To help the students to becom
- To aware of the negative forces of religions.

UNIT – I: RELIGION

God – Faith, Religion, Definition, Nature, Characteristics and Basic values of different religions. Impact of Globalization on religion – Importance of worship in holy places – celebration, Communion (come-union) – Socialization

UNIT – II: DIFFERENT RELIGIONS

Basic characteristics and basic thoughts of different religions: Buddhism, Christianity, Hinduism, Islam, Jainism and Sikhism

UNIT – III: UNITY OF RELIGION

Unity of Vision and Purpose- Respect for Other Religions, Inter Religious Co-operation, Religious Pluralism as a fact and Religious Pluralism as a value

UNIT – IV: FUNDAMENTALISM, COMMUNALISM AND SECULARISM

Meaning and impact of Fundamentalism, Communalism, Violence and Terrorism – Tolerance – Secularism – Individualism

UNIT – V: VALUE SYSTEMS

Value and Value Systems - Moral Values -Individuals and the need to stand for values in the context of Globalization – Consumerism - Will power to live up to your values - Healthy body for empowerment – Physical health and Mental hygiene, food and exercises

REFERENCES:

1. Social Analysis (a course for all first year UG students), 2001. Department of Foundation Courses, Loyola College, Chennai-34.
2. Special topics on Hindu Religion, 2001.Department of Foundation Courses, Loyola College, Chennai-34.
3. Religion: the living faiths of the world, 2001. Department of Foundation Courses, Loyola College, Chennai-34.
4. Sydney Am Meritt, 1997. Guided meditations for youth.
5. Marie Migon Mascarenhas,1986. Family life education- Value Education, A text book for College students.

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.Sc/B.Com /B.C.A-DEGREE COURSES
LIFE ORIENTED EDUCATION
BIBLE STUDIES – I: NEW TESTAMENT

HRS / WK : 1 **CODE: U15VE2LVBO1**
CREDIT : 1 **MARKS : 100**

OBJECTIVE:

- To enable the students to develop the passion for the Word of God – Jesus and inculcate the thirst of Missionaries being a disciple of Christ.

UNIT – I: BIBLE – THE WORD OF GOD

- Books of the Bible – Division into Old Testament and New Testament – History of the Bible-
- Messianic Prophecies (Isaiah 9:6,40:3,53:1-12,61:1-3,Micah 5:2)
- The Birth and Ministry of John the Baptist (Luke 1:1-80,Mat 3:1-17,14:1-12)
- The Birth, Passion, Death and Resurrection of Jesus (Luke 1:26-80,2:1-52,John 1 :18-21)

UNIT – II: MINISTRY OF JESUS

- Miracles (Mark 2:1-12,Luke 4:38-41,6:6-11,7:1-17,8:26-56,John 2:1-12)
- Parables (Luke 6:46-49,8:4-15,10:25-37,15:1-32)
- Preaching
  - Sermon on the mount (Mat 5-7)
  - Lord‟s Prayer (Luke 11: 1-13)
  - Kingdom of God (Mat 13: 24-50)
- Prayer life of Jesus (Luke 5:12-16,John 11:41-45,17:1-26,Mark 14:32-42)
- Rich and Poor (Luke 16: 19-31,21:1-4)
- Women Liberation (John 4:1-30,8:1-4)
- Women in the New Testament
- Martha & Maria (Luke 10: 38- 42, John 11: 1-46)

UNIT – III: CHURCH – BIRTH AND GROWTH

- Early Church

- Birth (Acts 2:1-41)
- Unity and sharing (Acts 2:42-47,4:1-37,5:1-11)
- Witnessing life (Acts 3:1-26,5:12-42,8:26-40, 16:20-34)
    - Comparison between early Church and present Church.

UNIT – IV: DISCIPLES AND APOSTLES

- Mother Mary (Mother of Jesus) (Luke 1: 27-35, John 2: 1-12, 19:35, Acts 1: 13-14)
- St. Peter (Luke 22:1-7,Acts 2:1-41,12:1-17)
- St. Andrew (Mat 4:18-20,John 1:35-42,6:1-14)
- St. Stephen (Acts 6,7)
- St. Paul (Acts 8,9,14,17,26 and 28)
- St. Thomas (John 20:24-31)

UNIT – V: ST. PAUL"S LETTERS AND THE MESSAGE

- I & II Corinthians
- Galatians
- Ephesians
- Philippians
- I & II Timothy
- Titus

REFERENCES:

1. Holy Bible
2. John Stott, 1994, **"Men with a Message"**, Angus Hudson Ltd. London.

(For Candidates admitted from June 2015 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS)

TIRUCHIRAPPALLI -2 B.A/B. Sc /B.Com/ B.C.A-DEGREE COURSES

LIFE ORIENTED EDUCATION

CATECHISM – I: GOD OF LIFE

HRS / WK : 1 **CODE: U15VE2LVC01**

CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To enable the students to know God and his Salvific acts through Holy Bible
- To enable the students to know about the Paschal Mystery

UNIT – I: CREATION AND COVENANT

Study from petty catechism - Genesis - God revealed himself in creation -God who preserves creation through covenants

(Pentateuch) -Our response to God‟s covenant -Reason for its success and failure -The relationship of God with Israel -Image of God in Old Testament-God and me

UNIT – II: GOD OF THE PROPHETS

God‟s care for the humanity through Prophets-Major (Isaiah, Jeremiah) Minor (Amos) and Women (Deborah) Prophets-Their life and mission - Theology of Prophets -Concept of sin and collective sins expressed by prophets and God‟s saving love.

UNIT – III: GOD OF WISDOM

God experience through wisdom Literature, its origin and growth

UNIT – IV: SYNOPTIC GOSPELS

Synoptic Gospels and John‟s Gospel – Author –historical background –Chief message of each Gospel and for whom it was written - A few passages for the study of parallelism in the Synoptic Gospels.

UNIT – V: LUKE‟S GOSPEL

Study of Luke‟s Gospel in detail – speciality of the Gospel – main emphasis of the message– meaning and blessing of suffering and paschal joy in one‟s life - Passion – Paschal Mystery

REFERENCES:

1. Catechism of the Catholic Church published by Theological Publications in India for the Catholic Hierarchy of India, 1994
2. The Holy Bible Revised Standard Version with Old and New Testaments Catholic Edition for India.
3. Vaazhvin Vazhiyil – St. John‟s Gospel- Fr. Eronimus
4. God‟s Word nourishes A catholic approach to the Scriptures Dr. Silvano Renu Rita, O.C.V.

STD and Dr. Mascarenhas Fio S.J. D.mim. Catholic Bible I
Documents of Vatican II – St. Paul‟s Publications, Bombay 1966.

(For Candidates admitted from 2015 onwards)

HOLY CROSS COLLEGE (Autonomous), Tiruchirappalli - 620 002.

PG & RESEARCH DEPARTMENT OF TAMIL

Second Year - Semester – III

Course Title	தமிழ்த்தாள் - **III**
Total Hours	**90**
Hours/Week	**6 Hrs Wk**
Code	**U15TL3TAM03**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objectives:

வாழ்வியல் நெறிகளாகிய அறம், பொருள், இன்பம், வீடுபேறு ஆகியவற்றின் சிறப்பினை எடுத்துரைத்தல்

- To explain the greatness of the values such as dharma, knowing the meaning of life
- To create awareness about social life.
- To strengthen the religious ideologies.

Course Objectives:

CO No.	Course Objectives
CO-1	வாழ்வியல் நெறிகளாகிய அறம், பொருள், இன்பம், வீடுபேறு ஆகியவற்றினை எடுத்துரைத்தல்
CO-2	சமயங்கள் உணர்த்தும் அறக்கருத்துக்களை அறிந்து கொள்ளச்செய்தல்.
CO-3	சோழர்கால காப்பிய இலக்கியங்கள் மற்றும் இலக்கண நூல்களை வகைப்படுத்துதல்.
CO-4	நாடகம் நடிப்பதன் வாயிலாக மாணவர்களின் திறன்களை வளர்த்தல்.
CO-5	தமிழக கோயில்களின் கலைநுட்பங்களையும், பண்பாட்டுச் சிறப்புகளையும் விவரித்தல்

அலகு:1 செய்யுள் **18 Hrs**

1. சிலப்பதிகாரம் - கடலாடு காதை
2. மணிமேகலை – உலகவறவி புக்க காதை
3. கம்பராமாயணம் - கங்கைப் படலம்

Key Words (Extra Reading)

சீவகசிந்தாமணி

அலகு:2 செய்யுள் **18 Hrs**

1. இரட்சணிய யாத்திரிகம் - மரணப்படலம்
2. சீறாப்புராணம் - ஒட்டகை பேசிய படலம்

அலகு:3 **18 Hrs**

தமிழ் இலக்கிய வரலாறு

சோழர் காலம்

அலகு:4 **18Hrs**

நாடகம்

சத்திய வேள்வி – அய்க்கண்

Key Words (Extra Reading)
யாருக்கும் வெட்கமில்லை - சோ

அலகு:5 **18 Hrs**

கோயிற்கலை

Note: Texts given in the Extra reading /Key words must be tested only through Assignment and Seminars.

Course Outcomes:

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	To learn the life of the people through the epic stories	PSO 1	U
CO-2	to learn the values taught by religion	PSO 2	AN
CO-3	Tostudy about the period of The King Chola, its epics, literature and grammar books	PSO 2	R
CO-4	to learn about the dramatic skills	PSO 3	U
CO-5	toteach students to evaluate the art, culture and other aspects of the temples in Tamil Literature.	PSO 4	U

பார்வை நூல்கள்	**பாட நூல்கள்**
1. செய்யுள்	- தமிழாய்வுத்துறை வுத்துறை வெளியீடு
2. தமிழ் இலக்கிய வரலாறு	- தமிழாய்வுத்துறை வுத்துறை வெளியீடு
3. நாடகம் அய்க்கண்	- சத்திய வேள்வி
4. கோயிற்கலை	- தமிழ்நாட்டிலுள்ள ஆலயங்களைக் கலை நுணுக்கத்துடன் காணுதல்

(For the candidates admitted from June 2018 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
SEMESTER – III

Course Title	**PART – I LANGUAGE HINDI- III-MEDIEVAL–MODERN POETRY AND HISTORY OF HINDI LITERATURE-1 (Veergadha Kal Aur Bakthi Kal)**
Total Hours	**90**
Hours/Week	**6Hrs/Wk**
Code	**CODE: U15HN3HIN03**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objective : To enable the students to appreciate and critically evaluate Spirituality in Hindi Literature.

Course Objectives (CO):

The learner will be able to

CO No.	**Course Objectives**
CO -1	remember, understand and evaluate the Poetry of the masters.
CO- 2	understand and analyse the history of Hindi literature in the literary works.
CO- 3	understand and analyse the cause and consequence on revolution in literature.
CO- 4	Evaluate various streams of Bhakthi kaal.
CO- 5	appreciate and analyse the works of Bihari.

UNIT – I **(18 Hours)**

1. Kabir Das
2. Todathi pathar
3. Veergatha Kal

(Pravarithiyan, Kavi, Rachanayean)

Extra Reading (Key Words): *PrithviRaj Rasoo, Jago phir ek bhar*

UNIT- II **(18 Hours)**

1. Thulasi Das
2. Anal Kireet
3. BhaktiKal – Gnanashrayi Sakha

Extra Reading (Key Words): *Kabir, Ramdhari Singh Dinakr*

UNIT- III **(18 Hours)**

1. Rahim Ke Dohe
2. Jhoote Patte
3. BhaktiKal – Prem Margi Sakha

Extra Reading (Key Words): *Rahim*

UNIT- IV

1. Raskhan
2. Aavo phir se gaon basayen
3. BhaktiKal –Ram Bhakti Sakha

Extra Reading (Key Words):

UNIT- V **(18 Hours)**

1. Bihari Ke Dohe
2. Sipahi
3. BhaktiKal – Krishna Bhakthi Sakha

Extra Reading (Key Words): *Bihari satsai*

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

Course Outcomes:

The learner will be able to:

CO No.	Course Outcomes	Cognitive Level
CO -1	Recite the poems of Kabir Das	R,U,E
CO- 2	Distinguish necessity and luxury Place Bhakthi kaal in Hindi Literature	U, An
CO- 3	Debate on pros and cons of a revolution	U, An
CO- 4	Summarize the four streams of Bhakthi kaal	E
CO- 5	Examine the powerful words of Bihari	An

CO- Course Outcome; R- Remember; U- Understand; Ap- Apply; An- Analyze; E- Evaluate; C- Create

Prescribed Books

- History Of Hindi Literature ; Aacharya Ramachandra Shukla, Delhi.
- Kavya Surabh: Pub.Dakshina Bharat Hindi Prachar Sabha , Cheenai.

Reference Books :

- Nai Sadhi Mein Kabir- Edi. Dr. M. Firoz Khan- Krishang Publication, Delhi.
- Dharmaveer Bharathi Ki Kavitha – Dr.Vibha shukla.;Aastha associates, Illahabad.

(For candidates admitted 2016 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2

DEPARTMENT OF FRENCH

SEMESTER III

Course Title	**PART I – LANGUAGE - FRENCH PAPER III** (LANGUAGE & CIVILISATION (ÉCHO A2 2e édition)
Total Hours	90
Hours/Week	6 Hrs/Wk
Code	U16FR3FRE03
Course Type	Theory
Credits	3
Marks	100

General Objective: To enable the students to understand the French cultural aspects and apply the grammar learnt in appropriate situations.

Course Objectives (CO):
The learner will be able to

CO 1	understand the French education system and evaluate the same across the world.
CO 2	understand the usage of pronouns that denote quantity and place and apply them in answers; analyse extracts from magazines and work conditions in France.
CO 3	remember the rules of construction and usage of subjunctive mode and apply the same in sentences; evaluate French politics.
CO 4	understand gerund, adverbs, relative pronouns and evaluate press and media in France.
CO 5	remember the usage of tenses and analyse the benefits of learning a foreign language.

Unit 1 Vivement demain ! (18 Hours)

Le futur, la comparaison des qualités, des quantités et des actions – la santé – le travail dans trente ans – la vie quotidienne - l‟éducation et la formation (l‟enseignement en France) – faire des projets.

Extra Reading (Key Words): le système éducatif en France.

Unit 2 Tu as du boulot ? (18 Hours)

Le pronom « en » et « y » - exprimer une condition : si + présent, si + passé composé, exprimer des préférences – les emplois de demain - des idées pour créer une entreprise – l‟économie en France - le travail en dix points

Extra Reading (Key Words): l‟organnigramme d‟une enterprise.

Unit 3 Qu‟en pensez-vous? (18 Hours)

L‟emploi du subjonctif , l‟expression de la quantité – revue de presse – entrée en politique – la naissance des départements – la région „Poitou- Charentes‟ - la vie politique
Extra Reading (Key Words): étude comparée de la politique en France et en Inde

Unit 4 C‟est tout un programme ! (18 Hours)

Les propositions relatives, la formation des adverbes, la forme « en + participe présent » - parler de la télévision et de la radio - comment les Français s‟informent (la télévision et la presse en France)
Extra Reading (Key Words):TV5 Monde, les journaux français.

Unit 5 On se retrouve (18 Hours)

L‟emploi et la conjugaison de l‟indicatif – parler de son apprentissage du français langue étrangère – les rencontres :
modes et comportements – une vraie vie de quartier grâce à Internet – formules pour un premier contact par écrit.

Extra Reading (Key Words): Paris, la capital de la mode!

Course outcomes	**Cognitive level**
Contrast French education system to that of India.	E
Examine press and work conditions in India	An
Label subjunctive mode and its usages	U, Ap
Interpret politics in France	E
Categorize French media and press	E
Simplify “FLE”	An

TEXT BOOKS :

ECHO A2 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D‟APPRENTISSAGE Authors: J. Girardet and J. Pécheur Publication: CLÉ INTERNATIONAL, 2013.

Books for Reference:
La Conjugaison – Nathan
French made easy – Intermediate level – Goodwill Publishing House Je parle français III – Abhay Publications
Le français avec des jeux et des activités – ELI Langue et la civilisation – I – Mauger Bleu

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

(for candidates admitted from June 2017 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), Tiruchirapalli – 620002

PG AND RESEARCH DEPARTMENT OF ENGLISH

I YEAR UG – SEMESTER III

PART II – ENGLISH 3 - GENERAL ENGLISH III

HOURS : 6 **CODE : U15EL3GEN03**

CREDIT : 3 **MARKS: 100**

GROWING WITH VALUES

Objectives:

1. To acquaint students with fine pieces of literature thereby enhancing their communicative skills.
2. To develop both receptive (reading, listening) and productive (speaking, writing) skills through communicative classes
3. To create interest among students for self-learning
4. To create a general awareness among students regarding the importance of humanistic values in the modern world.
5. To acquire proficiency in oral and written language.

UNIT I – Love, Faith and Hope

Listening for comprehension and general significance
Speaking about one's fear and hope
Reading for specific and global comprehension.
Writing – creative writing
Grammar – reporting speeches
Vocabulary – shades of meaning, Idioms and phrases (10)
Composition – Writing Paragraphs

TEXTS

"Hope" by Emily Dickinson **(Internal Testing)**

1. An extract from the Nobel Lecture by Mother Teresa
2. Angels Never Say "Hello!" by Dottie Walters
3. The Treasure by Alice Grey (Taken from Plant the seed by Timothy Kendrick)

UNIT II – Perseverance

Listening- for distinguishing / convert / summarize/(interview)
Speaking- a role play on the theme of perseverance (enactment of fables/ folk tales based on the theme)
Reading – read the passage (from encyclopedia) and draw a flowchart / tree diagram [main idea]
Writing- parallel writing
Grammar – descriptive discourse – degrees of comparison (describing person, city, places, things, weather climate)
Vocabulary – antonyms, idioms and phrases (10)
Composition – Creative writing

TEXTS

Mother to Son by Langston Hughes**(Internal Testing)**

1.**The Perseverance of a Spider.**
2. Two Gentlemen of Verona by A.J Cronin
3. Faith of determination and perseverance (about Walt Disney)

UNIT III – Tolerance/Benevolence/Compassion

Listening- for developing / relating (speech)
Speaking- simulate any personality related to humanity
Reading – scan the passage (life of …) and write down key phrases to sum up [figurative languages]
Writing- case study / letter writing (personal)
Grammar –writing reports of events and processes (voices)
Vocabulary – Suffixes, idioms and phrases
Composition – imaginative writing

TEXTS:
Portrait of Gandhiji by Will Durant (1st Para) **(Internal Testing)**
1. Gitanjali (Poem No. 11) Leave this chanting – Rabindranath Tagore
2. The Selfish Giant – Oscar Wilde
3. The Price of a Miracle in *Rainbows follow rain* by Dan Clark

UNIT IV – Essential Life Skills/ Resilience

Listening- for deducing/ illustrating / subdivide to make notes (newspaper article)
Speaking- interviewing (gap activity) / picture description
Reading – in-depth reading to classify/ categorize [point of view]
Writing- Situational writing
Grammar – analysis of sentences – simple, compound, complex
Vocabulary – compound words, idioms and phrases
Composition – essay writing (proverb as title)

TEXTS:
The story of Rosa Parks **(Internal Testing)**
1. Life of Nelson Mandela
2. It's cool to be kechi by Juliet Hindell
3. 'Home they brought Her warrior dead' by Alfred Lord Tennyson

UNIT V – The Art of Living

Listening- for comparing and contrasting (personality/lives of two people)
Speaking- reporting from the magazine / newspaper
Reading - read the passage to draw inference / parallel reading [making connections]
Writing- creative writing
Grammar –'If' clause
Vocabulary – coinage, idioms and phrases
Composition – creative writing/imaginative writing

TEXTS:
"A Psalm of Life" by H.W. Longfellow **(Internal Testing)**
1. The Power of Limitless living - by Robin Sharma.
2. The Art of Understanding Other People by Clarence Hall
3. "Leisure" by William Henry Davies

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(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc.Computer Science- Second Year - Semester – III

Course Title	**Major core - 5:Database Systems**
Total Hours	**75**
Hours/Week	**5 Hrs Wk**
Code	**U19CA3MCT05/ U19CS3MCT05**
Course Type	**Theory**
Credits	**5**
Marks	**100**

General Objective:

To impart the fundamental aspects of database design, database languages and database-system implementation.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Understand, analyze the database, file management and data management system.
CO-2	Apply Structured Query Language to access data from database.
CO-3	Identify different data models and relate E-R model with relation
CO-4	Apply Normalization techniques to refine database
CO-5	Analyze Transaction Processing and Concurrency Control mechanism in database system

UNIT- I Introduction to DBMS **15 Hrs**

Introduction to Database Systems: Basic Concepts and Definitions - Data Dictionary - Database - Database System - Data Administrator - Database Administrator - Database System Architecture: Three-level ANSI-SPARC Data Base Architecture - Data Independence – Mappings.

