

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF MATHEMATICS
CHOICE BASED CREDIT SYSTEM
UG COURSE PATTERN
B.Sc.MATHEMATICS
(FOR STUDENTS ADMITTED FROM THE YEAR 2014-2015 ONWARDS)

Sem	Part	Component	Title of the course	Code	Hrs/ Week	Credits	Marks
I	I	Language	Tamil Paper I/ Hindi Paper I/ French Paper I	U12TL1TAM01/ U14HN1HIN01/ U13FR1FRE01	6	3	100
	II	English	English Paper I	U10EL1GEN01	6	3	100
	III	Major Core – 1	Calculus and Fourier Series	U08MA1MCT01	7	5	100
		Allied – 1 (Compulsory)	Mathematical Statistics-I	U10MA1ACT01	4	4	100
		Allied – 2 (Compulsory)	Mathematical Statistics-II	U10MA1ACT06	4	3	100
	IV	Environmental Studies	Environmental Studies	U14RE1EST01	2	2	100
Value Education		Ethics /Bible Studies/ Catechism	U12VE2LVE01/ U12VE2LVB01/ U12VE2LVC01	1	--	--	
TOTAL					30	20	600
II	I	Language	Tamil Paper II/ Hindi Paper II/ French Paper II	U12TL2TAM02/ U14HN2HIN02/ U13FR2FRE02	5	3	100
	II	English	English Paper II	U10EL2GEN02	6	3	100
	III	Major Core – 2	Classical Algebra and Trigonometry	U08MA2MCT02	5	4	100
		Major Core – 3	Analytical Geometry of Three Dimensions and Vector Calculus	U08MA2MCT03	5	5	100
		Allied – 3 (Compulsory)	Mathematical Statistics –III	U10MA2ACT08	4	3	100
	IV	Skill Based Elective -1	Soft Skill Development	U14RE2SBT01	2	2	100
		Skill Based Elective - 2	Rural Enrichment and Sustainable Development	U08RE2SBT02	2	2	100
		Value Education	Ethics I /Bible Studies I/ Catechism I	U12VE2LVE01/ U12VE2LVB01 / U12VE2LVC01	1	1	100
	TOTAL					30	23

III	I	Language	Tamil Paper III/ Hindi Paper III/ French Paper III	U12TL3TAM03/ U14HN3HIN03 / U14FR3FRE03	6	3	100
	II	English	English Paper III	U10EL3GEN03	6	3	100
	III	Major core - 4	Sequences and series	U12MA3MCT04	5	5	100
		Major core - 5	Statics	U08MA3MCT05	5	5	100
		Allied – 4 (Optional)	Computer Fundamentals and PC Softwares	U11MA3AOT22	4	3	100
	IV	Skill Based Elective - 3	Aptitude Mathematics	U08MA3SBT03	2	2	100
		Gender Studies	Gender Studies	U12WS3GST01	1	1	100
Value Education		Ethics /Bible Studies / Catechism	U12VE4LVE02/ U12VE4LVB02/ U12VE4LVC02	1	-	100	
TOTAL					30	22	700
IV	I	Language	Tamil Paper IV/ Hindi Paper IV/ French Paper IV	U12TL4TAM04/ U14HN4HIN04 / U14FR4FRE04	5	3	100
	II	English	English Paper IV	U13EL4GEN04	6	3	100
	III	Major core – 6	Algebra	U08MA4MCT06	5	5	100
		Major Elective – 1	Numerical Methods / Combinatorics / Mathematical Modelling	U08MA4MET01/ U13MA4MET04/ U13MA4MET05	5	5	100
		Allied - 5 (Optional)	Formal Languages and Automata Theory	U11MA4AOT24	4	4	100
		Allied – 6 (Optional)	Internet and Web designing	U11MA4AOT26	4	3	100
	IV	Value Education	Ethics II/Bible Studies II/ Catechism II	U12VE4LVE02/ U12VE4LVB02 / U12VE4LVC02	1	1	100
TOTAL					30	24	700
V	III	Major core – 7	Real Analysis	U08MA5MCT07	5	4	100
		Major core – 8	Differential equations and Laplace transforms	U08MA5MCT08	5	4	100
		Major core – 9	Graph theory	U08MA5MCT10	5	4	100
		Major core – 10	Optimization Techniques- I	U08MA5MCT12	5	4	100
		Major elective - 2	C Programming and its application to Numerical Methods / Astronomy	U08MA5MET02 / U13MA5MET06	5	5	100
	IV	Non Major Elective - 1	Quick Mathematics	U08MA5NMT01	2	2	100
		Skill Based Elective -4	Programming Skills	U08MA5SBT04	2	2	100

		Value education	Ethics /Bible Studies / Catechism	U13VE6LVE03/ U12VE6LVB03/ U12VE6LVC03	1	--	--
TOTAL					30	25	700
VI	III	Major core – 11	Theory of Functions of a Complex Variable.	U08MA6MCT14	6	5	100
		Major core – 12	Optimization Techniques – II	U08MA6MCT15	6	5	100
		Major core – 13	Introduction to Fuzzy Mathematics	U08MA6MCT17	6	5	100
		Major Elective 3	Dynamics / Number Theory	U08MA6MET03/ U13MA6MET07	5	5	100
	IV	Non Major Elective – 2	Art of Programming	U08MA6NMT02	2	2	100
		Skill Based Elective – 5	Application of Algorithms	U08MA6SBT05	2	2	100
		Skill Based Elective - 6	Research Methodology	U13DS6SBT06	2	2	100
		Value Education	Ethics III /Bible Studies III / Catechism III	U13VE6LVE03/ U12VE6LVB03/ U12VE6LVC03	1	-	-
	IV	Extension Activity	RESCAPES -Impact study of project	U08RE6ETF01	-	1	100
TOTAL					30	27	800
GRAND TOTAL					180	140+1	4300

**List of Allied Courses
Offered by the Department to other students**

Sem	Part	Course	Title	Code	Hours	Credits	Marks
I	III	Allied 1	Allied Mathematics–I (for Physics students)	U10MA1ACT02	4	4	100
I	III	Allied 1	Business Mathematics (for Commerce students)	U08MA1ACT03	4	4	100
I	III	Allied 1	Business Mathematics and Statistics (for Commerce- Computer Application students)	U08MA1ACT04	4	4	100
I	III	Allied 2	Applied Mathematics –I (for B.C.A and Computer Science students)	U08MA1ACT05	4	3	100
I	III	Allied 2	Allied Mathematics –II (for Physics students)	U10MA1ACT07	4	3	100
II	III	Allied 3	Allied Mathematics –III (for Physics students)	U10MA2ACT09	4	3	100
II	III	Allied 3	Business Statistics (for Commerce students)	U08MA2ACT10	4	3	100
II	III	Allied 3	Applied Mathematics –II (for B.C.A and Computer Science students)	U08MA2ACT11	4	3	100
III	III	Allied 4	Applied Mathematics –III (for B.C.A and Computer Science students)	U11MA3AOT13	4	3	100
III	III	Allied 4	Calculus and Trigonometry (For Chemistry students)	U11MA3AOT14	4	3	100
III	III	Allied 4	Mathematics for Competitive Examinations (For Commerce students)	U11MA3AOT21	4	3	100
IV	III	Allied 5	Analytical Geometry of Three Dimensions, Vector Calculus and Laplace Transforms (For Chemistry students)	U11MA4AOT19	4	4	100
IV	III	Allied 5	Decision Making Techniques (For Commerce students)	U11MA4AOT23	4	4	100
IV	III	Allied 6	Numerical and Statistical Methods(For Chemistry students)	U11MA4AOT25	4	3	100

IV	III	Allied 6	Numerical Methods and Testing Hypothesis (For Commerce students)	U11MA4AOT27	4	3	100
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HOLY CROSS COLLEGE (Autonomous), Tiruchirappalli - 620 002.