Extra reading/Key words*: DB Software, Big Data*

UNIT- II Structured Query Language **15 Hrs**

Relational Query Languages: Query Language – Structured Query Language: Advantages and Disadvantages of SQL- Basic SQL Data Structure - SQL Data Types - SQL Operators - Data Definition Language - Data Query Language - Data Manipulation Language - Data Control Language - Data Administration Statements - Transaction Control Statements.

Extra reading/Key words*: PostgreSQL, Embedded SQL*

UNIT- III Types of Data Model **15 Hrs**

Data Models: Record-Based Data Model-Object-Based Data Model-Physical Data Model-Hierarchical Data Model-Network Data Model- Relational Data Model-Object-Oriented Data Model-Comparisons between Data Model- Entity-Relational Model: Basic E-R Concepts – Conversion of E-R Model into Relations.

Extra reading/Key words : *EER Model, Advanced Data Analysis*

UNIT- IV Normalization **15 Hrs**

Introduction – Normalization - Normal Forms - BCNF – Multi-value Dependencies and 4NF – Join Dependencies and 5NF- Query Processing: Introduction – Query Processing – Syntax Analyzer – Query Decomposition.

Extra reading/Key words*: 6NF, ONF*

UNIT- V Transaction Processing **15 Hrs**

Transaction Processing and Concurrency Control: Introduction - Transaction Concepts - Concurrency Control - Locking Methods for Concurrency Control – Database Recovery System: Database Recovery Concepts - Types of Database Failures - Types of Database Recovery.

Extra reading/Key words*: Web Server, Transaction Processing Monitor*

Course Outcomes:

The Learner will be able to

CO. No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Recall and Relate file management systems with DBMS.	PSO 1	R, U
CO-2	Design relations using Database Schema	PSO 2,PSO 5	A
CO-3	Relate Relational Algebra Notation with Relation Operation to access the data.	PSO 2	An
CO-4	Differentiate and Refine the relations by applying normalization techniques.	PSO 4	An,E
CO-5	Sketch and Relate E-R diagrams with relations.	PSO 2	An
CO-6	Apply SQL queries to access the data.	PSO 4	Ap
CO-7	Understand Transaction concepts and Analyze Concurrency Control method	PSO 1	U,An
CO-8	Differentiate types of Database failures and Database recovery	PSO 2	An

References:

Text Books:

1. S.K. Singh, "Database Systems - Concepts, Design and Application", Pearson education, 1st edition, 2013.

Reference Books:

1. G.K.Gupta **,"Database Management System",** 2011, Tata McGraw Hill Publications Company Limited, New Delhi.
2. Seema kedar, **"Database Management System",** 2011, Technical Publications.
3. Elmasri & Navathe, **"Fundamentals of Database Systems"**, 2006, Pearson Education Publications, New Delhi.
4. P.K. Yadav,**"Database Management System"**, 2013, Tata McGraw Hill Publications Company Limited, New Delhi.
5. Jiawei Hen and Micheline Kamber, **"Data Mining Concepts and Techniques"**, 2nd Edition, Morgan Kaufmann,2006

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc.Computer Science- Second Year - Semester –III

Course Title	**Major Core - 6 : Database Systems Lab**
Total Hours	**75**
Hours/Week	**5 Hrs /Wk**
Code	**U19CA3MCP06/ U19CS3MCP06**
Course Type	**Practical**
Credits	**5**
Marks	**100**

General Objectives:

To examines the database architecture and data mining technologies required for solving complex problems of data and information management, information retrieval, and knowledge discovery facing modern organizations.

Course Objectives:

The Learner will be able to

Co No.	**Course Objectives**
CO-1	Understand to create table,aggregate functions,set operators using queries
CO-2	Provide pratices to partition the table,usage of nested queries
CO-3	Apply pl/sql program to prepare mark sheet,pay slip,electricity bill
CO-4	Apply pl/sql program to prepare multiplication table,count the strings
CO-5	Provide the exposure on weka tools.

1. Table creation and simple queries.
2. Queries using aggregate functions.
3. Queries using set Operators.
4. Table creation with various joins.
5. Partitioned table creation.
6. Nested sub queries and correlated sub queries.
7. View creation and manipulations.
8. PL/SQL program to prepare mark sheet.
9. PL/SQL program to prepare a pay slip.
10. PL/SQL program to prepare the electricity Bill.
11. PL/SQL program to prepare the multiplication table for a given number.
12. PL/SQL program to count the number of characters and digits in a string.
13. Exposure on WEGA tools.

(For candidates admitted from 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
Affiliated to Bharathidasan University
Nationally Accredited (3rd cycle) with „A" Grade by NAAC College with potential for Excellence
Tiruchirappalli - 620002
Second Year - Semester - III

Course Title	**Allied 4(Optional) - APPLIED MATHEMATICS III (for BCA and B.Sc. Computer Science students)**
Total Hours	**60**
Hours / Week	**4**
Code	**U15MA3AOT13**
Course type	**Theory**
Credits	**3**
Marks	**100**

General Objective:

To impart the knowledge on matrices and enable the students to know about different methods of solving numerical equations, methods of interpolation ,numerical differentiation and integration.

Course Objectives(CO) :
The learner will be able to

CO No.	Course Objectives
CO - 1	Understand the types of matrices and its operations and finding solution of simultaneous linear equations
CO - 2	Evaluate Eigen values ,Eigen vector using Cayley Hamilton Theorem
CO - 3	Evaluate algebraic and transcendental equation using numerical methods.
CO - 4	Evaluate Polynomial using interpolation.
CO - 5	Evaluate integrals using trapezoidal and simpson $\frac{1}{3}$ rule
CO - 6	Evaluate differential equation of first order using Euler method, Runge Kutta method

UNIT 1: MATRICES **12 Hrs**

Types of matrices- operation on matrices-rank of a matrix-solution of simultaneous linear equation

Extra Reading/ Keywords: *Equivalent matrix, Echelon matrices, Method of inversion, Gaussian elimination method*

UNIT II : MATRICES (CONTINUED) 12 Hrs

Eigen values – eigen vectors- similar matrices- cayley Hamilton theorem (without proof) - eigen values for symmetric matrices

Extra Reading/ Keywords: *Diagonalization, Linear transformation, nth power of matrix, Matrix function*

UNIT III : SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS AND INTERPOLATION 12 Hrs

Solving algebraic and transcendental equations – Bisection, False position and Newton Raphson methods. Newton Gregory forward and backward interpolation formulae

Extra Reading/ Keywords: *Hankel matrix, Newton forward (backward) dividend difference formula, Intermediate value theorem*

UNIT IV : SOLUTION OF SIMULTANEOUS EQUATIONS 12 Hrs

Gauss elimination– Finding inverse of a matrix using Gauss elimination method – Iterative methods. Gauss Jacobi and Gauss Seidal methods.

Extra Reading/ Keywords: *Rate of convergence, Stationary iterative method, Newton's method, Eigen decomposition, Cholesky decomposition, Bell Polynomial*

UNIT V : NUMERICAL INTEGRATION AND SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS 12 Hrs

Trapezoidal rule and Simpsons 1/3 rule (truncation error excluded). Solving differential equations (1^{st} order differential equations only) – solutions by Euler‟s method - Euler‟s modifiedmethod(excluding improved Euler‟s method) – Runge Kutta 2^{nd} and 4^{th} order method. **Extra Reading/ Keywords:** *Local and Global truncation error, Explicit Runge Kutta method, Linear multistep method, Uniform grid and Non-Uniform grid*

Note: Tests given in the Extra Reading /Key Word: must be tested only through assignment andseminars

Course Outcomes(CO): The learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO - 1	Recall matrices and its operations and Solving simultaneous linear equations	**PSO - 3**	**R,U,E**
CO - 2	Compute Eigen values ,Eigen vector using Cayley Hamilton Theorem	**PSO -2**	**Ap, E**
CO - 3	Evaluate algebraic and transcendental equation using numerical methods	**PSO -1**	**E**
CO - 4	Formulation of Polynomial using interpolation .	**PSO -5**	**E**
CO - 5	Examine direct and iterative numerical methods of simultaneous equation. Solve differential equation using Euler method, Runge Kutta method.	**PSO -4**	**U,E**

CO - 6	impart the knowledge on matrices and enable the students to know about different methods of solving numerical equations, methods of interpolation ,numerical differentiation and integration- Skill Development	**PSO -2**	**U,E**

TEXT BOOKS:

For Units I and II

1. Narayanan S, Hanumantha Rao.R, Manicavachagom Pillay.T.K, Dr.Kandaswamy .P.(2000), ANCILLARY MATHEMATICS – VOLUME 1 - PART I – ALGEBRA, S.Viswanathan Printers and publishers Pvt Ltd, Chennai.

UNIT I Chapter 3 : Sections
3.1-3.3 UNIT II Chapter 3 :
Sections 3.4,3.5

For Units III, IV and V

2. Venkataraman M. K(2006), "NUMERICAL METHODS IN SCIENCE AND ENGINEERING", National Publishing House,

Chennai UNIT III Chapter 3 : Sections 1,2,4,5 and
Chapter 6: Sec 1-4
UNIT IV Chapter 4 Section 1-3,6
UNIT V Chapter 9 Section 8,10 and Chapter 11 Sections 10,12,14,16

REFERENCE BOOKS :

1. S. Arumugam and A. Thangapandi Isaac MODERN ALGEBRA, Scitech Publications (India) pvt ltd Chennai.
2.S. Arumugam, A. Thangapandi Isaac & A. Somasundaram NUMERICAL METHODS Scitech Publishers ,Chennai
3. A.Singaravelu (2008) ,ENGINEERING MATHEMATICS ,NUMERICAL METHODS- Meenakshi Publishers ,Chennai
4. ManicavachagomPillay .T.K , Natarajan.T, Ganapathy K.S ,(2005), ALGEBRA VOL II S.Viswanathan (Printers and publishers),Chennai

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc.Computer Science- Second Year - Semester – III

Course Title	**Skill Based Elective 3: UI/UX Design and Animation Lab using Open Source Tools**
Total Hours	**30**
Hours/Week	**2 Hrs/Wk**
Code	**U19CS3SBP03**
Course Type	**Practical**
Credits	**2**
Marks	**100**

General Objective:

Learn to use the basic tools found in Adobe Photoshop and Adobe illustrator in order to create and edit images.

Course Objectives:

The Learner will be able to

Co No.	**Course Objectives**
CO-1	Demonstrate the techniques of photo editing.
CO-2	Apply layer masks, filters and blending modes, share and save your images in various formats.
CO-3	Demonstrate the techniques for resize and crop images.
CO-4	Learn various retouching and repairing techniques to correct images.
CO-5	Learn the creation of various shapes and working with various files.
CO-6	Identify a web site's target audience and create user personals to create an audience-appropriate design for a web site.

EXERCISES

Photoshop Practical Exercises

1. Using various selection tools
2. Using image adjustment tools to enhance an image
3. Create scenery using Photoshop brushes.
4. Demonstrate the use of layer effects.
5. Create a text with picture inside.
6. Demonstrate the use of ripple effect and lens flare.
7. Create a snapshot inside a photo.
8. Photo retouching.

9. Coloring a BW photo.
10. Create slide mount template.
11. Create Photo mount template.
12. Create photo frame effect.
13. Create photo film effect.
14. Create a 3D Photo effect.
15. Create 2D and 3D logos.
16. Animate text using Image Ready.
17. Create three frames with Lens flare effect and different background colors and animate using Image Ready.
18. Create a Christmas Tree with Blinking Lights.
19. Animate a candle flame using Liquify filter.

Adobe Illustrator

1) Working with files.
2) Working in layers.
3) Viewing artwork.
4) Making Selections.
5) Creating Basic Shapes.
6) Working with type.
7) Placing Images.
8) Working with Objects.
9) Drawing graphs.
10) Working with imported artwork.

(For candidates admitted from 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A./B.Sc./ B.Com./B.C.A./B.B.A DEGREE COURSE
SEMESTER – III / VI

Course Title	**GENDER STUDIES**
Total Hours	**15**
Hours/Week	**1**
Code	**U15WS3GST01 / U15WS6GST01**
Course Type	Theory
Credits	**1**
Marks	**100**

General Objective:

To help students to realize their strengths and weaknesses in leading an ethically enriched life and to enjoy a gender-balancedambience

Course Objectives:

The student will be able to

1. understand the concepts ofgender.
2. differentiate women studies from genderstudies
3. analyze the areas of genderdiscrimination
4. analyze and evaluate the initiative and policies for womenempowerment
5. remember the women‟s movements and safeguardingmechanisms

Unit I **3 hrs**

Concepts of Gender:

Sex-Gender-Biological Determination-Patriarchy-Feminism-Gender Discrimination-Gender Division of Labour -Gender stereotyping – Gender Sensitivity-Gender Equity – Equality – Gender Mainstreaming – Empowerment.

Extra reading /Key Words: *Acts on gender*

Unit II **3 hrs**

Women‟s Studies Vs Gender Studies:

UGC‟s Guidelines – VII to XI Plans – Gender Studies: Beijing Conference and CEDAW-Exclusiveness and Inclusiveness.

Extra reading /Key Words: *Origin of Women's studies in India*

Unit–III **3hrs**

Areas of Gender Discrimination:

Family – Sex Ratio – Literacy – Health – Governance – Religion Work Vs Employment – Market – Media – Politics – Law – Domestic Violence – Sexual Harassment – State Politics and Planning.

Extra reading / Key Words: *Survey of level of discrimination*

Unit–IV **3hrs**

Women Development and Gender Empowerment:

Initiatives – International Women‟s Decade – International Women‟s Year – National Policy for Empowerment of Women – Women Empowerment Year 2001 – Mainstreaming Global Policies. **Extra reading/Key Words:** *Case study*

1.

Unit–V **3hrs**

Women‟s Movements and Safeguarding Mechanism: In India National / State Commission for Women (NCW) – All Women Police Station – Family Court – Domestic Violence Act – Prevention of Sexual Harassment at Work Place Supreme Court Guidelines – Maternity Benefit Act – PNDT Act – Hindu Succession Act 2005 – Eve Teasing Prevention Act – Self Help Groups – 73_{rd}Amendment for PRIs.

Extra reading / Key Words: *Laws on gender equality*

Note: Extra Reading/ keywords are only for Internal Testing (Seminar/ Assignments)

Course Outcome:

1. evaluate the concepts of gender discrimination.
2. compare women‟s studies with gender studies.
3. describe the areas of gender discrimination.
4. evaluate the initiative and policies for women empowerment.
5. Explain the different women movement.

REFERENCES:

Manimekalai. N & Suba. S (2011), Gender Studies, Publication Division,

Bharathidasan University, Tiruchirappalli

Jane, P. & Imelda, W. (2004), 50 Key Concepts in Gender Studies.

(For Candidates admitted from June 2015 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2

B.A. /B.Sc. / B.Com. / BBA/ B.C.A. DEGREE COURSE

LIFE ORIENTED EDUCATION

ETHICS – II: EMPOWERMENT OF WOMEN

HRS / WK : 1 **CODE: U15VE4LVE02**

CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To make the learners aware of various gender and social issues and Cyber Crimes.
- To make the learners understand and appreciate the role of media, in facing the challenges on various life issues.
- To enable the learners to understand the ways of empowering women and cyber crime against women

UNIT – I: GENDER ISSUES

Feminism, Responsibilities of men and women towards Egalitarian society, Gender Identity-Factors contributing to gender identity (Family values, culture, tradition, religion, societal values, mass media)

UNIT – II: SOCIAL ISSUES RELATED TO WOMEN

Eve teasing, Rape, Dowry, Harassment in marriage, Divorce and Widows Remarriage, HIV & AIDS, Transgender, Female Genocide, sex workers, trafficking, fugitive, Female foeticide, handicapped children and women and evils of drug abuse.

UNIT – III: WOMEN AND MEDIA

Portrayal of women in media world - News paper, Magazine, Cinema, TV, Video and Advertisements - Morality in Media and Right use of Media

UNIT – IV: WAYS OF EMPOWERING WOMEN

Need for empowerment –Skills required for empowerment and Career Oriented Skills, Women‟s bill- Property rights, Models of Empowered Women- St. Teresa of Kolkata, Indira Gandhi, Helen Keller, Chanu Sharmila and Malala

UNIT – V: CYBER CRIME AGAINST WOMEN

Harassment and Spoofing via e-mail, Cyber Stalking, Cyber Pornography, Morphing. Cyber Laws, Social network: Face book, Twitter and Whats app

REFERENCES:

1. Dr.M.Arumairaj et al., 1999, “Marching towards the Millenium ahead”.
2. Thomas Anjugandam, 1999, “Grow Free Live Free” Salesian Publicaiton.
3. H.C Pretti Nandhini Upretti, jaipur 2000 “Women and problems of Gender Discrimination”.
4. Thomas B.Jayaseelan, 2002, “Women: Rights and law” Indian Social Institute, New Delhi.
5. Reni Jacob vol I & II, April- June 2004, ”Vikasimi – The journal of Women‟s Empowerment, Ed,”

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.Sc/B.Com /B.C.A – DEGREE

COURSES LIFE ORIENTED EDUCATION

BIBLE STUDIES – II: OLD TESTAMENT

HRS / WK :1 **CODE: U15VE4LVBO2**
CREDIT : 1 **MARKS : 100**

OBJECTIVE:

- To enable the students to understand the desires of God through Prophetic revelation andto become sensitive to the heart beat of God.