TAMIL DEPARTMENT

BA/ B.SC/ B.COM DEGREE

Part - I : Language: Tamil Paper - 1

Total Hours : 90

Code : U12TL1TAM01

Hrs : 6Hrs /Wk

Marks : 100

Credit : 3

நோக்கங்கள்:

1. தாய்மொழியை வலுவோடும், பொலிவோடும் கையாளும் வழி முறைகளைக் கண்டறியச் செய்தல்.
2. தமிழ் இலக்கியப் பரப்பையும், பாரம்பரியத்தையும் அறிமுகப்படுத்துதல்.
3. படைப்பாற்றலை வளர்த்துக் கொள்ள ஊக்கம் அளித்தல்.
4. உயர்ந்த பண்பாடுகளின் அடிப்படையில் வாழ்க்கையை அமைத்துக் கொள்ளும் உள்ளார்ந்த விருப்பத்தைத் தோற்றுவித்தல்.
5. மனித உரிமைகளை வலியுறுத்தி மனித நேயத்தை வளர்த்தல்.
6. நாம் வாழும் நாட்டையும், உலகையும் பற்றிய விழிப்புணர்வை ஊட்டி சமய நல்லிணக்கத்தையும், சமூக நல்லுறவையும் பேணிக்காக்கத் துணைப்பிரிதல்.
7. ஆரோக்கியமான சிந்தனைகள் வளர ஆக்கம் அளித்தல்.

பயன்கள்:

1. தற்காலத் தமிழ் இலக்கிய வரலாற்றை வளர்க்க வழிகாட்டல்.
2. மாணவர்களின் தன்னம்பிக்கையை வளர்த்தல்
3. வாழ்வியல் நெறிகளை உணர்த்தல்.
4. பிழையின்றி எழுத பேச பயிற்சி அளித்தல்.

பாடத்திட்டம்

அலகு:1 செய்யுள்

மொழி

கல்வி

வீரம்

அலகு:2 செய்யுள்

அறம்

வாழ்க்கை

அலகு:3

தமிழ் இலக்கிய வரலாறு

20-ஆம் நூற்றாண்டு (தற்காலம்)

தமிழாய்வுத்துறை வெளியீடு

அலகு:4

படைப்பிலக்கியம் - சிறுகதைத் தொகுப்பு

அலகு:5

பொதுப்பகுதி - கலைச்சொற்கள்

தமிழாய்வுத்துறை வெளியீடு

பாட நூல்கள்

செய்யுள்	- தமிழாய்வுத்துறை வெளியீடு
தமிழ் இலக்கிய வரலாறு	- தமிழாய்வுத்துறை வெளியீடு
சிறுகதைத் தொகுப்பு	- தமிழாய்வுத்துறை வெளியீடு
கலைச்சொற்கள்	- தமிழாய்வுத்துறை வெளியீடு

(for the candidates admitted from June 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
PART – I LANGUAGE HINDI FOR B.A, B.Sc & B.Com
HINDI PAPER-I SHORT STORY, PROSE,
GRAMMAR SEMESTER – I

HRS/WEEK:6
CREDITS:3

CODE:U14HN1HIN01
MARKS :100

UNIT – I :Purasakar, Sukamaya Jeevan, Ganga Singh, Machuye Ki Beti,
Maharaj Ka Ilaj

UNIT-II : Maatru vandana, Chandini, Thitalii, Divali, Seekho.

UNIT- III :Sadak Ke Niyam, Bhagavan mahaveer, Prithvi Ka swarga, Mahan
ganithagya Ramanujam, Birbal Ki Chaturaye.

UNIT- IV :General Grammar
(Sanghya, Visheshan, ling, Vachan, Kriyavisheshan)

UNIT-V : Anuvad Abhyas –II

Books Prescribed :

- | | |
|---|--|
| <input type="checkbox"/> GalpaSanchayan | - D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> Naveen Hindi Patamala–I | - D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> Naveen Hindi Patamala–II | - D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> SugamHindiVyakaran | - D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> Anuvad Abhyas– II | - D.B.H.P. Sabha Publishers,Chennai-17 |

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2
DEPARTMENT OF FRENCH
SEMESTER I
PART I – LANGUAGE - FRENCH PAPER I [GRAMMAR & CIVILISATION
(ÉCHO A1 2^e édition)]
(For candidates admitted 2013 onwards)

HRS/WEEK :6

CODE : U13FR1FRE01

CREDIT:3

MARKS :100

Unit 1 Parcours d’initiation ; Vous comprenez

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.

Unit 2 Au travail!

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

Unit 3 On se détend!

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

Unit 4 Racontez-moi ! ; Bon voyage !

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

Unit 5 Bon appétit!

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.

TEXT BOOKS :

ECHO A1 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D’APPRENTISSAGE

Authors: J. Girardet and J. Pécheur

Publication: CLÉ INTERNATIONAL, 2012.

(for candidates admitted from 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2014 - 2015

I B.A., B.Sc., B.Com., B.R.Sc., B.C.A., B.B.A., SEMESTER I
PART II - ENGLISH 1 - GENERAL ENGLISH PAPER I

NO.OF HRS/WK:6

CODE:U10EL1GEN01

NO.OF CREDITS: 3

OBJECTIVES

To develop in the students LSRW Skills at the foundation basic level

To focus on Oral Communication Skills through several Spoken English tasks given individually and in groups.

To encourage students to read and appreciate biographies/passages/fables/folk tales

To develop sub skills including comprehension, vocabulary, grammar, spelling, punctuation and reference skills.

UNIT I: Speak Better I

Tasks 1 - 30

UNIT II: Speak Better II

Generation of Alternatives

Viewpoints

Challenging Assumptions

Redesigning

Dominant Ideas and Crucial Factors

UNIT III : Read and Communicate I : a) Fables and Folk Tales

The Crow and the Kavun

The Parakeet and the Clay Pot

UNIT IV: Read and Communicate I: b) Fables and Folk Tales

How the Ministers Laid Eggs

How Andare Ate Curd at the Palace

UNIT V: Read and Communicate II : Biographies

MahatmaGandhi

AbrahamLincoln

PRESCRIBED TEXT

Oranee Jansz : *EXPLORATIONS A Course in reading, thinking and communication skills:*
Foundation Books. Print.