UNIT – I: PURPOSE OF LIFE

Creation of man – fall of man (Gen 1-4) Plan of redemption through the life of :

- Noah (Gen 6-9); Abraham (Gen 12-18);
- Joseph (Gen 37-40); Moses (Exo 4-5);
- Joshua (Joshua 1-8)

UNIT – II: JUDGES AND KINGS

- Judges: Deborah (Judges 4); Samson (Judges 6-8); Gideon (Judges 13-16)
- Kings**:** David (I Sam 17-31, II Sam 1-12); Solomon (I Kings 1-11)

UNIT – III: MINOR PROPHETS

Brief Life History and teachings of

- Amos
- Jonah
- Micah
- Nahum
- Habakkuk

UNIT – IV: MAJOR PROPHETS

Brief Life History and teachings of

- Isaiah (Is 1,6,11,36-38,40-42,44,50,53,61)
- Jeremiah (Jer 1-3,7-12,18-19,23)
- Ezechial (chapters 1,2,3,5,8,12 visions)
- Daniel (Daniel 1-6)

UNIT – V: WOMEN IN THE BIBLE

Women in the Old Testament

- Eve (Gen 3)
- Ruth (Ruth 1-4)
- Hannah (I Sam 1:1-28)
- Esther (Esther 1-6)

REFERENCES:

1. Russell Fueller (1999) The Text book of the Twelve Minor Prophets. Wipf &Stock Publishers, UK.
2. Willis Judson Beecher (2002) The Prophets and The Promise. Wipf & Stock Publishers, UK

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
B.A./ B.Sc/ B.Com/ BBA/ B.C.A - DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – II: CHURCH AND SACRAMENTS

HRS / WK : 1 **CODE : U15VE4LVC02**

CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To enable the students to understand the ways of Christian living with the Church
- To understand God‟s gift of the Holy Spirit.
- To understand the methods of building relationship with Jesus.
- To learn the life of Sacraments and Prayer
- To enrich our devotion to Mother Mary and Saints.

UNIT – I: MISSION OF THE CHURCH

What is church (attributes) – Interpretation: body of Christ- Bride of Christ, goal of all things- Historical as well as spiritual- Mystery and Sacrament-Pilgrim Church.

UNIT – II: PARTICIPATORY CHURCH

Work of the Holy Spirit- Salt and leaven in the world "Church of modern World" Church as community – Its important aspect, early Christian Church – People of God as Church- Its characteristics and structure

UNIT – III: THE FUNCTIONARY CHURCH AND I

Ministerial Church – Relating Church –Parish Church- Role of lay faithful in the Church –

Its challenges – Church and I.

UNIT – IV: SACRAMENTS

Sacraments – Initiation– Healing – Service (all the seven) – Emphasis on Confession, Confirmation and Holy Communion. Sacramental: holy "things" used –Their sanctity.

UNIT – V: MARY AND SAINTS

Mary as a young virgin- Disciple- Her role in the Catholic Church-Annual feasts- Pilgrimages- Devotion to Mary, Dogmas. Saints in the Church- Prominent Women in the old testament

REFERENCES:

1. "Vatican II Revised" Archbishop Angelo Fernandes Published by X.Diax de Rio S.J. Gujarat Sahitya Prakash, P.O.Box. 70, Gujarat, 388001, India.
2. "The Sacraments The Word of God at the Mercy of the Body" Claretian Publications, Malleswaram, Bangalore 560055.
3. Documents of Vatican II – St. Paul‟s Publications, Bombay 1966.

(For Candidates admitted from 2015 onwards)

HOLY CROSS COLLEGE (Autonomous), Tiruchirappalli - 620 002.

PG & RESEARCH DEPARTMENT OF TAMIL

Second Year - Semester – IV

Course Title	தமிழ்த்தாள் - **IV**
Total Hours	**75**
Hours/Week	**5 Hrs Wk**
Code	**U15TL4TAM04**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objectives:

வாழ்வியல் நெறிகளாகிய அறம், பொருள், இன்பம், வீடுபேறு ஆகியவற்றின் மேன்மையை எடுத்துரைத்தல்

- Make the student to understand the cultural and tradition of Tamilians.
- Student will learn to understand the different religions
- Understand the depth of Tamil Literature & Culture.
- Know about the structure of the family, manners and discipline.
- Know about the rights of equality.

Course Objectives:

CO No.	Course Objectives
CO-1	அறம், பொருள், இன்பம், வீடுபேறு ஆகியவற்றின் மேன்மையை உணர்த்துதல்.
CO-2	இலக்கியங்களின் வாயிலாக வாழ்க்கைத் தத்துவத்தினை அறியச் செய்தல்.
CO-3	தமிழ் இலக்கிய வரலாற்றின் வாயிலாகத் தமிழரின் பண்பாடு, கலாச்சாரத்தை அறியச் செய்தல்.
CO-4	மனிதநேய சிந்தனைகளை உருவாக்குதல்.
CO-5	மொழிப்பெயர்ப்புத்திறனை வளர்த்தல்.

அலகு:1 செய்யுள் **15 Hrs**

1. குறுந்தொகை

1. கொங்கு தேர் வாழ்க்கை அஞ்சிறைத் தும்பி - இறையனார்
2. யாரும் இல்லை தானே கள்வன் - கபிலர்
3. வேம்பின் பைங்காய்என் தோழி தரினே – மிளைக்கந்தன்
4. உள்ளது சிதைப்போர் உளரெனப் படாஅர் - பாலை பாடிய பெருங்கடுங்கோ
5. நோற்றோர் மன்ற தோழி – குறுங்குடி மருதன்

2. நற்றிணை

1. மனையுறை புறவின் செங்கால் பேடை
2. நீள்மலைக் கலித்த பெருங்கோற் குறிஞ்சி - பாண்டியன் மாறன் வழுதி
3. ஆய்மலர் மழைக்கண் தெண்பனி உறைப்பவும் - நல்விளக்கனார்
4. சிறுவீ முல்லைப் பெரிது கமழ் அலரி - மதுரை பேராலவாயர்

3. கலித்தொகை

1. எறித்தரு கதிர்தாங்கி ஏந்திய குடைநீழல் - கபிலர்
2. பாடுகம் வா வாழி தோழி - கபிலர்

அலகு:2 **15 Hrs**

அகநானூறு

1.வானம் வாய்ப்பக் கவினிக் கானம் - சீத்தலைச் சாத்தனார்

2. எம்வெங் காம மியைவதாயின் - மாமூலனார்

5.புறநானூறு

1. நின் நயந்து உறைநர்க்கும் - பெருஞ்சித்திரனார்
2. காய்நெல் அறுத்துக் கவளம் கொளினே - பிசிராந்தையார்
3. படைப்புப் பலபடைத்து - பாண்டியன் அறிவுடைநம்பி
4. கேட்டல் மாத்திரை – கோப்பெருஞ்சோழன்
5. ஈன்று புறந்தருதல் என்தலைக் கடனே - பொன்முடியார்

6. பதிற்றுப்பத்து - ஐந்தாம் பத்து

1. சுடர் வீ வேங்கை
2. தசும்பு துளங்கு இருக்கை
3. ஊன்துவை அடிசில்

7. திருக்குறள்

1. அறத்துப்பால் - இனியவை கூறல்
2. பொருட்பால் - வினை செயல்வகை
3. காமத்துப்பால் - புலவி நுணுக்கம்

அலகு:3 **15 Hrs**

தமிழ் இலக்கிய வரலாறு

சங்ககாலம் - சங்கம் மருவியகாலம்

எட்டுத்தொகை, பத்துப்பாட்டு, பதினெண்கீழ்க்கணக்கு நூல்கள்

அலகு:4 **15 Hrs**

வாழ்க்கை வரலாறு

அன்னை தெரசா - பா. தீனதயாளன்

மநல றுழசனள (நுஒவசய சுநயனனைபெ)
அக்னி சிறகுகள் - அப்துல் கலாம்

அலகு:5 **15 Hrs**

பொது– மொழிப்பெயர்ப்பு

Note: Texts given in the Extra reading /Key words must be tested only through Assignment and Seminars.

Course Outcomes:

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	To develop an attitude to consider other living beings as equals	PSO 1	U
CO-2	To learn about the life style oftraditional Tamil literature	PSO 2	AN
CO-3	to be inspired by the traditional culture and values	PSO 2	R
CO-4	To study about the dedicated service of mother Theresa and to practice the same	PSO 3	U
CO-5	to enhance skills in translation	PSO 4	C

1. செய்யுள் - தமிழாய்வுத்துறை வெளியீடு
2. தமிழ் இலக்கிய வரலாறு - தமிழாய்வுத்துறை வெளியீடு
3. வாழ்க்கை வரலாறு பா.தீனதயாளன் - அன்னை தெரசா
4. மொழிப்பெயர்ப்பு - தமிழாய்வுத்துறை வெளியீடு

(For the candidates admitted from June 2018 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
SEMESTER – IV

Course Title	**PART – I LANGUAGE HINDI -IV FUNCTIONAL HINDI & TRANSLATION**
Total Hours	**75**
Hours/Week	**5Hrs/Wk**
Code	**CODE: U15HN4HIN04**
Course Type	**Theory**
Credits	**3**
Marks	**100**

General Objective : To enable the students to Learn the Language Skills.

Course Objectives (CO):

The learner will be able to

CO No.	**Course Objectives**
CO -1	apply technical translation in Functional Hindi
CO- 2	understand and evaluate global marketing
CO- 3	create general essays
CO- 4	apply the formats and create office orders
CO- 5	apply translation techniques in a text.

UNIT – I **(15 Hours)**

1. Personal Letters
2. Technical Terms
3. Translation Ex-1
4. General Essay - Pollution

UNIT- II **(15 Hours)**

1. Commercial Letters
2. Technical Terms
3. Translation Ex-4
4. General Essay - Globalisation

Extra Reading (Key Words): *Vyavasayikata*

1. Office Memorandum
2. Technical Phrases
3. Translation Ex-6

4. General Essay – Self Employment

Extra Reading (Key Words): *Kisan*

UNIT- IV*:* **(15 Hours)**

1. Office Order
2. Technical Phrases
3. Translation Ex-13
4. General Essay – India – Unity in Diversity

Extra Reading (Key Words): *Hamara Bharat*

1. Circular
2. Reminder
3. TranslationEx-15
4. General Essay – My Favourite Author

Extra Reading (Key Words): *Jayashankar Prasad, Premchand*

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

Course Outcomes:

The learner will be able to:

CO No.	Course Outcomes	Cognitive Level
CO -1	Utilize technical terms in translating a text.	Ap
CO- 2	Mark the global brands and their countries.	U, E
CO- 3	Develop an essay on any social issue.	E, C
CO- 4	Formulate an office order for the university	Ap, C
CO- 5	Make use of translation techniques in a text.	Ap

CO- Course Outcome; R- Remember; U- Understand; Ap- Apply; An- Analyze; E- Evaluate; C- Create

Prescribed Books

- Vyavaharik Hindi,by Dr. Mahendra Mittal,Shabari Sansthan, Delhi.
- Aalekhan Aur Tippan: Prof.Viraj, M.A; Raj Pal And Sons;Kashmiri Gate,Delhi.
- Anuvad Abhyas : Bholanath Tiwari; Lokbharathi Prakashan; New Delhi.

Reference Books :

- Raj Bhasha Hindi Aur Vuska Swaroop- Shanthi kumar Syal; Parampara Prakasha, Delhi.

Vyaharopayogi evam kam kaji Hindi – Ananth Kedharea .;Sahityayan Prakashan; Kanpur.

(For candidates admitted 2016 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2

DEPARTMENT OF FRENCH

SEMESTER IV

Course Title	**PART I – LANGUAGE - FRENCH PAPER IV** (LANGUAGE & CULTURE (ÉCHO A2 2e édition)
Total Hours	75
Hours/ Week	5 Hrs/Wk
Code	U16FR4FRE04
Course Type	Theory
Credits	3
Marks	100

General Objective: To enable the students to analyse and evaluate French cultural aspects and use the accumulated vocabulary and grammatical aspects in creative writing.

Course Objectives (CO):

The learner will be able to

CO1	Apply pronouns and create texts; appreciate and analyse French cuisine and festivals
CO2	critically evaluate the art forms of 20th century and apply conditional present tense in a text
CO3	remember savoir-faire in France and apply reported speech in story writing
CO4	analyse the consequences of immigration, sports and adventures; apply passive voice in a text
CO5	understand the usage of possessive pronouns and analyse the rhythm of life in France

Unit 1 C‟est la fête ! (18 Hours)

Les pronoms objets directs et indirects – parler d‟une fête – exprimer des goûts et des préférences – fêtes sans frontières – plats des fêtes – les jours fériés – les saisons

Extra Reading (Key Words): étude comparée des fêtes françaises et indiennes.

Unit 2 Vous plaisentez ! (18 Hours)

Le conditionnel présent, la distinction du futur et du conditionnel – le mouvement en général – raconter une anecdote – journée de détente – la naissance d‟un chef d‟œuvre - l‟art au début du 20e siècle – le plaisir de jeux de mots.

Extra Reading (Key Words): Histoire du monde au début du 20e siècle.

Unit 3 On s‟entend bien ! (18 Hours)

Les constructions « faire + verbe » et « laisser + verbe », le discours rapporté – décrire le caractère ou le comportement, exprimer l‟accord et le désaccord – le langage des couleurs – sujets de conversation – sujets d‟étonnement.

Extra Reading (Key Words): les taboos

Unit 4 À vos risqué et périls ! (18 Hours)

Le subjonctif présent, la voix passive – l‟aventure d‟aujourd‟hui – travailler pour la planète – réussites et échecs - marathon de Paris – plaisir des sports – les sports les plus regardés et pratiqués - les français et les sports.

Extra Reading (Key Words):les sportifs français

Unit 5 La vie est dure (18 Hours)

Les pronoms possessifs, les adjectifs, les pronoms indéfinis – parler de ses activités quotidiennes, exprimer la confiance ou la méfiance – les taches ménagères – la France insatisfaite - sans travail.

Extra Reading (Key Words): entretien d‟une personne.

Course outcomes	**Cognitive level**
Design a text using pronouns	C
Discover a French recipe	An
Narrate an anecdote	C
Critically evaluate modern art forms	E
Infer reported speech and passive voice in a story	C
Explain the influence of immigration on sports	An
Examine the rhythm of life in France	An

TEXT BOOKS :

ECHO A2 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D‟APPRENTISSAGE Authors: J. Girardet and J. Pécheur Publication: CLÉ INTERNATIONAL, 2013.

Books for Reference:

La Conjugaison – Nathan
French made easy – Intermediate level - Goodwill Publishing House Je parle français III – Abhay Publications
Le français avec des jeux et des activités - ELI Langue et la civilisation – I – Mauger Bleu

Note : Texts given in the Extra Reading (Key Words) must be tested only through Assignment and Seminars.

(for candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), Tiruchirapalli – 620002

PG AND RESEARCH DEPARTMENT OF ENGLISH

I YEAR UG – SEMESTER IV

PART II – ENGLISH 4 - GENERAL ENGLISH IV

HOURS : 6 **CODE : U15EL4GEN04**

CREDIT : 3 **MARKS: 100**

EMPLOYABILITY SKILLS

OBJECTIVES:

1. To develop both receptive (reading, listening) and productive (speaking, writing) skills through communicative classes.
2. To acquire proficiency in oral and written language.
3. To train the students for employability skills such as team skills, communication skills and presentation skills.
4. To acquire values related to personal integrity and excellence in work propagated in the literary works.
5. To create interest among students for self-learning.

UNIT I – Personal integrity –Honesty, dependability, adaptability and loyalty.

Listening to identify a person's attitude, values, situation and the decision made.
Speaking about one's action, expressing opinions, character analysis.
Reading for comprehension(inferring a character's method of managing a situation, adaptability and the like).
Writing recommendations.
Grammar – use of appropriate adjectives and adverbs in contexts and reporting speeches
Vocabulary – differentiating shades of meaning, use of idioms and phrases in sentences
Composition – Your thoughts are the architects of your destiny – David O' Mckay
Honesty is the first chapter in the book of wisdom – Thomas Jefferson

TEXTS

1. *"How far is the river"* by Ruskin Bond
2. *The Pie and the Tart* by Hugh Chesterman.
3. An excerpt from Shakespeare's *"Julius Caesar"* Act III Scene II Lines 13 - 33– Antony's speech

UNIT II – Key to success – Self-esteem, perfection and excellence

Listening to differentiate dutyfrom obligation.
Speaking – Discussing one's knowledge about different subjects, learning skills, thirst for knowledge, learning form experiences.
Reading for comprehension exhibiting higher perception of life's experiences.
Writingparagraphs with cause and reason, analyzing motives behind people's actions and behavior.
Grammar – use of cohesive devices
Vocabulary – figures of speech– simile, metaphor.
Composition –
1. Excellence is not a destination, it is a continuous journey that never ends – Brian Tracy
2. To be perfect is to change often – Winston Churchill

TEXTS

1. Our urgent need for self-esteem by Nathaniel Brandon.
2. Five senses by Judith Wright
3. Three questions by Leo Tolstoy

UNIT III – Team skills

Listening to speaker's ideas, opinions, and suggestions and analyzing their character.
Speaking –Discussing, questioning, interacting, respecting, sharing and participating.
Reading for comprehension – absorbing the attitude of the people.
Writing – personal essays and report writing
Grammar – use of inverted structures
Vocabulary –New words in current usage.
Composition –1. "Talent wins games, but teamwork and intelligence wins championships."
2. "It takes two flints to make a fire."

TEXTS

1. "The Little Black Boy" by William Blake
2.How to get cooperation by Dale Carnegie.

UNIT IV – Communication skills for interpersonal relationship

Listening to specific information and guessing.
Speaking –Facing interview and situational speeches (Master of ceremony, felicitation and the like).
Reading for comprehension to identify the methods of persuasion.
Writingformal letters and invitations.
Grammar – Transformation of sentences.
Vocabulary – Words related to technical registers.
Composition –1. "Communication is an art form that is crafted throughout our lives."
2. Birds of same feather flock together.

TEXTS

1.The Refund by Fritz Karinthy

UNIT V –Presentation skills

Listening to commands,information, announcements, and discussions in a meeting.
Speaking –role play in panel discussion, mock parliament and public speaking.
Reading for comprehension.
Writingagenda, minutes, memo, notice, circular, project proposal.
Grammar – use of simple, compound, complex, imperative sentences and punctuations.
Vocabulary – Business terms.
Composition – writing a project.

TEXTS

1.An excerpt from Abraham Lincoln's speech in Gettysburg.

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(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Second Year - Semester – IV

Course Title	Major Core - 7 : Operating Systems
Total Hours	75
Hours/Week	5 Hrs /Wk
Code	U18CS4MCT07
Course Type	Theory
Credits	5
Marks	100

General Objectives:

To enable the students to learn the concepts of operating systems and various algorithms involved.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Understand the structures of Computer system and operating systems
CO-2	Remember the working process of thread and their types
CO-3	Analyze the critical section problems and deadlocks
CO-4	Understand the concept of memory management and virtual memory
CO-5	Remember the file concepts and its types

UNIT I **15Hrs**

INTRODUCTION: What is an Operating System? – Mainframe Systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems - Real-Time Systems – Handheld Systems – Feature Migration – Computing Environments.

COMPUTER-SYSTEM STRUCTURES: Computer-System Operation – I/O Structure – Storage Structure – Storage Hierarchy – Hardware Protection –Network Structure.

OPERATING-SYSTEM STRUCTURES: System Components – Operating-System Services – System Calls – System Programs – System Structure – Virtual Machines.

Extra Reading /Key words:*Finding the evolution of computer system.*

UNIT II **15Hrs**

PROCESSES: Process Concept – Process Scheduling – Operation on Processes – Cooperating Processes – Interprocess Communication. **THREADS:** Overview – Multithreading Models - Threading Issues. **CPU SCHEDULING:** Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple–Processor Scheduling – Real-Time Scheduling – Algorithm Evaluation.

Extra Reading /Key words:*Calculating waiting time, turn around time and response timefor all the scheduling Algorithms.*

UNIT III **15Hrs**

PROCESS SYNCHRONIZATION: Background - The Critical-Section Problem – Synchronization Hardware – Semaphores – Classic Problems of Synchronization.

DEADLOCKS: System Model – Deadlock Characterization – Methods for Handling

Deadlocks – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Recovery from Deadlock.
Extra Reading /Key words:*Finding the real time examples in deadlock.*

UNIT IV **15Hrs**
MEMORY MANAGEMENT: Background – Swapping – Contiguous Memory Allocation – Paging - Segmentation – Segmentation with Paging.
VIRTUAL MEMORY: Background - Demand Paging – Process Creation - Page Replacement – Allocation of Frames – Thrashing – Other Considerations.
Extra Reading /Key words:*Calculating page fault and comparing which page replacement algorithm is the best one.*

UNIT V **15Hrs**
FILE-SYSTEM INTERFACE: File Concept – Access Methods – Directory Structure – File System Mounting – File Sharing – Protection.
FILE-SYSTEM IMPLEMENTATION: File-System Structure – File System Implementation - Directory Implementation – Allocation Methods – Free-Space Management –Efficiency and Performance – Recovery.
Extra Reading /Key words:*Comparing the allocation methods*.**.**

Course Outcomes:
The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Recall the different structures of operating systems	PSO 1	R
CO-2	Discuss theory and implementation of processes, resource control, physical and virtual memory, scheduling, I/O and files	PSO 2	Ap
CO-3	Calculate waiting time, response time, turnaround time and disk seek time in disk scheduling	PSO 2	Ap
CO-4	Compare the memory allocation methods and differentiate the page replacement algorithms	PSO 3	An
CO-5	Conclude with a detailed understanding of Linux kernel	PSO 4	U
CO-6	Gain the necessary knowledge for the employability in teaching profession	PSO 3	U

References

Text Books

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, **Operating System Concepts,**

2006, Sixth Edition, John Wiley & Sons Publications Inc., Singapore
UNIT I : Chapters 1, 2, 3(3.1 – 3.6)
UNIT II : Chapters 4(4.1 – 4.5), 5(5.1 - 5.3), 6(6.1 - 6.6)
UNIT III : Chapters 7(7.1 – 7.5), 8(8.1 – 8.7)
UNIT IV : Chapters 9(9.1 – 9.6), 10(10.1 – 10.6,10.8)
UNIT V : Chapters 11(11.1 – 11.6), 12(12.1 – 12.7)

Reference Books:

1. DeitelHarvay M., **Operating Systems**, 2003, Pearson Education Publications, Singapore.
2. GodboleAchyut S., **Operating Systems**, 2002, Tata McGraw Hill Publishing Company Limited, New Delhi.
3. Milan Milankovic, **Operating System-Concepts and Design**, 2005, Tata McGraw Hill Publishing Company Limited, New Delhi.
4. Tanenbaum Andrew S. & Woodhull Albert S., **Operating Systems – Design and Implementation**, 2002, Pearson Education Publications, Singapore.
5. William Stallings, **Operating Systems – Internals and Design Principles**, 2006, Pearson Education Publications, Singapore.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Second year - Semester – IV

Course Title	**Major Elective 1: Shell Programming Lab**
Total Hours	**75**
Hours/Week	**5 Hrs /Wk**
Code	**U19CS4MEP01**
Course Type	**Practical**
Credits	**5**
Marks	**100**

General objectives:

To demonstrate knowledge of shell programming and ability to use commands to implement file security.

Course objectives:

The Learner will be able to

CO NO.	**COURSE OBJECTIVES**
CO-1	Understand basic unix shell commands
CO-2	Recognize and understand commands related to inode,piping,mails
CO-3	Apply and develop shell programming using conditions and operators.
CO-4	Provide practices to create a file using instructions.
CO-5	Apply the script for performing particular tasks.
CO-6	Construct the program to safeguard the files from external users and hackers globally.

1.Use of Basic UNIX Shell Commands: ls, mkdir, rmdir, cd, cat, touch, file, wc, sort, cut, grep, dd, dfspace, du, ulimit

2. Commands related to inode, I/O redirection and piping, process control commands, mails.

3. Shell Programming: Shell script exercises based on following:

(i) Interactive shell scripts (ii) Positional parameters (iii) Arithmetic (iv) if-then-fi, if-then- else-fi, nested if-else (v) Logical operators (vi) else + if equals elif, case structure (vii) while, until, for loops, use of break

4. Write a shell script to create a file. Follow the instructions

(i) Input a page profile to yourself, copy it into other existing file;

(ii) Start printing file at certain line

(iii) Print all the difference between two file, copy the two files.

(iv) Print lines matching certain word pattern.

5. Write shell script for-

(i) Showing the count of users logged in,

(ii) Printing Column list of files in your home directory

(iii) Listing your job with below normal priority

(IV) Continue running your job after logging out.

6. Write a shell script to change data format. Show the time taken in execution of this script.

7. Write a shell script to print files names in a directory showing date of creation & serial number of the file.

8. Write a shell script to count lines, words and characters in its input (do not use wc).

9. Write a shell script to print end of a Glossary file in reverse order using Array. (Use awk tail)

10. Write a shell script to compute gcdlcm& of two numbers. Use the basic function to findgcd& LCM of N numbers.

(For Candidates admitted from June 2018 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

UG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Second Year - Semester – IV

Course Title	**MAJOR ELECTIVE 1: OPEN SOURCE TOOLS LAB**
Total Hours	**75**
Hours/Week	**5 Hrs /Wk**
Code	**U18CS4MEP02**
Course Type	**Practical**
Credits	**5**
Marks	**100**

General Objectives:

To learn creating dynamic web pages using the scripting language PHP with the LINUX operating system, the fundamental of PYTHON and PERL languages.

Course Objectives:

CO NO.	**COURSE OBJECTIVES**
CO-1	1. understand and apply linux commands.
CO-2	2. understand the PHP Basic syntax for variable types, structures, controls.
CO-3	3. create a database in phpMysql.
CO-4	4. apply and implement python concept with simple program.
CO-5	5. understand the basic concept of Perl and Features

1. Use the LINUX commands and give the output.
2. Write a PHP program for shopping cart.
3. Write a PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form
4. Write a PHP program for student marklist preparation using database connection.
5. Write a PHP program for employee payroll preparation using database connection.
6. Performing all the MySQL queries using GUI(PHPMy Admin).
7. Write a python program for sorting given n numbers.
8. Write a python program for preparing inventory control.
9. Write a perl program for preparing electricity bill.

(For Candidates admitted from June 2018 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002 UG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Third Year - Semester – IV

Course Title	**MAJOR ELECTIVE 1: WEB APPLICATION DEVELOPMENT TOOLS LAB**
Total Hours	**75**
Hours/Week	**5 Hrs /Wk**
Code	**U18CS4MEP03**
Course Type	**Practical**
Credits	**5**
Marks	**100**

General Objectives:

To get knowledge and practical skill to create dynamic web applications

Course Objectives:

CO NO.	COURSE OBJECTIVES
CO-1	Understand the concepts necessary to create Dynamic Web Applications
CO-2	Evaluate Several Alternatives in the Design of a Web Application.
CO-3	Develop A Functional Web Application.
CO-4	Comprehend and Propose Web Application Infrastructure.
CO-5	Apply Code Reuse With Templates, Libraries, And Snippets.

HTML5

1. Develop a web page for a Restaurant‟s Menu Card using tables.
2. Design a web page for your College displaying various courses using Lists and Frames.
3. Design an Online Application form for your College.

CSS 3

1. To illustrate CSS Border Style Properties
2. To illustrate CSS Border Image Properties.
3. To illustrate CSS Selector Properties.

JAVA SCRIPT

1. Write a script to generate random numbers within 1 to 10 and display the numbers in a table.
2. Write a script to create an arithmetic calculator using function.
3. Write a script to check the given string is palindrome or not.

(for the candidates admitted from June 2015onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2.

DEPARTMENT OF PHYSICS

SECOND YEAR-SEMESTER IV

Course Title	**ALLIED PHYSICS OPTIONAL PAPER 4: BASICS OF ELECTRONICS**
Total Hours	**60**
Hours/Week	**4 Hrs Wk**
Code	**U15PH4AOT 04**
Course Type	**Theory**
Credits	**4**
Marks	**100**

General Objective: To understand the characteristics and functions of various electronic elements such as diode, transistor and operational amplifier and the basic principles of digital electronics and microprocessor.

Course Objectives (CO):

The Learner will be able to:

CO No.	**Course Objectives**
CO-1	remember and understand the functions of PN junction in semiconductor electronics
CO-2	understand and analyze the working of operational amplifier
CO-3	remember, understand and apply the basic principles of Boolean algebra and logic gates in combinational circuits
CO-4	remember, understand and analyze the working of different types of flip flops and counters
CO-5	understand microprocessor and create simple programs using microprocessor

UNIT I: SEMICONDUCTOR ELECTRONICS **12 Hrs**

Semiconductors – P type and N type semiconductors – PN Junction diode – Biasing of PN junction – Volt – Ampere characteristics of diode – Zener diode - Characteristics of Zener diode – Zener diode as a voltage regulator - Bipolar junction transistor – Basic configurations – Characteristics of transistor in CE mode.

Extra reading / Key words:*Rectifiers, Amplifiers*

UNIT II: OPERATIONAL AMPLIFIER **12 Hrs**

Differential amplifier – Common mode and Differential mode signals – CMRR - Characteristics of an ideal op-amp - Virtual ground – Inverting amplifier – Non Inverting amplifier –Applications: Adder, Subtractor, Integrator and Differentiator.
Extra reading / Key words:*Wave form generator, Clipping& Clamping*

UNIT III: COMBINATIONAL CIRCUITS **12 Hrs**

Boolean operations – Rules and Law of Boolean Algebra – Logic gates (NOT , AND, OR, NAND, NOR and EX-OR) - Demorgan‟s theorems - NAND and NOR as universal gates – Karnaugh map - four variables - Half adder - Full adder – Half subtractor – Encoder – Decoder. **Extra reading / Key words:***Multiplexer, Demultiplexer*

UNIT IV: FLIP FLOPS AND COUNTERS **12 Hrs**

Flip Flops: SR, JK, D and T Flip Flops, Counters: Modulus of a counter – Modulo – N counter (asynchronous counters) – asynchronous Decade counter – Shift register: Series and Parallel –shift left and shift right registers.
Extra reading / Key words:*Ring counter, Synchronous counter*

UNIT V: MICROPROCESSOR **12 Hrs**

General architecture of Microcomputer and Microprocessor - Types of memories – Architecture of 8085 – Instruction and data formats – Instruction set - Addressing modes – Simple programming: Addition, subtraction and finding smallest/largest element of an integer array.
Extra reading / Key words:*Traffic controller, Ascending and descending program*

Note: Texts given in the Extra reading / Key words: rmust be tested only through Assignment and Seminars.
Course Outcomes:
The Learner will be able to :

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the functions of PN junction in semiconductor electronics.	PSO 2	R, U
CO-2	Describe the working of operational amplifier.	PSO 2	U
CO-3	State and explain the basic Laws and principles of Boolean algebra and logic gates in combinational circuits.	PSO 3	U, An
CO-4	Differentiate the different types of flip flops and counters.	PSO 4	U,An
CO-5	Rewrite the programs using microprocessor.	PSO 4	U,An
CO-6	Gain Employability - Understand the characteristics and functions of electronic elements	PSO 6	U

PO – Programme Outcomes; CO – Course Outcome; R- Remember; U- Understand; Ap – Apply;
An – Analyse; E- Evaluate; C – Create

Text Books:

1. Mehta V.K., Principles of Electronics, 7th revised edition S.Chand and company Ltd, New Delhi, (2014). (Unit I & II)
2. Vijayendran. V, Introduction to integrated Electronics, S. Viswanathan Pvt., Ltd. (2011). (Unit III & IV)
3. Ram. B, Fundamentals of microprossesors and microcomputer, 5th Edition Dhanapat. Rai & sons New Delhi, (2018). (Unit V)

BOOK FOR REFERENCE:

1. Sedha R.S., A text book of applied Electronics, S. Chand & company Ltd, New Delhi (2008).
2. Malvino. A and Leach, Digital Principles and Applications, 5th edition, Mc-Graw Hill, New York (1994).
3. Ramesh Gaonkar, Microprocessor: Architecture, Programming and Applications by Wiley Eastern Limited (2013).

(for the candidates admitted from June 2015onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2.

DEPARTMENT OF PHYSICS

SECOND YEAR -

SEMESTER IV

Course Title	**ALLIED PHYSICS OPTIONAL PAPER 5: ELECTRONICS PRACTICALS**
Total Hours	**60**
Hours/Week	**4 Hrs Wk**
Code	**U15PH4AOP05**
Course Type	**Practical**
Credits	**3**
Marks	**100**

General Objective: To understand the role of various components in electronic circuits and to built basic circuits such as operational amplifiers and to study practical digital circuits like registers, adder, subtractor and microprocessor.

Course Objectives (CO):

The Learner will be able to:

CO No.	**Course Objectives**
CO-1	understand the basic knowledge in solid state electronics including diodes and OPAMP
CO-2	analyze and create analog electronic circuits using discrete components
CO-3	construct arithmetic circuits
CO-4	unand understand and analyze the architectures of encoders, decoders, multiplexers and flip-flops
CO-5	understand the fundamentals of the microprocessor INTEL 8085
CO-6	Gain Skill Development-Practical exposure to Allied computer science Students

Any Sixteen Experiments Only

1. Study of Junction Diode Characteristics.
2. Study of Zener Diode Characteristics.
3. Construction of Regulated Power Supply using Zener Diode.
4. Study of Transistor Characteristics – Common Emitter Configuration.
5. Op –Amp –Adder and Subtractor.
6. Op –Amp –Inverting and Non-inverting amplifiers.
7. Op –Amp – Integrator and Differentiator.
8. Study of logic gates AND & OR discrete components.
9. Study of IC Chips.

10. Verification of De – Morgan‟s Theorems.
11. NAND as a universal gate.
12. NOR as a universal gate
13. Karnaugh Map - Construction of simplified circuit.
14. Flip – Flops: S-R, J –K and D.
15. Study of Encoders and Decoders.
16. Half adder, Half Subtractor and Full adder circuits.
17. Shift Left and Right registers
18. Construct mod-2, mod 9 counters using IC 7490.
19. Microprocessor – Programming for addition and subtraction.
20. Microprocessor – Programming for identifying the largest and smallest number from a series.

(For Candidates admitted from June 2015 onwards) HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2

B.A. /B.Sc. / B.Com. / BBA/ B.C.A. DEGREE

COURSE:LIFE ORIENTEDEDUCATION

ETHICS – II: EMPOWERMENT OF WOMEN

HRS / WK : 1 **CODE: U15VE4LVE02**

CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To make the learners aware of various gender and social issues and Cyber Crimes.
- To make the learners understand and appreciate the role of media, in facing the challenges on various life issues.
- To enable the learners to understand the ways of empowering women and cyber crime against women

UNIT – I: GENDER ISSUES

Feminism, Responsibilities of men and women towards Egalitarian society, Gender Identity- Factors contributing to gender identity (Family values, culture, tradition, religion, societal values, mass media)

UNIT – II: SOCIAL ISSUES RELATED TO WOMEN

Eve teasing, Rape, Dowry, Harassment in marriage, Divorce and Widows Remarriage, HIV & AIDS, Transgender, Female Genocide, sex workers, trafficking, fugitive, Female foeticide, handicapped children and women and evils of drug abuse.

UNIT – III: WOMEN AND MEDIA

Portrayal of women in media world - News paper, Magazine, Cinema, TV, Video and Advertisements - Morality in Media and Right use of Media

UNIT – IV: WAYS OF EMPOWERING WOMEN

Need for empowerment –Skills required for empowerment and Career Oriented Skills, Women‟s bill- Property rights, Models of Empowered Women- St. Teresa of Kolkata, Indira Gandhi, Helen Keller, Chanu Sharmila and Malala

UNIT – V: CYBER CRIME AGAINST WOMEN

Harassment and Spoofing via e-mail, Cyber Stalking, Cyber Pornography, Morphing. Cyber Laws, Social network: Face book, Twitter and Whats app

REFERENCES:

1. Dr.M.Arumairaj et al., 1999, “Marching towards the Millenium ahead”.
2. Thomas Anjugandam, 1999, “Grow Free Live Free” Salesian Publicaiton.
3. H.C Pretti Nandhini Upretti, jaipur 2000 “Women and problems of GenderDiscrimination”.
4. Thomas B.Jayaseelan, 2002, “Women: Rights and law” Indian Social Institute, New Delhi.
5. Reni Jacob vol I & II, April- June 2004, ”Vikasimi – The journal of Women‟s Empowerment, Ed,”

(For Candidates admitted from June 2015 onwards)
HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.Sc/B.Com /B.C.A – DEGREE
COURSES LIFE ORIENTED
EDUCATION
BIBLE STUDIES – II: OLD TESTAMENT

HRS / WK :1 **CODE: U15VE4LVBO2**
CREDIT : 1 **MARKS : 100**

OBJECTIVE:

- To enable the students to understand the desires of God through Prophetic revelation and to become sensitive to the heart beat of God.

UNIT – I: PURPOSE OF LIFE

Creation of man – fall of man (Gen 1-4) Plan of redemption through the life of :

- Noah (Gen 6-9); Abraham (Gen 12-18);
- Joseph (Gen 37-40); Moses (Exo 4-5);
- Joshua (Joshua 1-8)

UNIT – II: JUDGES AND KINGS

- Judges: Deborah (Judges 4); Samson (Judges 6-8); Gideon (Judges 13-16)
- Kings**:** David (I Sam 17-31, II Sam 1-12); Solomon (I Kings 1-11)

UNIT – III: MINOR PROPHETS

Brief Life History and teachings of

- Amos
- Jonah
- Micah
- Nahum
- Habakkuk

UNIT – IV: MAJOR PROPHETS

Brief Life History and teachings of

- Isaiah (Is 1,6,11,36-38,40-42,44,50,53,61)
- Jeremiah (Jer 1-3,7-12,18-19,23)
- Ezechial (chapters 1,2,3,5,8,12 visions)
- Daniel (Daniel 1-6)

UNIT – V: WOMEN IN THE BIBLE

Women in the Old Testament

- Eve (Gen 3)
- Ruth (Ruth 1-4)
- Hannah (I Sam 1:1-28)
- Esther (Esther 1-6)

REFERENCES:

1. Russell Fueller (1999) The Text book of the Twelve Minor Prophets. Wipf &Stock Publishers, UK.
2. Willis Judson Beecher (2002) The Prophets and The Promise. Wipf & Stock Publishers, UK

(For Candidates admitted from June 2015 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS)

TIRUCHIRAPPALLI – 2 B.A./ B.Sc/ B.Com/ BBA/ B.C.A - DEGREE COURSES

LIFE ORIENTED EDUCATION

CATECHISM – II: CHURCH AND SACRAMENTS

HRS / WK : 1 **CODE : U15VE4LVC02**

CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To enable the students to understand the ways of Christian living with the Church
- To understand God‟s gift of the Holy Spirit.
- To understand the methods of building relationship with Jesus.
- To learn the life of Sacraments and Prayer
- To enrich our devotion to Mother Mary and Saints.