LIST OF GENERAL TOPICS:

1. Knowledge ispower
2. The Impact of EnglishLanguage
3. Science andTechnology
4. Where there is a will there isway
5. Honesty is the bestpolicy
6. Birds of the same feather, flocktogether
7. East or west home is thebest
8. Make hay while the sunshines
9. Your favouriteleader
10. Description of a significant experience in yourlife.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – I
MAJOR CORE - 1 - CALCULUS AND FOURIER SERIES

Total Hours: 105

Hours/Week: 7

Credits: 5

Code:U08MA1MCT01

Marks: 100

GENERAL OBJECTIVES

To acquaint the students become familiar with techniques of differentiation and integration and apply them to solve problems.

UNIT I:SUCCESSIVE DIFFERENTIATION AND CURVATURE (21 HRS)

Successive differentiation – Leibnitz theorem (with proof) – Curvature – radius of curvature – centre of curvature – circle of curvature (in Cartesian form only) and evolute.

UNIT II:PARTIAL DIFFERENTIATION (21 HRS)

Partial differentiation – Total differential coefficient – Homogeneous functions-Partial derivatives of a function of two functions.

UNIT III:REDUCTION FORMULAE AND MULTIPLE INTEGRALS. (21 HRS)

Reduction formulae: $\int_0^{\pi/2} \sin^n x \, dx$, $\int_0^{\pi/2} \cos^n x \, dx$, $\int_0^{\pi/2} \sin^m x \cos^n x \, dx$
Multiple integrals – Evaluation of double integrals in cartesian form only. Triple integrals (evaluation in Cartesian Co-ordinates only) - Change of order of Integration.

UNIT IV: BETA AND GAMMA FUNCTIONS (21 HRS)

Beta and gamma functions – Definition, recurrence formula of gamma functions – Properties of Beta functions-Relations between Beta and Gamma functions – Evaluation of simple integrals.

UNIT V:FOURIER SERIES (21 HRS)

Fourier series in the range $(0, 2\pi)$ and $(-\pi, \pi)$ – Half range Cosine and Sine series.

Text Books:

1.Narayanan.S and ManicavachagomPillay .T.K (2002), CALCULUS (Vol I ,Vol II & III) , S.Viswanathan (Printers and publishers),Chennai.

CALCULUS (VolII) by S. Narayanan and T.K. ManicavachagomPillay for units

I and II.

Unit I – Chapter III, Chapter X Sec2 (from 2.1 to 2.6)

Unit II- Chapter VIII (Sec 1 and Sec.4)

CALCULUS (Vol II) by S. Narayanan and T.K. ManicavachagomPillay for units **III and IV**

Unit III- Chapter V Sections 1 to 4

Unit IV – Chapter VII Sections 2,3,4,5

CALCULUS (Vol III) by S. Narayanan and T.K. ManicavachagomPillay for unit **V**

References:

1.David V. Widder (2003) ,ADVANCED CALCULUS , Prentice Hall of India

Delhi.

2.Piskunov.N (1974) , DIFFERENTIAL AND INTEGRAL CALCULUS, Mir Publishers ,
Delhi

3.Thomas/Finney (1984) , CALCULUS AND ANALYTIC GEOMETRY,Narosa Publishing
House, Delhi.

4.Schaums Outline series(1965) – Theory and Problems of Laplace Transforms.

5.Schaums Outline series (2005) – Theory and problems of Advanced Calculus.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – I
ALLIED 1 - MATHEMATICAL STATISTICS I

Total Hours: 60

Hours/Week: 4

Credits: 4

Code: U10MA1ACT01

Marks:100

GENERAL OBJECTIVE:

To understand the various methods of collection of data and representing them through diagrams and graphs. To analyse the characteristics of data by using relevant statistical tools.

UNIT I: COLLECTION AND PRESENTATION OF DATA (12 HRS)

Definition of Statistics – Statistical data – primary and secondary – collection, classification and tabulation of data. Diagrammatic and graphical representation.

UNIT II: MEASURES OF DISPERSION & SKEWNESS, KURTOSIS (12 HRS)

Measures of dispersion – calculation of Mean Deviation, Quartile deviation, standard deviation, coefficient of variation and moments for frequency distributions- concept of skewness and kurtosis and their measures.

UNIT III :CORRELATION AND REGRESSION (12 HRS)

Simple Correlation – rank correlation – Linear regression. (Error analysis in chapter 12 omitted)

UNIT IV : INDEX NUMBERS (12 HRS)

Index Numbers- Uses – Types – Laspeyre's, Fisher's -Tests of Consistency – Cost of Living Index – Aggregate Expenditure Method – Family Budget Method .

UNIT V :ANALYSIS OF TIME SERIES (12 HRS)

Analysis of time series-Method of average-link relative method- Secular Trend-Seasonal Variation-Cyclical Variation – Irregular Variation.

TEXT BOOKS:

Pillai R.S.N, Bagavathi .V (2007) STATISTICS. Chand and Company ,New Delhi

UNIT I: Chapter 1,2,4,6, to 8

UNIT II: Chapters 10 and 11

UNIT III: Chapter 12 and 13 (Omit “Error analysis” in Chapter 12)

UNIT IV: Chapter 11 Section 11.9,4 & Chapter 14

UNIT V: Chapter 15.

REFERENCE BOOKS:

1. Arora .S, Sumeet Arora (2002), COMPREHENSIVE STATISTICAL METHODS, S.Chand and Company Ltd ,New Delhi.

2. Douglas A.Lind ,William G.Marchall ,Samuel A. Wathen (2003) ,BASIC STATISTICS FOR BUSINESS AND ECONOMICS, McGraw Hill, Delhi.

3. Gupta .S.C, Indra Gupta (2004) , BUSINESS STATISTICS ,Himalaya Publishing House , New Delhi.

4. Gupta .S.P (2006) , STATISTICAL METHODS, Sultan Chand & Sons ,New Delhi.

5. Sharma J.K, (2006) BUSINESS STATISTICS, Dorling Kindersley, (India) Pvt Ltd, Licensees of Pearson Education in South Asia.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.SC., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – I
ALLIED 2 - MATHEMATICAL STATISTICS II

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U10MA1ACT06

Marks:100

GENERAL OBJECTIVE:

To make the students understand various characteristics of discrete and continuous statistical distributions with mathematical techniques.

UNIT I: RANDOM VARIABLES (12 HRS)

Discrete and continuous random variable, cumulative distributive function, properties of distribution function, function of a random variable, two dimensional random variable, joint probability function, marginal probability distribution, conditional probability distribution, independent random variables.

UNIT II: EXPECTATION AND VARIANCE (12 HRS)

Expectation of a random variable - expectation of a function of a random variable, theorems on expectation. Variance – definition, theorems on variance, Tchebychev's inequality.

UNIT III: MOMENTS AND MOMENT GENERATING FUNCTION (12 HRS)

Moments – definition, relation between central and raw moments, Moment generating function, properties of moment generating function. (Probability generating function and cumulants are excluded)

UNIT IV: DISCRETE DISTRIBUTIONS (12 HRS)

Binomial distribution – Definition, properties, binomial frequency distribution, moments, recurrence formula for moments, moment generating function, additive property, mode.

Poisson distribution – Definition, properties, Poisson frequency distribution, Poisson distribution as limiting form of binomial distribution, moments, recurrence formula for moments, moment generating function, mode.

UNIT V – CONTINUOUS DISTRIBUTIONS (12 HRS)

Normal Distribution – Definition, moments, moment generating function, linearity property, mean deviation, mode, points of inflection, normal probability integral, properties of normal distribution.

TEXT BOOK:

Vittal .P.R (2002) , MATHEMATICAL STATISTICS ,MarghamPublishers,Chennai.

Unit I - Chapter 2

Unit II - Chapters 3, 4

Unit III - Chapters 5, 6(Probability generating function and cumulants are excluded)

Unit IV - Chapters 12, 13

Unit V - Chapters 16

REFERENCE BOOKS:

1.Arora .S,SumeetArora (2002),COMPREHENSIVE STATISTICAL METHODS, S.Chand and Company Ltd ,New Delhi.

2.Gupta .S.C, Kapoor.V.K (2002) , FUNDAMENTALS OF MATHEMATICAL STATISTICS Sultan Chand & Sons ,New Delhi.

3.Gupta .S.P (2006) , STATISTICAL METHODS, Sultan Chand & Sons ,New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A /B.Sc./B.Com/B.R.SC/B.C.A/B.B.A DEGREE EXAMINATION
SEMESTER - I
ENVIRONMENTAL STUDIES

CODE:U14RE1EST01

Hrs– 2/Week
CREDITS : 2

Unit I–Awareness and Natural Resources

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.

Unit II–Ecosystems and Biodiversity

Ecosystem–concepts, structure and types–concept of food chain and food web–causes and effects of weakening food chains
Biodiversity–concept of genetic, species and ecological biodiversity–ecological and economic values–India, a mega diversity country, hotspots–threats to biodiversity and conservation measures.

Unit III–Environmental Pollution

Causes, effects and control of water, and air pollution–global warming–ozone depletion– Nuclear hazards.

Unit IV–Human population and Environment

Population growth at national and global level.

World food production–Effects of modern agriculture on land and Eco systems–GMOs and related issues.

Environmental pollutions and diseases–malaria– chikungunya

Unit V–Environment and Social Issues

Rich poor wide–at national and global levels.

Urbanization –slums Changing value systems –AIDS

Family welfare programme

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A. /B.Sc. / B.Com. / B.R.Sc. / B.C.A. DEGREE COURSE
LIFE ORIENTED EDUCATION

ETHICS – I: RELIGION AND VALUE SYSTEMS

HRS /Wk:1

CODE: U12VE2LVE01

CREDITS : 1 MARKS : 100

OBJECTIVES:

- To Understand My and Other Religions and Culture
- To Appreciate My and Other Religions and Culture
- To Learn from other Religions and Culture
- To Interact with My and Other Religions and Culture to enhance My faith in My religion.
- To Help the students to become aware of the negative forces of religions.

UNIT – I: RELIGION

Concept of God- Faith, Meaning, Definition, Nature, Characteristics. Basic values of different religions-Globalization.

UNIT – II: DIFFERENT RELIGIONS

Basic characteristics and basic thoughts- Buddhism, Christianity, Hinduism, Islam, Jainism and Sikhism

UNIT – III: UNITY OF RELIGION

Unity of Vision and Purpose- Respect for Other's Faith, 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 concept 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.

HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/ B.Sc/ B.Com/ B.R.Sc./ B.C.A – DEGREE COURSES
LIFE ORIENTED EDUCATION BIBLE STUDIES – I:
NEW TESTAMENT

HRS / WK: 1

CODE:U12VE2LVBO1

CREDIT : 1 MARKS : 100

OBJECTIVE:

- Developing the passion for the Word of God – Jesus and inculcating 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,Micah5:2)
- The Birth and Ministry of John the Baptist (Luke 1:1-80,Mat3:1-17,14:1-12)
- The Birth, Passion 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,John2:1-12)
- Parables (Luke6:46-49,8:4-15,10:25-37,15:1-32)
- 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,Mark14:32-42)
- Rich and Poor (Luke 16:19-31,21:1-4)
- Women Liberation (John4:1-30,8:1-4)
- Women in the New Testament
- Mary(Mother of Jesus)-(Luke 1:27-35, John 2:1-12, 19:35, Acts1:13-14)
- Martha & Maria (Luke 10: 38- 42, John 11:1-46)

UNIT – III: CHURCH – BIRTH AND GROWTH

- EarlyChurch
- Birth (Acts 2:1-41)
- Unity and sharing (Acts2:42-47,4:1-37,5:1-11)
- Witnessing life (Acts 3:1-26,5:12-42,8:26-40,16:20-34)
- Comparison between early Church and presentChurch.

UNIT – IV: DISCIPLES AND APOSTLES

- Betrayal and the change in the life of St. Peter (Luke 22:1-7,Acts2:1-41,12:1-17)
- St.Andrew (Mat 4:18-20,John1:35-42,6:1-14)
- St.Stephen (Acts 6,7)
- St.Paul (Acts 8,9,14,17,26 and 28)

UNIT – V: MISSIONARIES

- St. Thomas (John 20:24-31) & Missionary to India\ Pandithar RamaBai
- WilliamCarrie
- Dr.Ida Scuddar & St. Britto(Oriyur)
- AmyCarcheal
- Mother Teresa(Calcutta)
- Devasagayam (Nagercoil)
- Staines &Family

REFERENCES:

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

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI -2
B.A/B.Sc./B.Com/B.R.Sc/B.C.A-DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – I: GOD OF LIFE

CODE:U12VE2LVC01

HRS /WK:1

MARKS: 100

CREDIT :1

OBJECTIVES:

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

UNIT - I: CREATION AND COVENANT

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 savinglove.

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 – specialty 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 forIndia.
- 3.Vaalvin Valizha – St. John’s Gospel – Fr.Eronimus

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – I

(For the candidates admitted from 2008 onwards)

Allied1: ALLIED MATHEMATICS I

(For Physics Students)

Total Hours: 60

Hours/Week: 4

Credits: 4

Code: U10MA1ACT02

Marks:100

GENERAL OBJECTIVE:

To give an in depth knowledge of matrices, trigonometry and calculus and inculcate the habit of problem solving.

UNIT I : ALGEBRA (12 HRS)

Characteristic equation of a square matrix – Evaluation of eigen values and eigen vectors – Cayley – Hamilton theorem (without proof) and simple problems.