UNIT – I: MISSION OF THE CHURCH

What is church (attributes) – Interpretation: body of Christ- Bride of Christ, goal of all things- Historical as well as spiritual- Mystery and Sacrament-Pilgrim Church.

UNIT – II: PARTICIPATORY CHURCH

Work of the Holy Spirit- Salt and leaven in the world "Church of modern World" Church as community – Its important aspect, early Christian Church – People of God as Church- Its characteristics and structure

UNIT – III: THE FUNCTIONARY CHURCH AND I

Ministerial Church – Relating Church –Parish Church- Role of lay faithful in the Church – Its challenges – Church and I.

UNIT – IV: SACRAMENTS

Sacraments – Initiation– Healing – Service (all the seven) – Emphasis on Confession, Confirmation and Holy Communion.
Sacramental: holy "things" used –Their sanctity.

UNIT – V: MARY AND SAINTS

Mary as a young virgin- Disciple- Her role in the Catholic Church-Annual feasts- Pilgrimages- Devotion to Mary, Dogmas. Saints in the Church- Prominent Women in the old testament

REFERENCES:

1. "Vatican II Revised" Archbishop Angelo Fernandes Published by X.Diax de Rio S.J. Gujarat Sahitya Prakash, P.O.Box. 70, Gujarat, 388001, India.
2. "The Sacraments The Word of God at the Mercy of the Body" Claretian Publications, Malleswaram, Bangalore 560055.

Documents of Vatican II – St. Paul‟s Publications, Bombay 1966.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – V

Course Title	Major Core 8: Java Programming
Total Hours	75
Hours/Week	5 Hrs Wk
Code	U18CS5MCT08
Course Type	Theory
Credits	4
Marks	100

General Objective

To enable the students to learn the syntax, concepts of the language and to write the solution for read world problems.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Understand & Analyze the Java features and Program Structure
CO-2	Apply the concepts of encapsulation in terms of classes and objects
CO-3	Understand and implement the types of Inheritance & Package.
CO-4	Differentiate and demonstrate the types in Thread creation and Exception Handling.
CO-5	Create the Applet Programming and apply the Collection Framework.

UNIT I **15Hrs**

JAVA EVOLUTION : Java History – Java Features – How Java Differs from C and C++ -- Java and Internet – Java and World Wide Web – Web Browsers – Hardware and Software Requirements – Java Support Systems – Java Environment.

OVERVIEW OF JAVA LANGAGE : Introduction – Simple Java Program – More of Java – An Application with Two Classes – Java Program Structure – Java Tokens – Java Statements – Implementing a Java Program – Java Virtual Machine – Command Line Arguments – Programming Style - **TYPE CONVERSION IN EXPRESSION-DECISION MAKING AND BRANCHING :** Introduction – Decision Making with If Statement – Simple If Statement – The If ..Else Statement – Nesting of If..Else Statements – The Else If Ladder – The Switch Statement – The ? : Operator.

Extra Reading /Key words:*Netbean, Eclipse*

UNIT II **15Hrs**

DECISION MAKING AND LOOPING: Introduction – The While Statement – The do Statement – The for Statement – Jumps in Loops – Labeled Loops. **CLASSES, OBJECTS AND METHODS:** Introduction – Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static Members – Nesting of Methods – Inheritance: Extending a Class – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Methods – Abstract Methods and Classes – Methods with Varargs – Visibility Control.

Extra Reading /Key words:*Generalization, Specialization*

UNIT III **15Hrs**

INTERFACES: MULTIPLE INHERITANCE: Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables.

PACKAGES : PUTTING CLASSES TOGETHER : Introduction – Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – Hiding Classes – Static Import.

Extra Reading /Key words:*Proxy, JAR Files*

UNIT IV: **15Hrs**

MULTITHREADED PROGRAMMING : Introduction – Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the 'Runnable' Interface-Inter thread communication. **MANAGING ERRORS AND EXCEPTIONS :** Introduction – Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing Our Own Exceptions – Using Exceptions for Debugging.

Extra Reading /Key words:*Deadlock, Synchronization*

UNIT V: **15Hrs**

APPLET PROGRAMMING : Introduction – How Applets Differ from Applications – Preparing to Write Applets – Building Applet Code – Applet Life Cycle – Creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to Html File – Running the Applet – More About Applet Tag – Passing Parameters to Applets – Aligning the Display – More About Html Tags – Displaying Numerical Values – Getting Input from the User-Event Handling-Introduction to AWT package-Introduction to Swings-**JAVA COLLECTIONS:** Overview of Interfaces-Overview of Classes-Overview of Algorithms.

Extra Reading /Key words:*HTML5, Servlet*

Course Outcomes:

The Learner will be able to

CO. No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	State OOPS and Relate java syntax with c and C++.	PSO 3	R, U
CO-2	Categorize OOPS such as encapsulation, abstraction, polymorphism.	PSO 1	R
CO-3	Apply encapsulation concepts in developing the programs with classes and objects.	PSO 5	Ap
CO-4	Identify different types of inheritance and apply them for reusability of code.	PSO 2	Ap
CO-5	Construct the packages by arranging the classes with visibility control.	PSO 1	Ap
CO-6	Design program using different methods of thread creation and exception handling.	PSO 1	U
CO-7	Create Internet program using applets.	PSO 4	An
CO-8	Evaluate java collection with other implementation methods of data structure.	PSO 1	U,R

CO-9	Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem	PSO 4	An

References:

Text Book

1. E.Balagurusamy, **"Programming with JAVA"**,5th Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi.
   UNIT I : CHAPTERS 2, 3, 5.13 & 6
   UNIT II : CHAPTERS 7, 8
   UNIT III : CHAPTERS 10,11
   UNIT IV : CHAPTERS 12, 13
   UNIT V : CHAPTERS 14,17

Books for Reference

1. Herbert Schildt, **"Java The Complete Reference"**, 7th edition, Tata McGraw-Hill Publications Pvt. Ltd., New Delhi
2. Y.Daniel Liang, **"Introduction to Java Programming"** , 10th edition, Pearson Education Ltd
3. David J.Eck, **"Programming :Introduction to programming using Java"**, 6th edition, Createspace Publications
4. Joshua Bloch, **"Effective Java"**, 2nd edition, Addison Wesley Publications.
5. Kathy Sierra, Bert Bates, **"Head First Java",** 2nd edition, O'Reilly Publications.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – V

Course Title	Major Core 9 – Software Engineering Concepts
Total Hours	75
Hours/Week	5 Hrs Wk
Code	U18CS5MCT09
Course Type	Theory
Credits	4
Marks	100

General Objectives:

To preparestudents to be successful professionals in the IT field with solid fundamental knowledge of Software Engineering.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Remembers and understand software the nature of software , software process and software engineering practice and Analyse& Evaluate the various models.
CO-2	Understand the requirements, analyze and apply the various requirement models.
CO-3	Understand the design concepts, analyze and apply the concepts to design architectural, component level & User interface models. Remember and understand the golden rules.
CO-4	Understand the quality concepts, Software Quality Assurance tasks, discuss the strategies of testing, explain the types of testing.
CO-5	Understand the Product, process & project metrics, Analyse the estimation modeling, understand the emerging trends, Apply the software concepts to do project.

UNIT I **15Hrs**

INTRODUCTION TO SOFTWARE ENGINEERING: Evolving role of software – Software – The changing nature of software.

SOFTWARE ENGINEERING: A layered technology – A process framework – CMMI-Process Pattern – Process Assessment – Personal and Team Process Models.

PROCESS MODELS: Prescriptive models-The waterfall model - Incremental Process Models - Evolutionary Process Models.

Extra Reading (Key words): Additional Process Models.

UNIT II **15Hrs**

REQUIREMENTS ENGINEERING: Abridge to Design and Construction- Requirements Engineering task – Initiating the requirement engineering process – Eliciting requirements .

BUILDING THE ANALYSIS MODEL: Requirement analysis – Analysis Modeling approaches - Data Modeling concepts - Object Oriented Analysis - Flow Oriented Modeling .

Extra Reading (Key words): XML Modeling.

UNIT III **15Hrs**

DESIGN ENGINEERING: Design within the context of software engineering - Design process and Design quality - Design Concepts - Design Model.

CREATING AN ARCHITECTURAL DESIGN: Architectural styles and patterns - Mapping data flow into a software architecture.

Extra Reading (Key words): Other architectural designs.

UNIT IV **15Hrs**

MODELING COMPONENT LEVEL DESIGN : What is a component - Designing Class Based components – Conducting Component level design.

PERFORMING USER INTERFACE DESIGN: The golden rules – User-Interface analysis and Design-Interface analysis - Interface Design steps.

Extra Reading (Key words): Latest User Interface designs.

UNIT V **15Hrs**

TESTING STRATEGIES: Test strategies for Conventional Software - Validation testing – System testing - The art of debugging.

TESTING TACTICS: Software testing fundamentals - Black Box and White Box testing-Basis path testing- Control Structure testing - Black Box testing.

QUALITY MANAGEMENT: Quality concepts - Software Quality Assurance - Software Reviews -Formal Technical Reviews.

Extra Reading (Key words): Overview of Testing Tools.

Course Outcomes:

The Learner will be able to

CO. No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Define software, explain the nature of software , software process and software engineering practice, explain and compare the various models.	PSO 2	R, U
CO-2	Discuss the requirements, analyze and design the various requirement models.	PSO 2,6	R, U
CO-3	Explain the design concepts, analyze and apply the concepts to design architectural, component level & User interface models, list the golden rules.	PSO 2	U
CO-4	Explain the quality concepts, Software Quality Assurance tasks, discuss the strategies of testing, explain the types of testing.	PSO 3	Ap
CO-5	Explain the Product, process & project metrics, discuss the estimation modeling, understand the emerging trends, Prepare a Product.	PSO 4	U
C0-6	Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.	PSO 5	Ap

References

Text Book:

1. Pressman Roger .S, “Software Engineering-A Practitioner’s Approach”, 2005, Tata McGraw Hill Publishing Company Ltd., New Delhi.

UNIT I

Chapter1 (1.1 to 1.3), Chapter2 (2.1 to 2.6), Chapter3 (3.1 to 3.4)

UNIT II

Chapter7 (7.1 to 7.4), Chapter8 (8.1 to 8.4, 8.6)

UNIT III

Chapter9 (9.1 to 9.4), Chapter10 (10.3 and 10.6)

UNIT IV

Chapter11 (11.1 to 11.3), Chapter12 (12.1 to 12.4)

UNIT V

Chapter13 (13.3,13.5 to 13.7), Chapter14 (14.1 to 14.6), Chapter26 (26.1 to 26.4, 26.7)

Reference Books:

1. Carlo Ghezzi, Mehdi Jazayeri and DimoMandrioli, “Fundamentals of Software Engineering”, 2001, Prentice-Hall of India Private Ltd., New Delhi.
2. Ian Sommarvilla, “Software Engineering”, 2004, Pearson Education Publishing Ltd., New Delhi.
3. JawadekarWaman.S, “Software Engineering Principles and Practice”, 2004, Tata McGraw Hill Publishing Company Ltd., New Delhi.
4. Richard Fairley, “Software Engineering Concepts”, 2000, Tata McGraw Hill International Publishing Company Ltd., New Delhi.
5. Shari Lawrence Pfleeger, “Software Engineering Theory and Practice”, 2001, Pearson Education Publishing Ltd., New Delhi.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – V

Course Title	Major Core 10 – Computer Organization and Architecture
Total Hours	75
Hours/Week	5 Hrs Wk
Code	U18CS5MCT10
Course Type	Theory
Credits	4
Marks	100

General Objectives:

To give Basic Knowledge on Various Building Blocks of a Digital Computer and Architecture.

Course Objectives:

The Learner will be able to

CO. No.	Course Objectives
CO-1	Understand and learn the types of computer Instructions.
CO-2	Learn and understand the Machine language and Assembly languages.
CO-3	Know and understand the categories of the peripheral devices and its data transfer.
CO-4	Learn and understand the instruction formats, addressing, modern pipelining and vector processing techniques.
CO-5	Know and understand the main memory, auxiliary memory, associative, cache and virtual memory.

UNIT I **15 Hrs**

BASIC COMPUTER ORGANIZATION AND DESIGN: Computer Instructions: Instruction Set Completeness-Timing And Control-Instruction Cycle: Fetch And Decode- Determine The Type Of Instruction-Register-Reference Instructions-Memory-Reference Instructions–Input-Output And Interrupt: Input-Output Configuration-Input-Output Instructions-Program Interrupt-Interrupt Cycle.

Extra Reading (Key words): Computer Instructions about various Processors.

UNIT II **15 Hrs**

PROGRAMMING THE BASIC COMPUTER: Introduction –Machine Language-Assembly Language: Rules Of The Language-An Example-Translation To Binary-The Assembler: Representation Of Symbolic Program In Memory-First Pass-Second Pass-Program Loops. Micro programmed Control: Control Memory-Addressing Sequencing: Conditional Branching-Mapping Of Instruction-Subroutines.

Extra Reading(Key words): Other translators for program translation.

UNIT III **15 Hrs**

INPUT – OUTPUT ORGANIZATION: Peripheral Devices -- Input Output Interface – Asynchronous Data Transfer – Modes of Transfer – Priority Interrupt – Direct Memory Access.

Key terms: INTEL 8085 & 8086 Instructions.

UNIT IV **15 Hrs**

CENTRAL PROCESSING UNIT: General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation.

PIPELINE AND VECTOR PROCESSING: Parallel Processing – Pipelining – Arithmetic Pipeline – Instruction Pipeline – RISC Pipeline – Vector Processing.

Key terms: Compare and process the real time data with Stack, Pipeline and vector processing.

UNIT V **15 Hrs**

MEMORY ORGANIZATION: Memory Hierarchy – Main Memory – RAM and ROM Chips – Memory Address Map – Memory Connection to CPU – Auxiliary Memory – Magnetic Tape – Associative Memory -- Cache Memory – Virtual Memory – Memory Management Hardware.

Key terms: Acquire knowledge about Memory Organization.

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Describe the Computer Instructions	PSO 1	R, U
CO-2	Explain the Instruction Cycle.	PSO 2	U
CO-3	Illustrate the concept of Micro programmed Control	PSO 2	U
CO-4	Illustrate the concepts of transfer of data.	PSO 3	U
CO-5	Differentiate different types of addressing modes and explain pipeline and vector processing.	PSO 4	An
CO-6	Analyze the various types of Memory and the purpose of Memory Management.	PSO 4	An
CO-7	Apply Basic Knowledge on Various Building Blocks of a Digital Computer and Architecture	PSO 4	R,U

References

Text Books:

1. M.Morris Mono, **Computer System Architecture**, Third Edition,2011,Prentice – Pearson, New Delhi.

UNIT I : Chapters 5.3 - 5.7
UNIT II : Chapters 6.1 – 6.5, 7.1, 7.2
UNIT III : Chapters 11
UNIT IV : Chapters 8.1 – 8.6, 9.1 – 9.6
UNIT V : Chapters 12

Reference Books

1. Thomas C.Bartee, **Digital Computer Fundamental**, 1991,Tata McGraw – Hill Publishing Company, New Delhi.
2. Albert Paul Malvino and Jerald A.Brown, **Digital Computer Electronics** ,1999 ,Tata McGraw – Hill Publishing Company, New Delhi.
3. M.Morris Mano, **Digital Logic and Computer Design**,1998, Prentice Hall of India Private Ltd, New Delhi.
4. Kai Hwang, Faye A. Briggs, **Computer Architecture and Parallel Processing** , 1985,McGraw – Hill Book Company, New Delhi.
5. Thomas C.Bartee, **Computer Architecture and Logic Design** , 1991,Tata McGraw – Hill Publishing Company, New Delhi.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – V

Course Title	Major Core 11: Java Programming Lab
Total Hours	75
Hours/Week	5 Hrs Wk
Code	U18CS5MCP11
Course Type	Practical
Credits	4
Marks	100

General Objectives:

To learn the knowledge of object-oriented paradigm in the Java programming language,the use of Java in a variety of technologies and on different platforms.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Design and implement programs in the Java programming language that make strong use of classes and object.
CO-2	Create a program to print formatted text to the console output and read/parse console input text using a Scanner object.
CO-3	Apply logical constructs for branching and loops as well as use iterator objects when appropriate
CO-4	Create the polymorphism through use of super-classes and interfaces
CO-5	Design and implement custom checked and unchecked exception types.
CO-6	Designing Enterprise based applications by encapsulating an application's business logic

1. SIMPLE PROGRAMS.
2. CONTROL STRUCTURES
3. CLASSES & OBJECTS AND METHODS
4. ARRAYS
5. INTERFACE
6. INHERITANCE
7. PACKAGES
8. MULTITHREADED PROGRAMMING
9. EXCEPTION HANDLING
10. APPLETS

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – V

Course Title	Major Elective 2 – Bigdata technologies and tools
Total Hours	75
Hours/Week	5 Hrs /Wk
Code	U18CS5MET04
Course Type	Theory
Credits	5
Marks	100

General Objectives:

To provide the basic understanding of Big Data Analytics, its technologies and tools and the Cloud Infrastructure for Big Data Analytics.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	remember the basics of Bigdata Analytics
CO-2	understand and analyze the various bigdata analytic systems
CO-3	understand and analyze the various components of Hadoop Framework
CO-4	understand and analyze various NoSQL databases
CO-5	understand and analyze the various components of Real Analytic Framework

UNIT I **15Hrs**

Introduction to Bigdata Analytics: Introducing Bigdata Analytics - Bigdata Technologies - Big Data Analytics in Cloud - Big Data Reference Architecture (BDRA)- Compute, Storage and Network Infrastructures- Big Data Architecture - Challenges and Opportunities with Big Data Analytics.