UNIT II : TRIGONOMETRY (12 HRS)

Expansions of $\text{Cosn}\theta$, $\text{Sinn}\theta$ and $\text{Tann}\theta$ (n being a positive integer) – Expansions of $\text{Sinn}\theta$ and $\text{Cosn}\theta$ in a series of sines and cosines of multiples of θ (n being a positive integer and θ in radians) – Expansions of $\text{Sin}\theta$, $\text{Cos}\theta$ and $\text{Tan}\theta$ in a series of powers of θ – approximations (Formation of equations excluded)

UNIT III : HYPERBOLIC FUNCTIONS (12 HRS)

Hyperbolic functions, inverse hyperbolic functions, separation into real and imaginary parts.

UNIT IV : DIFFERENTIAL CALCULUS (12 HRS)

Successive differentiation – nth derivative of standard functions – Leibnitz theorem (without proof) Application to simple problems – Jacobians of two and three variables.

UNIT V : MULTIPLE INTEGRALS (12 HRS)

Reduction formulae: $\int_0^{\pi/2} \sin^n x \, dx$, $\int_0^{\pi/2} \cos^n x \, dx$, $\int_0^{\pi/2} \sin^n x \cos^n x \, dx$ (Problems only)

Introduction to evaluation of double (Change of order of integration excluded) and Triple integrals (in Cartesian only).

TEXT BOOK

Narayanan.S ,ManicavachagomPillay(2006), T.K, ANCILLARY MATHEMATICSS.Viswanathan (Printers and publishers),Chennai.

REFERENCE BOOKS:

1. Aggarwal.S,(2000) ALGEBRA-IS.Chand& Company(Pvt)Ltd.,New Delhi
2. Balasubrahmanyam P., Venkatachary P.R. ,Venkataraman G.R.(1992), TEXT-BOOK ON TRIGONOMETRY Published by ROC House & Sons,Chennai.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – I

(For the candidates admitted from 2008 onwards)

Allied1: BUSINESS MATHEMATICS

(For Commerce Students)

Total Hours: 60

Hours/Week: 4

Credits: 4

Code: U08MA1ACT03

Marks:100

GENERAL OBJECTIVE:

This course introduces the basic concepts of mathematics relevant to business and managerial skills

UNIT I: MATHEMATICS OF FINANCE (12 HRS)

Mathematics of finance – Simple interest – Compound interest – Depreciation – discounting (Excluding Annuities , Sinking Fund and Amortisation Table).

UNIT II: MATRICES (12 HRS)

Matrices - inverse of a matrix rank of a matrix –Test for Consistency of equations.

(Excluding Algebra of Matrices , Determinants and also Input – Output Analysis)

UNIT III: APPLICATIONS OF DIFFERENTIATION AND INTEGRATION (12 HRS)

Differentiation (Excluding Derivatives of Standard functions from first principle) –Applications of the derivative – Integration with applications

UNIT IV: TRANSPORTATION PROBLEM (12 HRS)

Transportation problem – Initial basic feasible solution – North West Corner rule – Vogel's Approximation method – Matrix minima method (optimal solution excluded)

UNIT V: ASSIGNMENT PROBLEM (12 HRS)

Assignment problem (Travelling salesman problem excluded)

TEXT BOOKS:

1.Navaneetham P.A.(2007) , BUSINESS MATHEMATICS AND STATISTICS ,Jai Publishers Trichy for UNITS I , II and III.

UNIT I Chapter 2 (Omit Sec. 7,8&9)

UNIT II Chapter 4 (Omit Sec 1 to 8 (upto4) and 13)

UNIT III Chapter 6 ,7 and 8

2.KantiSwarup, Gupta P.K, Man Mohan (2004), OPERATIONS RESEARCH

Sultan Chand & Sons, New Delhi for UNITS IV and V.

UNIT IV Chapter 6 (Omit Sec 6:4 ,6:5.2 , 6:5.3 , 6:6 to 6:9)

UNIT V Chapter 7 (Omit Sec 7:4)

REFERENCE BOOKS:

1. Vittal .P.R,(2004),BUSINESS MATHEMATICS ,MarghamPublishers,Chennai.
2. Aggarwal.D.R(2005), Business Mathematics Vrinda Publications, New Delhi.
3. Gupta P.K,,Hira D.S, Problems in Operations Research S.Chand& Co, New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – I
(For the candidates admitted from 2008 onwards)
ALLIED 1 - BUSINESS MATHEMATICS AND STATISTICS
(For commerce students-Computer Application)

Total Hours: 60
Hours/Week: 4
Credits: 4

Code: U08MA1ACT04
Marks:100

GENERAL OBJECTIVE:

To provide sufficient knowledge of statistics which enables them to compute various statistical measures. To introduce some linear programming techniques to solve allocation problems

UNIT I : APPLICATIONS OF DIFFERENTIATION (12 HRS)

Application of derivatives –marginal functions –elasticity –increasing and decreasing functions –maxima and minima

UNIT II : TRANSPORTATION AND ASSIGNMENT PROBLEM (12 HRS)

Transportation Problem –North-West Corner Rule –Matrix minima method-Vogels approximation method (only initial basic feasible solution) –Assignment Problem –Hungarian method.

UNIT III : COLLECTION AND PRESENTATION OF DATA (12 HRS)

Statistics –meaning and scope –collection of data –classification and tabulation –diagrams and graphs –histogram-polygon –cumulative frequency curves.

UNIT IV :MEASURES OF DISPERSION AND CORRELATION (12 HRS)

Measures of dispersion –range, quartile deviation, mean deviation, standard deviation , coefficient of variation-merits demerits –Karl Pearsons coefficient of correlation ,Rank correlation

UNIT V :INDEX NUMBERS (12 HRS)

Index Numbers – Laspeyer's, fisher's and Paasche's index numbers- tests for Index Numbers - cost of living Index Number - uses of Index Numbers.

TEXT BOOKS:

- 1.Unit I-Navnitham PA. Business Mathematics and Statistics (2009)
- 2.Unit II-KantiSwarup,Gupta P.K , ManmohanOPERATIONS RESEARCH ,Sultan Chand New Delhi.
- 3.Units III ,IV and V-Pillai R.S.N , Bagavathi .V (2007) STATISTICSS.Chand and Company ,New Delhi

REFERENCE BOOKS:

1. HamdyTaha (2005), OPERATIONS RESEARCH Prentice Hall of India, New Delhi.
2. Gupta ,Hira (1989), OPERATIONS RESEARCH.Chand Publishers, New Delhi.
3. Arora .S,SumeetArora (2002),COMPREHENSIVE STATISTICAL METHODS, S.Chand and Company Ltd ,New Delhi.
4. DouglasA.Lind ,William G.Marchall ,Samuel A. Wathen (2003) ,BASIC STATISTICS FOR BUSINESSAND ECONOMICS, McGraw Hill, Delhi.
5. Gupta .S.C, Indra Gupta (2004) ,BUSINESS STATISTICS ,Himalaya Publishing House ,New Delhi.
6. Gupta .S.P (2006) ,STATISTICAL METHODS, Sultan Chand & Sons ,New Delhi.
7. Sharma J.K, (2006) BUSINESS STATISTICS, Dorling Kindersley, (India) PvtLtd,Licensees of Pearson Education in South Asia.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – I
(For the candidates admitted from 2008 onwards)
Allied 2 - APPLIED MATHEMATICS I
(for computer science students)

Total Hours: 60
Hours/Week: 4
Credits: 3

Code: U08MA1ACT05
Marks:100

GENERAL OBJECTIVE:

To impart the knowledge on matrices, differential equation of I and II order, Laplace Transforms and Fourier series.

UNIT I:MATRICES (12 HRS)

Solution of system of linear equations-- Eigen values and Eigen vectors of a matrix – Cayley Hamilton's Theorem(without proof).

UNIT II :PARTIAL DIFFERENTIAL EQUATIONS (12 HRS)

Formation of equations by eliminating arbitrary constants and arbitrary functions; definition of general, Particular, complete and singular integrals – solutions of first order equations in their standard forms – $F(p,q) = 0$, $F(x,p,q) = 0$, $F(y,p,q) = 0$, $F(z,p,q) = 0$,

$F(x,p) = F(y,q)$, $Z = px+qy+f(p,q)$, Lagrange's equations $Pp+Qq = R$

UNIT III : LAPLACE TRANSFORMS (12 HRS)

Definition - Laplace transforms of functions e^{at} , $\cos at$, $\sin at$, t^n (n is a +ve integer), $e^{at}\cos bt$, $e^{at}\sin bt$, $f'(t)$, $f''(t)$, $f^n(t)$, $t^n f(t)$, $f(t)/t$

UNIT IV : INVERSE LAPLACE TRANSFORMS (12 HRS)

Definition - Inverse transforms relating to the above standard functions

UNIT V: FOURIER SERIES (12 HRS)

Fourier Series: Fourier Series: – Even and odd functions – properties of odd and even functions – Half range Fourier series – Development in sine and cosine series (omitting general interval).

TEXT BOOKS:

1.Narayanan S, Hanumantharao.R, ManicavachagomPillay.T.K, Kandaswamy(2000),

ANCILLARY MATHEMATICS – VOLUME 1 - PART I – ALGEBRA,S.Viswanathan

Printers and publishers Pvt Ltd, Chennai.

2.Narayanan.S and ManicavachagomPillay T.K(2000), INTEGRAL CALCULUS AND DIFFERENTIAL EQUATIONS.S.Viswanathan Printers and publishers Pvt Ltd, Chennai.

3.Venkataraman M.K, ENGINEERING MATHEMATICS (VOL II), (2006) National publishing company Chennai

Unit : I

1. “Ancillary Mathematics – Volume 1 - Part I – Algebra”,

S. Narayanan, R. Hanumantharao, T.K. Manicavachagom Pillay & Kandaswamy.

Unit II, III & IV:

2. Narayanan and Manickavasagam Pillai, “Ancillary Mathematics Volume 1 : Part II (Section B)-Integral Calculus and Differential equations.

Unit V:

3. Dr. M.K. Venkataraman, “Engineering Mathematics (Vol II)”, Third Edition, 1998.

REFERENCE BOOKS:

1. Ashan and zafar (2006) ,DIFFERENTIAL EQUATION AND THEIR APPLICATIONS ,Prentice Hall of India,Pvt Ltd.

2. Iyengar(2000), DIFFERENTIAL EQUATION Anmal Publications, Newdelhi.

3. Manicavachagom Pillay T.K(2006),Algebra , S.Viswanathan Printers and publishers Pvt Ltd, Chennai.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – I
(For the candidates admitted from 2008 onwards)
ALLIED 2 - ALLIED MATHEMATICS II
(For Physics Students)

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U10MA1ACT07

Marks:100

GENERAL OBJECTIVE:

To make the students familiar with the basic concepts of three dimensional geometry, line, surface and volume integrals

UNIT I: PLANE (12 HRS)

Direction Cosines – Direction ratios – angle between two lines - The Plane – the general equation of the plane – Standard forms of equations of planes.

UNIT II:STRAIGHT LINES (12 HRS)

Skewlines – Shortest distance between two skewlines – equation of the line of shortest distance (Cartesian only) – coplanarity of Straight lines

UNIT III: SPHERE (12 HRS)

Sphere - General equation – tangent planes – section of a sphere by a plane - sphere through a given circle.

UNIT IV: DIFFERENTIATION OF VECTORS (12 HRS)

Velocity – acceleration – scalar and vector fields – Gradient, Divergence and curl – applications.

UNIT V: VECTOR INTEGRATION (12 HRS)

Line integral – surface integral – volume integral – application of Gauss and Stoke's theorems (Statement only) simple problems.

TEXT BOOKS:

1.ManicavachagomPillay. T.K, Natarajan T (2000) , A TEXT BOOK OF ANALYTICALGEOMETRY (Part II – Three Dimensions) , S.Viswanathan (Printers and publishers),Chennai. .

2.Viswanathan .K and Selvaraj .S (1999) , VECTOR ANALYSIS , Emerald Publishers ,Chennai

UNIT I &II : Ancillary Mathematics by S. Narayanan and others.

UNIT III &IV : Vector analysis by K. Viswanathan and S. Selvaraj.

UNIT V: Engineering Mathematics (Third year – Part B) by Dr. M.K. Venkatraman.

REFERENCE BOOKS:

1.Duraipandian .P,LaxmiDuraipandian&D.Mahilan(1990) , ANALYTICAL GEOMETRY, Emerald Publishers,Chennai.

2.Duraipandian.P ,LaxmiDuraipandian, (1998) , VECTOR ANALYSIS , Emerald Publishers Chennai.

புனித சிலுவை தன்னாட்சிக் கல்லூரி, திருச்சிராப்பள்ளி – 620 002.

தமிழாய்வுத்துறை

இளங்கலை / இளமறிவியல் / இளம் வணிகவியல் பட்ட வகுப்பு

முதலாமாண்டு— இரண்டாம் பருவம் - 2014

தாள் - II

Total Hours : 75

Code : U12TL2TAM02

Hrs : 5Hrs /Wk

Marks : 100

Credit : 3

நோக்கங்கள்:

1. இறைச் சிந்தனை வழி மாணவர்களை ஒருமுகப்படுத்துதல்.
2. தமிழ்ச் சான்றோர்களின் சிறப்புகளை அறிமுகப்படுத்துதல்.
3. மாணவர்களின் நல்லெண்ணங்களை மேம்படுத்துதல்.
4. நட்புணர்வை மாணவர்கள் மனதில் பதியவைத்தல்.

பயன்கள்:

1. இப்பாடம் மாணவர்களிடையே ஆன்மீக அறிவு அறிமுகமாகவும், வளரவும், ஆழப்படவும் துணைபுரிகின்றது. இது ஓர் இயற்கைப் பூங்கா.
2. தமிழை நேசித்து, தமிழ்ச் சான்றோர்களின் மீது மதிப்புக் கொள்ளவும், தானும் சான்றோர் ஆகவும் இது ஒரு பாலமாக பயன்படுகிறது.
3. ஊற்றுக்களாய் மாணவிகளிடையே மறைந்து கிடக்கும் நல்லெண்ணங்களை வெளிக்கொணரவும் நேர்மறைச் சிந்தனைகள் தோன்றவும் பயன்படுவதால் இது ஒரு நூலகமாகும்.
4. வாழ்க்கையில் நட்பின் தேவையை உணர வைக்கும் வழிகாட்டியாகத் திகழ்கிறது. இது வாழ்க்கைப் பெட்டகம்.