Extra Reading /Key words:*Emerging Big Data Sources. Types of Analytics*

UNIT II **15Hrs**

Big Data Analytic Systems: Traditional RDBM Systems - Hadoop Distributions - NoSQL Databases - Analytic Platforms : Massively Parallel Processing (MPP) Database :EMC Greenplum and Microsoft's Parallel Data WarehousingOption - Analytical Appliance -In-memory System-Columnar Systems - R Language - Eco Systems - Tools

Extra Reading /Key words:*Big Data Analytics in Network*

UNIT III **15Hrs**

Hadoop Framework

Introduction to Hadoop Distributions - Hadoop Distributed File System - MapReduce - YARN (Map Reduce 2)- HBase - PIG - Hive - SQOOP- Mahout, Zookeeper-Ambari - Chukwa - Avro - Oozie- Flume- Cassandra -Upcoming Hadoop Technologies: BigSQL - Apache drill – Stinger.

Extra Reading /Key words:*Hadoop Spark Framework*

UNIT IV **15Hrs**

NoSQL Framework: Introduction- NoSQL Databases - Why NoSQL? -Features - Characteristics - Classifications - Key-Value Stores- Document Stores - Column Family Databases - Tabular

Storage - Graph Databases - Cloud Databases- Hybrid SQL-NoSQL Databases -Examples – Challenges..

Extra Reading /Key words:*Chronology of development of NoSQL*

UNIT V **15Hrs**

Real Time Analytic Framework: Introduction- How fast is fast? How Real is Real Time -The RTBDA stack - The five phases of Real Time - How Big is Big - Part of a Larger Trend.Tools : SPARK , STORM - Significance of In-Memory Computing for Big Data Analytics -Examples - Limitations - Future of In-Memory Computing.

Extra Reading /Key words:*Edge Analytics*

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Summarize the basics of Big Data Analytics	PSO 1	R, U
CO-2	Distinguish various Big Data Analytic Systems	PSO 1 & PSO2	R
CO-3	Compare various components of Hadoop Framework	PSO 2	U
CO-4	Categorize the NoSQL databases	PSO 2	U
CO-5	Discuss Real Time Analytics Framework	PSO 1 & PSO 2	An
CO-6	Evaluate Real Time Analytics and Streaming Analytics	PSO 3	U, An
CO-7	Gain the required skills required for teaching profession and for further research.	PSO 1 & PSO 3	U, R, Ap

References

Text Books:

1. P. Raj& Ganesh Deka, "Handbook of research on Cloud Infrastructures for Big Data Analytics", 2014, IGI Press.
2. Mike Barlow, " Real-Time Big Data Analytics : Emerging Architecture" ,2013, O'Reilly Media Inc.

Reference Books:

1. Thomas Erl, Zaigham Mahmood &Richardoputtini, "Cloud Computing (Concepts, Technology & Architecture),2013, Prentice Hall Press.
2. VigneshPrajapati, "Big Data Analytics with R and Hadoop", 2013, PACKT Publishing.
3. Tom White,"Hadoop: The Definitive Guide",2009, O'Reilly Media Inc.
4. AravindSathi, “Big Data Analytics : Disruptive Technologies for changing the Game”,2012, MC Press. (IBM ebook)
5. Seema Acharya, SubjashiniChellapan, “Big Data Analytics”, Wiley,2015.
6. Judith Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman, “Big data”, 2015, Wiley publications.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – V

Course Title	Major Elective 2 – Business Process Outsourcing
Total Hours	75
Hours/Week	5 Hrs /Wk
Code	U18CS5MET05
Course Type	Theory
Credits	5
Marks	100

General Objectives:

To enable the students to understand the various activities engaged in BPO domains.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Understand the concept of outsourcing and identify different types of outsourcing.
CO-2	Aware of BPO Companied in India and world-wide.
CO-3	Classify call centers and appreciate the use of BPOs in Healthcare systems.
CO-4	Understand Healthcare BPO and the technologies required.
CO-5	Understand the Career Opportunities in the BPO Industry.

UNIT I **15Hrs**

Introduction to Business Process: Nature and Types of Business Organization-Organization Structure - Definition - Complexity -Formalization-Outcomes for Individuals. **Explanation:** Size - Technology - Environment - Natural Cultures.

Extra Reading /Key words:*call center, e-support*.

UNIT II **15Hrs**

Introduction to Business Process Outsourcing and Offshore BPO: Benefits of BPO – Growth Drivers - BPO Models and Types of Vendors. **Offshore BPO:** Evolution - Global ITES/BPO Scenario - Offshore BPO Destinations - Challenges of Off Shoring - BPO Companies in India.

Extra Reading /Key words:*Customer Attrition, Back office support.*

UNIT III **15Hrs**

Contact center and Healthcare BPO: Types of Call Centers - Technology - Components and Working Principles of a Call Center- Issues and Problems. Structure of American Healthcare Sector - Activity Profile - Future Trends and Threats.

Extra Reading /Key words:*Cloud Computing, BPaaS.*

UNIT IV **15Hrs**

Transaction Processing BPO and Human Resource BPO: Elements of Back Office Services - Financial Services - Insurance. Reasons for Outsourcing HR - Activities Involved in HR BPO - HR Outsourcing Trends.

Extra Reading /Key words:*KPO, VOC.*

UNIT V **15Hrs**

Career Opportunities in the BPO Industry: Employment Opportunities -Employee Structure - Skill Set Required -Compensation Levels. Case study: Intelnet Global, CBay System, Data matrix.

Extra Reading /Key words:*Hypergrowth, virtual agent* **.**

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Recall and relate the concept of outsourcing and identify different types of outsourcing.	PSO 4	R, U
CO-2	Explain BPO Companied in India and world-wide.	PSO 2	R
CO-3	Apply call centers and appreciate the use of BPOs in Healthcare systems.	PSO 3	Ap
CO-4	Examine Transaction Processing BPO and Human Resource BPO.	PSO 3	R
CO-5	Plan for Career Opportunities in the BPO Industry.	PSO 1	R
CO-6	Evaluate the Offshore BPO.	PSO 2	E
CO-7	Apply concept development for the career opportunity in BPO Industry	PSO 2	Ap

References

Text Books:

1. Richard H.Hall, "Organization, Structure, Processes and Outcomes", Pearson Education, 7th Edition (UNIT: I).
2. SarikaKulkarni, "Business Process Outsourcing", Jaico Publishing House, 2005 (UNIT: II, III, IV & V)

Books for Reference:

1. Dr. S. Nakkiran, "Business Process Outsourcing", Deep & Deep Publishers, 2004.
2. Ed. Gopal. R, Manjrekar, Pradip, "BPO/KPO Management – An Industry Perspective",Excell Books.
3. Akshaya Bhargava, "Random Notes on Indian BPO", the ICFAI University Press. 2006.
4. Kulkarni, Sarika, "Business Process Outsourcing", Jaico Publishing House, Delhi, 2005.
5. Vinod V. Sople, "Business Process Outsourcing, A Supply Chain of Expertises", PHI Learning Private Limited, New Delhi, 2009.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – V

Course Title	**Major Elective 2 – Artificial Intelligence And Expert Systems**
Total Hours	**75**
Hours/Week	**5 Hrs /Wk**
Code	**U19CS5MET06**
Course Type	**Theory**
Credits	**5**
Marks	**100**

General Objective:

To develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents.

Course Objectives

The Learner will be able to

CO No.	Course Objectives
CO-1	Remember Search, Knowledge representation, inference, logic, and learning.
CO-2	The knowledge of artificial intelligence plays a considerable role in some applications students develop for courses in the program.
CO-3	Students will implement a small AI system in a team environment.
CO-4	Apply these techniques in applications which involve perception, reasoning and learning.
CO-5	To implement a small AI system in a team environment

UNIT I **15Hrs**

Concept of intelligence, Artificial intelligence, definition turning test, areas of application. Search techniques, state space, Production rules, problem characteristics. Production system characteristic, depth first, breadth first search methods.

Extra Reading /Keywords:*Early History, Current status of AI*

UNIT II **15Hrs**

Heuristic search method, generate and test, hill climbing, best first method, graph search, AND OR search methods, constraint satisfaction, backtracking. Introduction to list and string processing, concept of knowledge, Logic, prepositional and predicate calculus, resolution.

Extra Reading /Keywords: *Informed and Uninformed Search*

UNIT III **15Hrs**

Semiatics nets, frames, conceptual dependency, scripts, Monotonic reasoning, logical reasoning induction, default reasoning, minimalist reasoning, statistical reasoning, Baye's theorem, certainty

factors, dempster shafer theory, Fuzzy logic.

Extra Reading /Keywords: *Reasoning and acting, Fuzzy logic in current trends*

UNIT IV **15Hrs**

Concept of learning, Knowledge acquisition, rote learning, discovery, analogy.

Extra Reading /Keywords: *knowledge acquisition by expert systems*

UNIT V **15Hrs**

Concept of expert system, need for an expert system, Component and categories of an expert system, Stages in the development of an expert system.

Extra Reading /Keywords: *Applications of expert systems*

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Understand the design a knowledge based system.	PSO 1	R, U
CO-2	Understand the terminology used in this topical area.	PSO 2	Ap
CO-3	Analyzed important historical and current trends addressing artificial intelligence.	PSO 2	U
CO-4	Analyze and design a real world problem for implementation and understand the dynamic behavior of a system	PSO 3	U
CO-5	Use different machine learning techniques to design AI machine and enveloping applications for real world problems.	PSO 4	Ap
CO-6	Build Artificial intelligence in various fields.	PSO 4	U, Ap

References

Text Books:

1. Elaine rich & Kevin Knight: Artificial Intelligence and Expert System, PHI.

2. Charniak, E.: Introduction of Artificial Intelligence, Narosa Publishing House.

3. Winton. P.H.: LISP, Narosa Publishing House.

Books for Reference:

1. Data W. Patterson, Introduction to Artificial Intelligence and Expert Systems, PHI, 2009.

2. Stuart Russell and Peter Norvig, Artificial Intelligence A Modern Approach, Second Edition, Pearson Education Series, 2003.

3. Keith Darlington, The essence of Expert Systems, Pearson First Impression, 2011.

4. Marcellus: Expert System Programming in TURBO PROLOG Prentice-Hall Inc. 1989.

5. Clark, K. L. & McCabe, F.G.: Micro-Prolog Prentice-Hall Inc. 1987.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002
PG DEPARTMENT OF COMPUTER SCIENCE
B.Sc. Computer Science - Third Year - Semester – V

Course Title	Non Major Elective 1: Multimedia Lab- GIMP
Total Hours	30
Hours/Week	2 Hrs Wk
Code	U18CS5NMP01
Course Type	Practical
Credits	2
Marks	100

General Objectives:

To learn use the basic tools found in GIMP to create and edit images.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Apply various tools to create and edit images.
CO-2	Apply layers, filter effects and blending modes , share and save your images in various formats.
CO-3	Learn various retouching and repairing techniques to correct images.
CO-4	Demonstrate the techniques to use text reflection effect .
CO-5	Demonstrate how to insert image inside the text.
CO-6	Design and develop creative applications using GIMP.

GIMP Practical Exercises

1. Create Pencil Drawing Effect.
2. Demonstrate the Image Inside Text Effect.
3. Create a Rainbow Effect.
4. Demonstrate the use of Text Reflection Effect.
5. Create a Sunshine Effect.
6. Create Rain Effect.
7. Create Sliced Text Effect.
8. Create Image Inside Cube Effect.
9. Create a Text Portrait Effect.
10. Create a Film Strip Effect.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2

B.A. /B.Sc. / B.Com. / BBA/ B.C.A. DEGREE

COURSES LIFE ORIENTED

EDUCATION

ETHICS – III: FAMILY AND CAREER DEVELOPMENT

HRS / WK : 1 **CODE: U15VE6LVE03**
CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To help the students acquire skills, knowledge and talents to lead a meaningful life.
- To make the students learn skills of nurturing family and children.
- To make the students aware of emotional intelligence and choose their career.

UNIT – I: PERSONAL COMPETENCE

Emotional Intelligence for Professional growth, Management Vs Leadership-Management and Leadership Skills - Conflict Management - Tips for Professional growth

UNIT – II: MARRIAGE AND FAMILY

Family Vision - Family Values, Family relationship, Family Management, Sex in Marriage, Emotional Balance and Imbalance, Compatibility between Husband and Wife

UNIT – III: PARENTHOOD

Bringing up Children - Development stages (Eric Ericson model), Spirituality: Spirituality in Family - Prayer, God‟s Will , Role of Mother

UNIT – IV: PERSONALITY DEVELOPMENT

Self Analysis; interpersonal relation, introspection – Character formation towards positive personality- Values, self and college motto, punctuality, good moral, poverty, honesty, politeness, humanity, gentleness, friendship, fellowship and patriotism

UNIT – V: CAREER CHOICE

Career Choice according to Personality, Preparation for Competitive Exams, Sources of Knowledge, Memory Techniques, Mind Mapping

REFERENCES:

1. Tony B and Barry Buzan(2003), The mind map book, BBC world wide limited, London.
2. Susan Nash(2005), Turning team performance inside out, Jai CO. publishing House, New Delhi.
3. Fr. Ignacimuthu (1999) “Values for Life”, Vaigarai Pathipagam.
4. Grose. D.N. (2000), “A text book on Value Education”, Dominant Publishers.

HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.SC/B.COM/ B.C.A – DEGREE
COURSES LIFE ORIENTED EDUCATION
BIBLE STUDIES – III: ESSENCE OF CHRISTIAN LIVING

HRS / WK : 1 **CODE: U15VE6LVBO3**

CREDIT : 1 **MARKS : 100**

OBJECTIVE:

- To prepare the students to practice Christian principles in family, church and society as young women

UNIT – I: ESSENTIALS OF CHRISTIAN FAITH

- Salvation – Deliverance from sin (Is 53),Assurance of salvation and New life (II Cor 5:17)
- Sacraments – Baptism (Luke 3: 6-14), Lord‟s Supper (I Cor 10: 16,17; 11: 23-29)
- Trinity – One in three and three in one. Illustrations from the Bible. (John 14: 16,17)
- Heaven and Eternal life (John 14: 13, 3: 13-21)

UNIT – II: MARRIAGE AND FAMILY LIFE

- Finding the God‟s Will - Issac (Gen 24)
- Man and woman as Partners – Abraham and Sarah (Gen 16-18,22), Aquila and Priscilla (Acts 18: 1-3,26)
- Evils to be avoided – Premarital Sex, Extramarital Sex, Homosexuality, Abortion(Heb 13: 4, Psalm 127 : 4)
- Ideal Wife – Sarah (I Peter 3: 1-6), Ruth,(Eph 5)

UNIT – III: CHRISTIAN HOME

- Parental Responsibilities and bringing up children – Abraham (Gen 22), Eli (I Sam 2: 24-36,3: 11- 18), Mary, Mother of Jesus (Luke 2: 51,52)
- Caring for the Aged (I Sam 2: 31,32)

UNIT – IV: CHRISTIAN ETHICS

- Holiness – Joseph (Gen 39:9) Levi 11: 45, Ecc 12
- Obedience to God - Abraham (Gen 12) ; St.Paul (Acts 9)
- Freedom and Accountability
- Justice and Love
- Choices in Life – Making Decisions (Studies, job, life Partner)
- Model to follow – Who is your model? (John 15: 1-17)
- Social Evils – Dowry, Caste discrimination, Accumulation of wealth

UNIT – V: MISSIONARIES DOWN THE LANE

- William Carrie (Calcutta)
- Pandithar Rama Bai (Karnataka)
- Amy Carcheal (Dohnavur)
- Dr. Ida Scuddar (Vellore)
- Devasagayam (Nagercoil)
- St. John De Britto (Oriyur)
- Graham Staines & Family (Odisha)
- St. Mother Teresa (Calcutta)

REFERENCES:

1. Alban Douglass (1982) One Hundred Bible Lessons. Gospel Literature Service, Mumbai.
2. Derek Prince (1993) Foundations for Righteous Living. Derek Prince Ministries-South Pacific, New Zealand.
3. Derek Prince and Ruth Prince (1986) God is a Match maker. Derek Ministries, India.
4. Ron Rhodes(2005) Hand book on Cults. Amazon.com
5. Stanley.R. (1997) With God Again. Blessing Youth Mission, India.
6. Taylor.H. (1993) Tend My Sheep. SPCK, London.

(For Candidates admitted from June 2015 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2

B.A./B.Sc/B.Com/BBA/B.C.A - DEGREE COURSES

LIFE ORIENTED EDUCATION

CATECHISM – III: LITURGY AND CHRISTIAN LIFE

HRS / WK : 1 **CODE:U15VE6LVC03**

CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To prepare the students to participate meaningfully in the liturgical celebration and experience GOD in their day today life.
- To enable the students to become living witnesses to Jesus Christ in their personal, family and social life.

UNIT – I: LITURGY

Personal prayer (Know oneself) – Vocal prayer – Community prayer – Meditation – Contemplation – Knowing the prayers : Our Father – Hail Mary – Holy Rosary – Mysteries of the Rosary- Litany of Mary – Family prayer-Popular devotion

UNIT – II: HOLY SACRIFICE OF THE MASS

Significance – Meaning and need for spiritual growth – Mass prayers – Part of the mass – Liturgical year, its division and its significance. – The Creed – Act of contrition – Discernment of spirits – Counseling – Spiritual direction.

UNIT – III: CHRISTIAN VOCATION AS DISCIPLE FOR THE KINGDOM OF GOD

Who am I as a Christian? – Christian dignity and others – The values of the Kingdom opposing to the values of the World – Christian social conscience – Christian in the reformation of the world – A call to be salt and light in today‟s context.

UNIT – IV: CHRISTIAN FAMILY

Holy Family- Characteristic of good family – Bible centered, Prayer centered, Christian centered– Responsibilities of parents and children in the family –Laws of the Church towards marriage-Pro life (Abortion, Euthanasia) – Lay Vocation – Lay Participation – Lay associates.

UNIT – V: CONSECRATED LIFE

“Come and follow me” – special disciples - Religious vocation – “I have called you to be mine”- Role of Nuns and Priest - called to be prophets and agents for God‟s Kingdom – nucleus of the church – Eschatological signs of the God‟s Kingdom.

REFERENCES:

1. Compendium – Catechism of the Catholic Church Published by Vaigarai Publishing House for the Catholic Church of India.
2. You are the light of the World, A course on Christian living for II year Religion published by Department of Foundation Courses, St.Joseph‟s College (Autonomous), Tiruchirappalli– 620 002.
3. Documents of Vatican II – St. Paul‟s Publications, Bombay 1966.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	Major Core 12 - Computer Networks
Total Hours	75
Hours/Week	5 Hrs Wk
Code	U18CS6MCT12
Course Type	Theory
Credits	4
Marks	100

General Objectives:

To impart deep knowledge on different layers of Computer Networks.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Remembers and understands the basic concept of computer hardware and software
CO-2	Understand the types of Transmission Media and remembers the working principles of Public Switched Telephone Network.
CO-3	Understand the general techniques of Error control, Flow control in Data Link Protocols.
CO-4	Analyse the Routing and Congestion Control Algorithms in Network Layer; remember the underlying protocol in Transport Layer.
CO-5	Remember the various services of Application Layer; analyze the various techniques in cryptography.

UNIT I **15 Hrs**

INTRODUCTION: Uses of Computer Networks - Network Hardware - Network Software - Reference models OSI reference Model (TCP/IP reference Model, A comparison of the OSI and TCP/IP Reference Models).

Extra Reading (Keywords): IoT interoperation across the OSI model.