அலகு:1 செய்யுள்

இறைமை

அன்பு

நேர்மை

அலகு:2 செய்யுள்

தன்னம்பிக்கை

முயற்சி

அலகு:3

தமிழ் இலக்கிய வரலாறு - தமிழாய்வுத்துறை வெளியீடு

பல்லவர்காலம்

நாயக்கர்காலம்

அலகு:4

படைப்பிலக்கியம் - புதினம்

சு.தமிழ்ச்செல்வி - கீதாரி

அலகு:5

கடிதம் எழுதுதல்

பாட நூல்கள்

செய்யுள்

தமிழ் இலக்கிய வரலாறு

கீதாரி

கடித இலக்கியம்

- தமிழாய்வுத்துறை வெளியீடு

- தமிழாய்வுத்துறை வெளியீடு

- சு.தமிழ்ச்செல்வி

- பயிற்சி ஏடு.

(for the candidates admitted from June 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
PART – I LANGUAGE HINDI FOR B.A, B.Sc & B.Com
HINDI PAPER-II PROSE, DRAMA, GRAMMAR-II,
COMPREHENSION SEMESTER –II

HRS/WEEK:5

CODE:U14HN2HIN02

CREDITS:3

MARKS :100

UNIT – I :Bharat matha, Premchand, Taj mahal ki Aathma Kahani, Mahakavi Prasadh, Meri theertha yatra

UNIT-II : Sathyameva jayathe - Drama (chapter 1&2)

UNIT- III :Sathyameva jayathe – Drama (chapter 3)

UNIT- IV :General Grammar (Sarvanaam, Kriya, Kaal, Karak, Ne Ka niyam)

UNIT-V : Comprehension – Prosepassages

Books Prescribed :

- | | |
|--|--|
| <input type="checkbox"/> NaveenGadhyaChayanika | – D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> SathyamevaJayathe | – D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> GeneralGrammar | – D.B.H.P. Sabha Publishers,Chennai-17 |

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2
DEPARTMENT OF FRENCH
SEMESTER II
PART I - LANGUAGE - FRENCH PAPER II [GRAMMAR, CIVILISATION
& TRANSLATION (ÉCHO A1 2^e édition)]
(For candidates admitted 2013 onwards)

HRS/WEEK :5

CODE :

U13FR2FRE02

CREDIT: 3

MARKS :100

Unit 1 Quelle journée !

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.

Unit 2 Qu'on est bien ici !

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)

Unit 3 Souvenez-vous ?

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.

Unit 4 On s'appelle ?

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.

Unit 5 Un bon conseil ! ; Parlez-moi de vous !

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.

TEXT BOOKS :

ECHO A1 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D'APPRENTISSAGE

Authors: J. Girardet and J. Pécheur

Publication: CLÉ INTERNATIONAL, 2012.

(for candidates admitted from 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2014 - 2015

I B.A., B.Sc., B.Com., B.R.Sc., B.C.A., B.B.A., SEMESTER II
PART II - ENGLISH II - GENERAL ENGLISH PAPER II

NO.OF HRS/WK:6

CODE:U10EL2GEN02

NO.OF CREDITS: 3

OBJECTIVES

Integrated skills of English with focus on reading, writing, speaking and listening. Integrated sub skills that include comprehension, vocabulary, grammar, spelling, punctuation and reference skills.
Literary appreciation (incidental)

UNIT I

The Suitor and Papa: *Anton Chekov*

UNIT II

The Sniper: *Liam O'Flaherty*

UNIT III

A Handful of Dates: *Tayeb Salih*

UNIT IV

Two Gentlemen of Verona: *A.J. Cronin*

UNIT V

GRAMMAR - 1. Transformation of sentences – a) Direct – Indirect speech b) Voices

2. Question Tag

3. Tenses

COMPREHENSION – Prescribed texts

COMPOSITION - 1. Personal letter

2. Creative Writing

3. Narrative Writing

4. Article Writing

GENERAL ESSAY: 5 TOPICS

1. My relationship with my mother

2. My favourite hobby

3. Look before you leap
4. All that glitters is not gold
5. Me, after ten years...

BOOKS FOR REFERENCE

Renu, Anand and Geetha, Rajeevan, *Images Of Life An Anthology of Prose*, New Delhi: Cambridge University Press, 2006. Print.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

B.Sc., MATHEMATICS

(For the candidates admitted from 2008 onwards)

SEMESTER – II

MAJOR CORE – 2 - CLASSICAL ALGEBRA AND TRIGONOMETRY

Total Hours: 75

Hours/Week: 5

Credits: 4

Code: U08MA2MCT02

Marks: 100

GENERAL OBJECTIVES:

To enable the students to understand the techniques of solving algebraic equations and to expose the basic ideas of number theory. To make the students familiar with expansion of trigonometric functions and facilitate ways of separating complex functions.

UNIT I: THEORY OF EQUATIONS: (15 HRS)

Relation between roots and coefficients – symmetric functions of roots in terms of the coefficients – Sum of the powers of the roots of an equation – Newton's Theorem on the sum of the powers of the roots - Transformation of equations – Reciprocal equations – To increase or Decrease the roots by a given quantity.

UNIT II: THEORY OF NUMBERS: (15 HRS)

Introduction – Divisors of a given number N – Euler's function $\phi(N)$ – highest power of a prime p contained in $n!$ – congruences – numbers in arithmetical progression – Problems with application of Fermat's theorem – Wilson's theorem – Lagrange's theorem (No proof for all the three theorems)

UNIT III: EXPANSIONS OF TRIGONOMETRIC FUNCTIONS (15 HRS)

Expansions of $\cos n\theta$, $\sin n\theta$, $\tan n\theta$ where n is a positive integer (excluding formation of equations); Expansions of $\cos^n \theta$, $\sin^n \theta$ in a series of sines and cosines of multiples of θ , (θ in radians) and expansion of $\cos \theta$, $\sin \theta$, $\tan \theta$ in a series of powers of θ .

UNIT IV: HYPERBOLIC FUNCTIONS (15 HRS)

Hyperbolic functions – inverse hyperbolic functions, separation into real and imaginary parts. Logarithm of complex numbers $x+iy$.

UNIT V: SUMMATION OF TRIGONOMETRIC SERIES. (15 HRS)

Sum of sines of n angles in A.P. – sum of cosines of n angles in A.P.

TEXT BOOKS:

ManicavachagomPillay .T.K ,Natarajan.T , Ganapathy K.S ,(2005),

ALGEBRA Vol I&Vol II ,S.Viswanathan (Printers and publishers),Chennai.

TREATMENT as in:

UNIT I: Algebra Vol I by T.K. ManicavachagomPillay, T. Natarajan and K.S. Ganapathy
Chapter 6 Sec: 11 to 21,24.