UNIT II **15 Hrs**

THE PHYSICAL LAYER: Guided Transmission Media - Wireless Transmission - The Public Switched Telephone Network: Structure of the Telephone System – Trunks and Multiplexing - Switching.

Extra Reading (Keywords): Mobile Telephone System.

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UNIT III **15 Hrs**

THE DATA LINK LAYER: Data Link Layer Design issues - Error Detection and Correction - Elementary Data Link Protocols - Sliding Window Protocols**.**

Extra Reading (Keywords): **Orthogonal frequency division multiplexing (OFDM) Technique**

UNIT IV **15 Hrs**

THE NETWORK LAYER: Network Layer Design Issues - Routing Algorithms - Congestion Control Algorithms. **THE TRANSPORT LAYER:** The Transport Service (Services Provided to the Upper Layers, Transport Service Primitives) – Elements of Transport Protocols.

Extra Reading (Keywords): Quality of Service (QoS)

UNIT V **15 Hrs**

THE APPLICATION LAYER: DNS - Domain Name System - Electronic Mail - The World Wide Web. **NETWORK SECURITY:** Cryptography - Symmetric Key Algorithms - Public Key Algorithms.

Extra Reading (Keywords): Communication Security and Web Security

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the fundamental knowledge in Network Hardware and Software; summarize OSI reference Model.	PSO 2	R, U
CO-2	Describe about the types of Transmission Media and understands the working of Public Switched Telephone Network and Mobile Telephone System.	PSO 2,6	R, An
CO-3	Relate and illustrate the techniques of Error Detection and Correction.	PSO 2	U, A
CO-4	Express the Elementary Data Link Protocols.	PSO 3	R
CO-5	Illustrate and analyse the Routing and Congestion Control Algorithms in Network Layer; explain the underlying protocol in Transport Layer.	PSO 4	R,An
CO-6	Identify the functionality of Application Layer services.	PSO 4	U
CO-7	Analyze and interpret the network security algorithms.	PSO 1,6	R, An
CO-8	Apply new concepts for the multiple choice test required for the employability of teaching profession	PSO 3	U, Ap

References

Text Book:

1. TanenbaumAndrew . S, Computer Networks, 2006, Fourth Edition, Prentice-Hall India of India Pvt. Ltd., New Delhi.

UNIT I **:** Chapter 1 (1.1, 1.2, 1.3, 1.4.1,1.4.2,1.4.3)
UNIT II **:** Chapter 2 (2.2, 2.3, 2.5(2.5.1, 2.5.4, 2.5.5))
UNIT III **:** Chapter 3 (3.1 - 3.4)
UNIT IV **:** Chapter 5 (5.1, 5.2(5.2.1-5.2.8), 5.3)
Chapter 6 (6.1.1, 6.1.2), 6.2),
UNIT V **:** Chapter 7 (7.1, 7.2, 7.3)
Chapter 8.1, 8.2, 8.3

Reference Books:

1. Black Uyless D., **"Data Communication and Distributed Networks"**, 2000, Prentice Hall of India Pvt. Ltd., New Delhi.
2. ForouzanBehrouz A., **"Local Area Networks"**, 2003, Tata McGraw Hill Publishing Limited, New Delhi.
3. GodboleAchyut S., **"Data Communication and Networks"**, 2002, Tata McGraw Hill Publishing Limited, New Delhi.
4. Mansfield Kenneth C., Antonakos James L., **"An Introduction to Computer Networking"**, 2002, Prentice Hall of India, New Delhi.
5. Tanenbaum Andrew S., **"Computer Networks"**, 2003, Pearson Education, Asia.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002 PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	Major Core 13– Internet of Things
Total Hours	75
Hours/Week	5 Hrs Wk
Code	U19CS6MCT13
Course Type	Theory
Credits	4
Marks	100

General Objective:

To understand the Fundamentals, Architecture and Protocols of Internet of Things and its application in various domain

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Understand the Internet of computer and Internet of things.
CO-2	Compare M2M and IoT communication.
CO-3	Understand and analyze the architecture in various IoT Layer
CO-4	Analyze various protocols and its usage in communication.
CO-5	Create Program to implement IoT applications

UNIT- I Introduction To IoT

15Hrs

Introduction to Internet of Things –Definition and Characteristics of IoT, Physical Design of IoT – IoT Protocols, IoT communication models, IoT Communication APIs, IoT enabled Technologies – Wireless Sensor Networks, Cloud Computing, Big data analytics, Communication protocols, Embedded Systems. Domain Specific IoTs – Home, City, Environment, Energy, Retail, Logistics, Agriculture, Industry, health and Lifestyle .

Extra Reading/Keywords: ***Bio sensors, Nano sensors***

UNIT- II IoT and M2M

15Hrs

IoT and M2M – Software defined networks, network function virtualization, difference between SDN and NFV for IoT -Basics of IoT System Management with NETCOZF, YANG-NETCONF, YANG, and SNMP NETOPEER

Extra Reading/Keywords: ***5G technology, Ambient intelligence***

UNIT- III IoT Architecture

15Hrs

Architecture Reference Model- Introduction-Reference model and architecture-IoT reference model-IoT Reference Architecture-Introduction-Functional View-Information view-Deployment and operational view-Other relevant architectural views

Extra Reading/Keywords: ***Security and Context Aware architecture***

UNIT-IV IoT Protocols 15Hrs

Protocol Standardization for IoT – M2M Area Network Physical layer:IEEE 802.15.4.– M2M Protocols for legacy Systems: BACNet Protocol – Modbus– Zigbee Architecture – IP based Protocol – 6LowPAN -RPL

Extra Reading/Keywords: ***Physical Web, mDNS***

UNIT-VBuildingIoTWithRaspberryPi & Arduino 15Hrs

Building IOT with RASPERRY PI- IoT Systems - Logical Design using Python – IoT Physical Devices & Endpoints - IoT Device -Building blocks -Raspberry Pi -Board - Linux on Raspberry Pi – Raspberry Pi Interfaces -Programming Raspberry Pi with Python - Other IoT Platforms - Arduino.

Extra Reading/Keywords: ***Simulator-Proteus***

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Recognize and describe the Internet of computer and Internet of Things	PSO 1	R, U
CO-2	Classify IoT architecture based on their applicability.	PSO 2	An
CO-3	Identify the different protocols used in different layer.	PSO 2	R
CO-4	Classify models in IoT Architecture	PSO 3	An
CO-5	Implement Python Program in Raspberry PI board using python.	PSO 4	Ap
CO-6	Express the IoT application in various real time problems	PSO 4	U

Text Books:

1. Arshdeep Bahga, Vijay Madisetti, “Internet of Things – A hands-on approach”, Universities Press, 2015.
   UNIT I: CHAPTER 1
   UNIT II: CHAPTER 5
   UNIT V: CHAPTER 6
2. Jan Holler, Vlasios Tsiatsis , Catherine Mulligan, Stamatis , Karnouskos, Stefan Avesand. David Boyle, "From Machine-to-Machine to the Internet of Things - Introduction to a New Age of Intelligence", Elsevier, 2014.
   UNIT III: CHAPTER 7,8
3. Olivier Hersent, David Boswarthick, Omar Elloumi , “The Internet of Things – Key applications and Protocols”, Wiley, 2012
   UNIT IV: CHAPTERS 1,3,5,7,12

Reference Books:

1. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), "Architecting the " Internet of Things", Springer, 2011.
2. Pethuru Raj and Anupama C. Raman, "The Internet of Things Enabling Technologies, Platforms and Use Cases", Taylor & Francis, CRC Press, 2017.
3. Honbo Zhou, "The Internet of Things in the Cloud: A Middleware Perspective", CRC Press, 2012.
4. Ovidiu Vermesan,Peter Friess, "Internet of Things-From Research and Innovation to Market deployment",Rivers publisher.
5. Adrian McEWen and Hakim Cassimally, "Designing the Internet of Things", John Wiely and Sons private Ltd, 2014.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	**Major Core 14 – Computer Graphics**
Total Hours	**75**
Hours/Week	**5 Hrs /Wk**
Code	**U18CS6MCT14**
Course Type	**Theory**
Credits	**4**
Marks	**100**

General Objectives:

To enable the students to impart knowledge about the concept of Computer Graphics.

Course Objectives:

The Learner will be able to

CO. No.	Course Objectives
CO-1	Remember various video display devices and input devices.
CO-2	Understand various line drawing and circle generating algorithms.
CO-3	Understand attributes of output primitives.
CO-4	Apply two dimensional geometric transformations.
CO-5	Understand three dimensional concepts and two dimensional viewing.

UNIT I **15Hrs**

OVERVIEW OF GRAPHICS SYSTEMS: Video display devices: Refresh cathode-ray tubes - Raster-Scan Displays - Random-Scan Displays - Color CRT Monitors - Direct-View Storage Tubes - Flat-Panel Displays - Three-Dimensional Viewing Devices - Stereoscopic and Virtual-Reality Systems - Raster-Scan Systems: Video Controller - Raster-Scan Display Processor - Random-Scan Systems - Graphics Monitors and Workstations - Input Devices: Keyboards-Mouse - Trackball and space ball - Joysticks - Data Glove - Digitizers - Image Scanners - Touch Panels - Light Pens - Voice Systems- Hard Copy Devices.

Extra Reading /Key words:*Smart Glasses, Microsoft Band*

UNIT II **15Hrs**

OUTPUT PRIMITIVES: Points and Lines - Line-Drawing Algorithms: DDA Algorithm-Bresenham's Line Algorithm - Loading the Frame Buffer - Line Function - Circle-Generating Algorithms: Properties of Circles - Midpoint Circle Algorithm - Curve Functions – Fill-Area Functions – Character Generation.

Extra Reading /Key words:*Rendering Algorithms, Ellipse generating Algorithm*

UNIT III **15Hrs**

ATTRIBUTES OF OUTPUT PRIMITIVES: Line Attributes: Line Type - Line width - Pen and Brush Options - Line color - Curve Attributes - Color and Grayscale Levels: Color Tables-

Grayscale - Area-Fill Attributes: Fill Styles - Pattern Fill - Soft Fill - Character Attributes: Text Attributes - Marker Attributes - Bundled Attributes: Bundled Line Attributes - Bundled Area-Fill Attributes - Bundled Text Attributes - Bundled Marker Attributes -Inquiry Functions.
Extra Reading /Key words:*Vertex Attributes-OpenGL, Drawing Primitives in OpenGL*

UNIT IV **15Hrs**

TWO - DIMENSIONAL GEOMETRIC TRANSFORMATIONS: Basic Transformations: Translation – Rotation -- scaling – Matrix Representations and Homogeneous Coordinates - Composite Transformations: Translations – Rotations -- Scaling. Other Transformations: Reflection -- Shear - Affine Transformations - Transformation functions - Raster Methods for transformations.
TWO – DIMENSIONAL VIEWING : Window to View port Coordinate Transformations - Clipping Operations - Point Clipping - Line Clipping: Cohen Sutherland Line Clipping – Polygon Clipping: Sutherland-Hodgeman Polygon Clipping.
Extra Reading /Key words:*LiangBarsky line clipping algorithm, Cyrus Beck Algorithm*

UNIT V: **15Hrs**

THREE DIMENSIONAL CONCEPTS: Three - Dimensional Display Methods: Parallel projection -- Perspective Projection -- Depth Cueing -- Visible Line and Surface – Identification -- Surface Rendering -- Exploded and Cutaway Views -- Three-dimensional and Stereoscopic views -- Three-Dimensional Graphics Packages.
TWO – DIMENSIONAL VIEWING : Viewing Coordinates : Specifying the View Plane-- Transformation from World to Viewing Coordinates -- Projections: Parallel projection -- Perspective Projection.
Extra Reading /Key words:*Polygon Meshes, Polygon Surfaces*

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Associate the computer graphics display technologies and various input devices.	PSO 4	U
CO-2	Illustrate line drawing and circle generating algorithms.	PSO 2	A
CO-3	Discuss various attributes of output primitives.	PSO 5	U
CO-4	Illustrate and relate 2D geometric transformations and clipping techniques.	PSO 2	A
CO-5	Explain the concepts of 3D.	PSO 3	R, U
CO-6	Explain the concepts of 2D Viewing.	PSO 3	R, U
CO-7	Recommendation of enriching Computer Graphics improves student quality in their employability	PSO 3	R, U, Ap

References

Text Books:

1. Donald Hearn &M.Pauline Baker 'COMPUTER GRAPHICS' , 2006,Prentice Hall of India, New Delhi.

Unit I : Chapter-2 (2.1-2.6)
Unit II : Chapter-3 (3.1-3.5,3.9,3.12,3.14)
Unit III : Chapter-4 (4.1- 4.7)
Unit IV : Chapters 5(5.1 - 5.8), 6(6.3, 6.5-6.7,6.8)
Unit V : Chapters 9(9.1 – 9.2), 12(12.2 - 12.3)

Reference Books:

1. AsthanaR.G.S , Sinha .N.K, **Computer Graphics**, 2002 , New Age International Publishers, New Delhi.

2. Foley, Van Dam, FeinerHugher, **Computer Graphics – Principles & Practice**, 2004, Pearson Education, New Delhi.

3. Krishnamurthy N., **Introduction to Computer Graphics**, 2002, Tata McGraw Hill Publishing Company Limited, New Delhi.

4. David Hillman, **Multimedia Technology and Applications** ,2003,Galgotia Publications Private Ltd, New Delhi.

5. Judith Jeffcoale, **Multimedia in Practice Technology and Applications** , 2003,Prentice Hall of India Private Ltd, New Delhi.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	Major Core 15: C# And .Net Programming Lab
Total Hours	60
Hours/Week	4 Hrs /Wk
Code	U19CS6MCP15
Course Type	Practical
Credits	4
Marks	100

General Objectives:

To obtain overall view of .NET technologies and its programming with C#

Course Objectives:

The Learner will be able to

CO NO.	COURSE OBJECTIVES
CO-1	understand and Getting started with .net, data types & variables, using the .net framework , branching & flow control
CO-2	understand Classes & objects, properties & methods, object oriented techniques etc
CO-3	Delegates & events, generics ,handling exceptions, collections classes
CO-4	Ability to implement complex information systems
CO-5	Ability to design and implement applications and distributed systems on the .NET platform
CO-6	Able to create simple web applications and window applications

EXERCISES

C#:

1. Simple Computations
2. Classes and methods
3. Constructors with parameters
4. Pass by values and pass by reference
5. Arrays
6. Structures
7. Enumerator
8. Jagged arrays
9. Method Overloading
10. Static Members
11. Operator Overloading
12. Inheritance
13. Virtual Methods

14. Abstract Class
15. Indexers
16. Delegates and Events
17. Interface
18. Exception Handling
19. Generic Method

.NET:

1. Windows Application with Database Connectivity using C# and ADO.NET
2. Web Application with Database Connectivity using C#, ASP.NET and ADO.NET
3. Using ILDASM.exe
4. Creating strong Assemblies

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	Major Elective 3: Introduction To Cloud Computing
Total Hours	60
Hours/Week	4 Hrs Wk
Code	U19CS6MET07
Course Type	Theory
Credits	4
Marks	100

General Objective:

To impart the Basic Concepts of Cloud Computing and understand the Technologies and Architectures of Cloud Computing.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Explain the fundamental of Cloud Computing concept and models.
CO-2	Describe the various basic concepts related to cloud computing Mechanisms
CO-3	Explain the architecture and concept of different cloud models: IaaS, PaaS, SaaS.
CO-4	Apply the application development and deployment models using cloud platforms.
CO-5	Analysis the Cloud security mechanisms and architectures

UNIT I

12Hrs

UNDERSTANDING CLOUD COMPUTING: Origins And Influences - Basic Concepts And Terminology - Goals And Benefits. **FUNDAMENTAL CONCEPTS AND MODELS:** Roles And Boundaries - Cloud Characteristics - Cloud Delivery Models - Cloud Deployment Models.

Extra Reading /Key words:*Cloud Enabling Technology.*

UNIT II

12Hrs

CLOUD COMPUTING MECHANISMS

CLOUD INFRASTRUCTURE MECHANISMS: Logical Network Perimeter – Virtual Server – Cloud Storage Device – Cloud Usage Monitor. **SPECIALIZED CLOUD MECHANISMS:** Automated Scaling Listener – Load Balancer – SLA Monitor – Pay-Per Use Monitor – Audit Monitor – Failover System .

Extra Reading /Key words:*MultiDevice Broker*

UNIT III

12Hrs

CLOUD COMPUTING ARCHITECTURES

FUNDAMENTAL CLOUD ARCHITECTURES: Workload Distribution Architecture – Resource Pooling Architecture – Dynamic Scalability Architecture – Elastic Resource Capacity Architecture – Service Load Balancing Architecture – Cloud Bursting Architecture – Elastic Disk Provisioning Architecture. **ADVANCED CLOUD ARCHITECTURES:** Hypervisor Clustering Architecture – Load Balanced Virtual Server Instances Architecture – Cloud Balancing Architecture.

Extra Reading /Key words: *cloud virtualization.*

UNIT IV

12Hrs

WORKING WITH CLOUDS

CLOUD PROVIDER PERSPECTIVE OF CLOUD DELIVERY MODELS: Building Iaas Environments – Equipping Paas Environments – Optimizing Saas Environments. **CLOUD**

CONSUMER PERSPECTIVE OF CLOUD DELIVERY MODELS: Working With Iaas Environments – Working WithPaas Environments – Working With Saas Services.

Extra Reading /Key words: *Cost Metrics and Pricing Models*

UNIT V

12Hrs

CLOUD SECURITY:

Basic Terms And Concepts-Threat Agents - Cloud Security Threats.

CLOUD SECURITY MECHANISMS: Encryption -Hashing- Digital Signature – Public Key Infrastructure-Identity And Access Management – Single Sign On – Cloud Based Security Groups – Hardened Virtual Server Images.

Extra Reading /Key words: *Security Policy Disparity.*

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Discuss the various basic concepts related to cloud computing technologies	PSO 5	E, U
CO-2	Know and explain the Infrastructure oriented mechanisms.	PSO 2	U
CO-3	Explain the fundamental cloud architectures	PSO 2	U
CO-4	Explain the architecture and concept of different cloud models: IaaS, PaaS, SaaS	PSO 1	An
CO-5	Explain major security and privacy problems in the cloud and how they are addressed with the security mechanisms.	PSO 5	An
CO-6	Formulate a plan to modify and design cloud computing architecture	PSO 2	U, Ap

References:

Text Book

1. Thomas Erl, Zaigham Mahmood, and Ricardo Puttini, "Cloud Computing : Concepts, Technology and Architecture", Prentice Hall, U.S.A., 2013.

UNIT I: Chapters 3,4& 5
UNIT II : Chapters 7 & 8
UNIT III : Chapters 11(11.1-11.8) & 12 (12.1,12.2,12.5)
UNIT IV: Chapters 14& 15
UNIT V: Chapters 6 (6.1-6.3) & 10

Books For Reference

1. George Reese, “Cloud Application Architectures”, Shroffo’reilly, Isbn: 8184047142, 2009.
2. Michael Miller, “ Cloud Computing Web Based Applications That Change The Way You Work And Collaborate Online”, Pearson Education, 2009.
3. Kris Jamsa, “Cloud Computing”, Jones and Bartlett Learning, 2013.
4. Swarup K. Das, “Cloud Computing”,Dominant Publishers, 2015.
5. PrasantaPattnaik, ManasKabat,”Fundamentals of Cloud Computing”, S.Chand (G/L) & Company Ltd; First edition (2014).

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	**Major Elective-3 : Pervasive Computing**
Total Hours	**60**
Hours/Week	**4 Hrs Wk**
Code	**U19CS6MET08**
Course Type	**Theory**
Credits	**4**
Marks	**100**

General Objectives:

To understand basic concepts of pervasive computing technology.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Remember the basic concepts in pervasive computing.
CO-2	Analyze the different device technologies.
CO-3	Understand the various device connectivities.
CO-4	Remember the basic concepts of WAP.
CO-5	Remember the basic concepts of PDA.

UNIT I **12Hrs**

Pervasive Computing: Past, Present and Future Pervasive Computing-Pervasive Computing Market-m-Business-Application examples: Retail, Airline check-in and booking-Sales force automation-Health care-Tracking-Car information system-E-mail access via WAP.

Extra Reading /Keywords: *Ubiquitous computing*

UNIT II **12Hrs**

Device Technology: Hardware-Human Machine Interfaces-Biometrics-Operating Systems-Java for Pervasive devices.

Extra Reading /Keywords: *Behavioural Biometric*

UNIT III **12Hrs**

Device Connectivity: Protocols-Security-Device Management Web Application Concepts: WWW architecture-Protocols-Transcoding-Client authentication via internet.

Extra Reading /Keywords: *Rendering*

UNIT IV **12Hrs**

WAP and Beyond: Components of the WAP architecture-WAP infrastructure WAP security issues-

WML-WAP push-Products-i-Mode-Voice Technology: Basics of Speech recognition- Voice Standards-Speech applications-Speech and Pervasive Computing

Extra Reading /Keywords: *Speech recognition technology in Ubiquitous computing*

UNIT V **12Hrs**

PDA: Device Categories-PDA operation Systems-Device Characteristics Software Components-Standards-Mobile Applications-PDA Browsers Pervasive Web Application architecture:

Background-Scalability and availability Development of Pervasive Computing web applications-Pervasive application architecture.

Extra Reading /Keywords: *Smartphone operating system*

Course Outcomes:

The Learner will be able to

CO No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Describe the Fundamentals of Pervasive Computing	PSO 1, PSO 2	U
CO-2	Discuss the Device Technology	PSO 2, PSO 4	An
CO-3	Explain the Different Protocols	PSO 2	U
CO-4	Illustrate Wireless Application Protocol	PSO 5	An
CO-5	Discuss Architecture of Pervasive Computing	PSO 1	Ap
CO-6	Discuss WAP Architecture	PSO 2, PSO 3	U

References

Text Books

1. Jochen Burkhardt, Horst Henn, Stefan Hepper, Thomas Schaech & Klaus Rindtorff,"Pervasive Computing, Technology and Architecture of Mobile Internet Applications", Pearson Education, 2006

Reference Books:

1. Fundamentals of Mobile and Pervasive Computing, Frank Adelstein, Sandeep KS Gupta, Golden Richard III, Loren Schwiebert, McGraw Hill edition, 2006

2. "Pervasive Computing" by BURKHARDT.

3. "Mobile and Pervasive Computing" by V Jeyasri Arokiamary.

4. "Networking Infrastructure for Pervasive Computing: Enabling Technologies and Systems" by Debashis Saha and Amitava Mukherjee.

5. "Pervasive Computing: The Mobile World (Springer Professional Computing)" by Uwe Hansmann and Lothar Merk.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	Major Elective-3 : Cyber Security
Total Hours	60
Hours/Week	4 Hrs Wk
Code	U19CS6MET09
Course Type	Theory
Credits	4
Marks	100

General Objectives:

To Understand the essentials of information security and Learn the algorithms for implementing security.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Remember and understand the fundamentals of security algorithm.
CO-2	Analyze the various symmetric key and public key algorithms.
CO-3	Understand the techniques to secure data in Hash algorithms.
CO-4	Remember the security algorithm in various layers.
CO-5	Analyze the various attacks in networks.

UNIT - I **12Hrs**

SECURITY FUNDAMENTALS

Introduction, Terminology, Attacks, Security Goals : Authentication, Authorization, Cipher Techniques: Substitution and Transposition, One Time Pad, Modular Arithmetic, GCD, Euclid's Algorithms, Chinese Remainder Theorem, Discrete Logarithm, Fermat Theorem, Block Ciphers, Stream Ciphers. Secret Splitting and Sharing.

Extra Reading /Keywords: *Cryptanalysis*

UNIT - II **12Hrs**

CRYPTOGRAPHY

Symmetric Key Algorithms: DES, AES, BLOWFISH, Attacks on DES, Modes of Operations, Linear Cryptanalysis and Differential Cryptanalysis, Public Key Algorithms: RSA, Key Generation and Usage.

Extra Reading /Keywords: *digital signatures*

UNIT - III **12Hrs**

MESSAGE DIGEST AND KEY MANAGEMENT

Hash Algorithms: SHA-1, MD5, Key Management: Introduction, Key Management: Generations, Distribution, Updation, Digital Certificate, Digital Signature, PKI. Diffie-Hellman Key Exchange. One Way Authentication, Mutual Authentication, Kerberos 5.0.

Extra Reading /Keywords: *lattice techniques*

UNIT IV **12Hrs**

NETWORK SECURITY

Layer Wise Security Concerns, IPSEC- Introduction, AH and ESP, Tunnel Mode, Transport Mode,
Security Associations, SSL- Introduction, Handshake Protocol, Record Layer Protocol.
IKE- Internet Key Exchange Protocol. Intrusion Detection Systems: Introduction, Anomaly Based, Signature Based, Host Based, Network Based Systems.

Extra Reading /Keywords: *Known Cipher text Attack*

UNIT - V **12Hrs**

INTRODUCTION TO CYBER SECURITY

Introduction, Definition and origin, Cybercrime and Information security, Classification of Cybercrimes, The legal perspectives- Indian perspective ,Global perspective, Categories of Cybercrime, Types of Attacks, a Social Engineering, Cyber stalking, Cloud Computing and Cybercrime

Extra Reading /Keywords: *Steganography*

Course Outcomes:

The Learner will be able to

CO. No.	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Explain the Terminology, Techniques and Algorithms in security.	PSO 1, PSO 2	U
CO-2	Analyze the techniques of Symmetric Key Algorithms and Public Key Algorithms	PSO 2	An
CO-3	Investigate the message digest and key management.	PSO 3	U
CO-4	Explore the IPSEC,AH and ESP and IKE.	PSO 5	An
CO-5	Categorize the various cyber security.	PSO 1,PSO 2	Ap
CO-6	Describe the type of attacks and recovery methods.	PSO 2, PSO 3	U
CO-7	Gain knowledge about information security and algorithms for implementing security.	PSO1	R,U

References

Text Books

1. BruiceSchneier, “Applied Cryptography- Protocols, Algorithms and Source code in C”, 2nd Edition, Wiely India Pvt Ltd, ISBN 978-81-265-1368-0
2. Nina Godbole, SunitBelapure, “Cyber Security- Understanding Cyber Crimes, Computer Forensics and Legal Perspectives”, Wiely India Pvt.Ltd.,ISBN- 978-81-265-2179-1
3. Bernard Menezes, “Network Security and Cryptography”, Cengage Learning, ISBN-978-81-315- 1349-1

Reference Books:

1. Nina Godbole, “ Information Systems Security”, Wiley India Pvt. Ltd
2. Willaim Stallings, “Computer Security: Principles and Practices”, Pearson Ed.
3. Mark Merkow, “ Information Security-Principles and Practices”, Pearson Ed
4. CK Shyamala et el., “Cryptography and Security”, Wiley India Pvt. Ltd,
5. Berouz Forouzan, “Cryptography and Network Security”, 2 edition, TMH,

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	Non Major Elective 2:Animation Lab
Total Hours	30
Hours/Week	2 Hrs Wk
Code	U18CS6NMP02
Course Type	Practical
Credits	2
Marks	100

General Objectives:

To learn how to creating animations, using special effects, drawing objects, incorporating sound and video, and using Action Script

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Design, create, edit, and manipulate animation application using tools and techniques.
CO-2	Demonstrate the ability to effectively utilize the timeline and motion tween effects to produceseveral animation application.
CO-3	Understand, create, and edit symbols, filters and button types.
CO-4	Create manipulate, and edit text and graphics to obtain desired action script.
CO-5	Creating and Editing Text and Using Sounds
CO-6	Integrate the new technologies, animations and graphics in games, movies and mobile applications

EXERCISES

1. Animation Using Motion Tween.
2. Animation Using Shape Tween.
3. Animation Using Guide Layer.
4. Animation of Text in Multiple Layers.
5. Masking the Text by an Object.
6. Animation Using images and its effects.
7. Masking Two Images.
8. Text Morphing.
9. Importing sound
10. Animation Using Movie clip objects.
11. Create an e-Invitation for College Day with audio note.
12. Create 30 seconds multi-media profile about your College.
13. Animate a 5 yr child walking on the street.
14. Animate the same child stopping when a vehicle crosses.
15. Generate a new comic character and give a name to it.
16. Create a video-resume about yourself.

(For Candidates admitted from June 2019 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 620 002

PG DEPARTMENT OF COMPUTER SCIENCE

B.Sc. Computer Science - Third Year - Semester – VI

Course Title	Skill Based Elective 5: Python Programming Lab
Total Hours	30
Hours/Week	2 Hrs Wk
Code	U19CS6SBP05
Course Type	Practical
Credits	2
Marks	100

General Objectives:

To learn use the basic tools found in Adobe Photoshop to create and edit images.

Course Objectives:

The Learner will be able to

CO No.	Course Objectives
CO-1	Describe the Strings, List, Tuples and Dictionaries in Python.
CO-2	Demonstrate thepowerof Numbers, Math functions in python.
CO-3	Develop linked data structures such as linear and binary search.
CO-4	Demonstrate the techniques for command line arguments.
CO-5	Create elliptical orbits and bouncing ball in Pygame .
CO-6	Experiment Python scripting language to develop innovative real time applications.

EXERCISES

1. Compute the GCD of two numbers.
2. Find the square root of a number (Newton's method)
3. Exponentiation (power of a number)
4. Find the maximum of a list of numbers
5. Linear search and Binary search
6. Selection sort, Insertion sort
7. Merge sort
8. First n prime numbers
9. Multiply matrices
10. Programs that take command line arguments (word count)
11. Find the most frequent words in a text read from a file
12. Simulate elliptical orbits in Pygame
13. Simulate bouncing ball using Pygame.

HOLY CROSS COLLEGE (AUTONOMOUS), TRICHIRAPPALLI -2
DEPARTMENT OF COMPUTER SCIENCE
III B.C.A/B.A/B.Sc/B.Com/BBA/B.R.Sc
SEMESTERVI
SKILL BASED ELECTIVE 6
RESEARCH METHODOLOGY

CODE: U15DS6SBT06 **HOURS/WEEK : 2**
CREDITS:2

Course objectives:

To help the students develop research skills

To expose the students to the concept of research and to implement a research project.

Unit 1: Introduction to Research

Definition, type, nature and scope of research – Research design

Unit 2: Data Collection

Types-Primary and secondary data-Data processing-Hypothesis testing

Unit 3: Plan and Execution

Methodology –Plan and execution-Analysis –Documentation

Unit 4: Format and Presentation of Project Report

Art of writing and Structure of a Project Report-Viva-Voce

Unit 5: Project

Project work

Books for reference:

1. Kothari C.R., Research Methodology. New Delhi: New Age International
(P) Ltd Publishers,2009.Reprint
2. Rahim F.A Thesis Writing: A manual for researchers.
New Delhi:
New Age International Publishers, 1998. Print.
3. Gopalana. Thesis Writing. Chennai: Vijay Nicole, 2005.Print.Oliver, Paul, Writing Your Thesis. New Delhi: Sage Publication, 2008. Print.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A. /B.Sc. / B.Com. / BBA/ B.C.A. DEGREE
COURSE LIFE ORIENTED
EDUCATION
ETHICS – III: FAMILY AND CAREER DEVELOPMENT

HRS / WK : 1 **CODE: U15VE6LVE03**
CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To help the students acquire skills, knowledge and talents to lead a meaningful life.
- To make the students learn skills of nurturing family and children.
- To make the students aware of emotional intelligence and choose their career.

UNIT – I: PERSONAL COMPETENCE

Emotional Intelligence for Professional growth, Management Vs Leadership- Management and Leadership Skills - Conflict Management - Tips for Professional growth

UNIT – II: MARRIAGE AND FAMILY

Family Vision - Family Values, Family relationship, Family Management, Sex in Marriage, Emotional Balance and Imbalance, Compatibility between Husband and Wife

UNIT – III: PARENTHOOD

Bringing up Children - Development stages (Eric Ericson model), Spirituality: Spirituality in Family - Prayer, God‟s Will , Role of Mother

UNIT – IV: PERSONALITY DEVELOPMENT

Self Analysis; interpersonal relation, introspection – Character formation towards positive personality- Values, self and college motto, punctuality, good moral, poverty, honesty, politeness, humanity, gentleness, friendship, fellowship and patriotism

UNIT – V: CAREER CHOICE

Career Choice according to Personality, Preparation for Competitive Exams, Sources of Knowledge, Memory Techniques, Mind Mapping

REFERENCES:

1. Tony B and Barry Buzan(2003), The mind map book, BBC world wide limited, London.
2. Susan Nash(2005), Turning team performance inside out, Jai CO. publishing House, New Delhi.
3. Fr. Ignacimuthu (1999) “Values for Life”, Vaigarai Pathipagam.
4. Grose. D.N. (2000), “A text book on Value Education”, Dominant Publishers.

HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.SC/B.COM/ B.C.A – DEGREE
COURSES LIFE ORIENTED EDUCATION
BIBLE STUDIES – III: ESSENCE OF CHRISTIAN LIVING

HRS / WK : 1 **CODE: U15VE6LVBO3**

CREDIT : 1 **MARKS : 100**

OBJECTIVE:

- To prepare the students to practice Christian principles in family, church and society as young women

UNIT – I: ESSENTIALS OF CHRISTIAN FAITH

- Salvation – Deliverance from sin (Is 53),Assurance of salvation and New life (II Cor 5:17)
- Sacraments – Baptism (Luke 3: 6-14), Lord‟s Supper (I Cor 10: 16,17; 11: 23-29)
- Trinity – One in three and three in one. Illustrations from the Bible. (John 14: 16,17)
- Heaven and Eternal life (John 14: 13, 3: 13-21)

UNIT – II: MARRIAGE AND FAMILY LIFE

- Finding the God‟s Will - Issac (Gen 24)
- Man and woman as Partners – Abraham and Sarah (Gen 16-18,22), Aquila and Priscilla (Acts 18: 1-3,26)
- Evils to be avoided – Premarital Sex, Extramarital Sex, Homosexuality, Abortion(Heb 13: 4, Psalm 127 : 4)
- Ideal Wife – Sarah (I Peter 3: 1-6), Ruth,(Eph 5)

UNIT – III: CHRISTIAN HOME

- Parental Responsibilities and bringing up children – Abraham (Gen 22), Eli (I Sam 2: 24-36,3: 11- 18), Mary, Mother of Jesus (Luke 2: 51,52)
- Caring for the Aged (I Sam 2: 31,32)

UNIT – IV: CHRISTIAN ETHICS

- Holiness – Joseph (Gen 39:9) Levi 11: 45, Ecc 12
- Obedience to God - Abraham (Gen 12) ; St.Paul (Acts 9)
- Freedom and Accountability
- Justice and Love
- Choices in Life – Making Decisions (Studies, job, life Partner)
- Model to follow – Who is your model? (John 15: 1-17)
- Social Evils – Dowry, Caste discrimination, Accumulation of wealth

UNIT – V: MISSIONARIES DOWN THE LANE

- William Carrie (Calcutta)
- Pandithar Rama Bai (Karnataka)
- Amy Carcheal (Dohnavur)
- Dr. Ida Scuddar (Vellore)
- Devasagayam (Nagercoil)
- St. John De Britto (Oriyur)
- Graham Staines & Family (Odisha)
- St. Mother Teresa (Calcutta)

REFERENCES:

1. Alban Douglass (1982) One Hundred Bible Lessons. Gospel Literature Service, Mumbai.
2. Derek Prince (1993) Foundations for Righteous Living. Derek Prince Ministries-South Pacific, New Zealand.
3. Derek Prince and Ruth Prince (1986) God is a Match maker. Derek Ministries, India.
4. Ron Rhodes(2005) Hand book on Cults. Amazon.com
5. Stanley.R. (1997) With God Again. Blessing Youth Mission, India.
6. Taylor.H. (1993) Tend My Sheep. SPCK, London.

(For Candidates admitted from June 2015 onwards)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2

B.A./B.Sc/B.Com/BBA/B.C.A -

DEGREE COURSES

LIFE ORIENTED

EDUCATION

CATECHISM – III: LITURGY AND CHRISTIAN LIFE

HRS / WK : 1 **CODE:U15VE6LVC03**

CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To prepare the students to participate meaningfully in the liturgical celebration and experience GOD in their day today life.
- To enable the students to become living witnesses to Jesus Christ in their personal, family and social life.

UNIT – I: LITURGY

Personal prayer (Know oneself) – Vocal prayer – Community prayer – Meditation – Contemplation – Knowing the prayers : Our Father – Hail Mary – Holy Rosary – Mysteries of the Rosary- Litany of Mary – Family prayer-Popular devotion

UNIT – II: HOLY SACRIFICE OF THE MASS

Significance – Meaning and need for spiritual growth – Mass prayers – Part of the mass – Liturgical year, its division and its significance. – The Creed – Act of contrition – Discernment of spirits – Counseling – Spiritual direction.

UNIT – III: CHRISTIAN VOCATION AS DISCIPLE FOR THE KINGDOM OF GOD

Who am I as a Christian? – Christian dignity and others – The values of the Kingdom opposing to the values of the World – Christian social conscience – Christian in the reformation of the world – A call to be salt and light in today‟s context.

UNIT – IV: CHRISTIAN FAMILY

Holy Family- Characteristic of good family – Bible centered, Prayer centered, Christian centered– Responsibilities of parents and children in the family –Laws of the Church towards marriage-Pro life (Abortion, Euthanasia) – Lay Vocation – Lay Participation – Lay associates.

UNIT – V: CONSECRATED LIFE

“Come and follow me” – special disciples - Religious vocation – “I have called you to be mine”- Role of Nuns and Priest - called to be prophets and agents for God‟s Kingdom – nucleus of the church – Eschatological signs of the God‟s Kingdom.

REFERENCES:

1. Compendium – Catechism of the Catholic Church Published by Vaigarai Publishing House for the Catholic Church of India.
2. You are the light of the World, A course on Christian living for II year Religion published by Department of Foundation Courses, St.Joseph‟s College (Autonomous), Tiruchirappalli– 620 002.
3. Documents of Vatican II – St. Paul‟s Publications, Bombay 1966.