UNIT II: Algebra Vol II by T.K. ManicavachagomPillay, T. Natarajan and K.S. Ganapathy
Chapter 5 fully.

TREATMENT as in Trigonometry by Narayanan and ManicavachagomPillay for UNIT III,
IV & V.

UNIT III: Chapter III (Sec 1 to 5, Excluding Formation of Equations& 5.1)

UNIT IV: Chapter IV and in Chapter V (Sec 5.1 only)

UNIT V: Chapter VI (Sec. 1 & 2)

REFERENCE:

1. Arumugam ,ThangapandiIssac,(2005) THEORY OF EQUATIONS AND TRIGONOMETRY , New Gamma Publishing House ,Delhi.

2.Kandasamy .P.Thilagavathy.K (2006) , MATHEMATICSVolII,S.Chand& Company,
New Delhi.

3.Kumaravelu ,SuseelaKumaravelu (2002),ELEMENTS OF NUMBER THEORY
SCITECH Publishers ,Chennai.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – II
MAJOR CORE -3 - ANALYTICAL GEOMETRY OF THREE DIMENSIONS AND
VECTOR CALCULUS

Total Hours: 75

Hours/Week: 5

Credits: 5

Code: U08MA2MCT03

Marks: 100

GENERAL OBJECTIVES:

To expose the students to the concepts of three dimensional geometry and to introduce the concepts of vector differentiation, vector integration and the idea of line, surface and volume integrals.

UNIT I: PLANE AND STRAIGHT LINE (15 HRS)

The plane – the general equation of the plane – standard forms of equations of planes – Equation of the plane in the form $P + \lambda P' = 0$. Different forms of equations of a straight line – the plane and the straight line – coplanar lines – the shortest distance between two skew lines – equations of two skew lines.

UNIT II: SPHERE (15 HRS)

Equation of a sphere – Length of the tangent from a point – Tangent planes. The plane section of a sphere - Intersection of two spheres.

UNIT III: VECTOR DIFFERENTIATION: (15 HRS)

Derivatives of vector functions – velocity and acceleration – differential operators – directional derivatives, gradient, divergence and curl – solenoidal and irrotational vectors

UNIT IV: VECTOR INTEGRATION: (15 HRS)

Line integrals – work done by a force – conservative field – surface integral and its applications – volume integral and its applications

UNIT V: INTEGRAL THEOREMS : (15 HRS)

Integral theorems (without proof) - Gauss divergence theorem, Green's theorem, Stoke's theorem and their applications.

TEXT BOOKS:

1. Manicavachagom Pillay. T.K, Natarajan T (2010) , A TEXT BOOK OF ANALYTICAL GEOMETRY (Part II – Three Dimensions) , S.Viswanathan (Printers and publishers),Chennai. .

Unit I-Chapters II and III-Sections 1-8(omit from 8.1)

Unit II-Chapter IV

2.Viswanathan .K and Selvaraj .S (1999) , VECTOR ANALYSIS , Emerald Publishers ,Chennai

Unit III-Chapters I and II

Unit IV– Chapter III

Unit V –Chapter IV(Sections 4.1, 4.2(4.2.1, 4.2.3), 4.3(4.3.1, 4.3.3, 4.3.4), 4.4(4.4.1 , 4.4.3))

REFERENCE BOOKS:

Duraipandian .P,LaxmiDuraipandian&D.Mahilan(1990) , ANALYTICAL GEOMETRY, Emerald Publishers,Chennai.

Duraipandian.P ,LaxmiDuraipandian, (1998) , VECTOR ANALYSIS , Emerald Publishers Chennai.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.SC., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – II
ALLIED 3 - MATHEMATICAL STATISTICS III

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U10MA2ACT08

Marks:100

GENERAL OBJECTIVE:

To facilitate the students to apply acquired theoretical knowledge of tests of significance in real life problems.

UNIT I: SAMPLING DISTRIBUTION (12 HRS)

Sampling Theory - distribution – Chi-square, student-t and F distributions and their properties..

UNIT II: ESTIMATION (12 HRS)

Point Estimation – unbiased estimator, efficient estimator, Cramer- Rao inequality, Rao – Blackwell theorem, consistent estimator, sufficient estimator, method of moments, method of maximum likelihood.

Interval Estimation – Confidence interval for the mean of the normal population, for the difference between means, for the proportion of population, for the difference between two proportions.

UNIT III: TEST OF HYPOTHESIS FOR LARGE SAMPLES (12 HRS)

Large samples – definitions, test of hypothesis – test for a specified mean, for the equality of a means, for specified proportion, for the equality of 2 proportions, for standard deviation of the population, for equality of two standard deviations, (Confidence interval not included) for correlation coefficient.

UNIT IV: TEST OF HYPOTHESIS USING t AND F DISTRIBUTION (12 HRS)

SMALL SAMPLES : t Test for a specified population mean, for difference between two population means, for paired observations. F test – for Equality of two population variances, (Analysis of variance excluded).

UNIT V: TEST OF HYPOTHESIS USING CHI SQUARE (12 HRS)

SMALL SAMPLES: Chi square Test – definition, additive property, Pearson's Statistics, Uses of Chi-square test, test for a specified population variance, test of independence of attributes. Test of goodness of fit.

TEXT BOOK:

Vittal .P.R (2002) , MATHEMATICAL STATISTICS ,MarghamPublishers,Chennai.

UNIT : I - Chapter 22

UNIT : II - Chapter 23

UNIT : III - Chapter 24

UNIT : IV - Chapter 25,26

UNIT : V - Chapter 27.

REFERENCE BOOKS:

1.Arora .S,SumeetArora (2002),COMPREHENSIVE STATISTICAL METHODS, S.Chand and Company Ltd ,New Delhi.

2.Gupta .S.C, Kapoor.V.K (2002) , FUNTAMENTALS OF MATHEMATICAL STATISTICS , Sultan Chand & Sons ,New Delhi.

3.Gupta .S.P (2006) , STATISTICAL METHODS, Sultan Chand & Sons ,New Delhi.

HOLY CROSS COLLEGE(AUTONOMOUS),TIRUCHIRAPPALLI

B.A/B.Sc./B.Com/B.R.SC/B.C.A/B.B.A DEGREE EXAMINATION

SEMESTER-II

SBE-1 SOFT SKILL DEVELOPMENT

CODE:U14RE2SBT01

Hrs– 2/Week

CREDITS : 2

General Objective:

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

UNIT I: 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.

UNIT II : Interpersonal skills

Trust-trustworthiness-interpersonal communication-art of listening, reading and writing-art of writing-Emails etiquettes-building relationship-networking

UNIT III: Corporate skills

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

UNIT IV: Management skills

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

UNIT V: Employability skills

Writing Resume/CV- interview skills-Group Discussion-mock Interview-mock GD-Career planning

TEXT BOOKS:

Meena K.Ayothi V.(2013) A Book on development of soft skills(soft skills: A Road Map to Success) P.R . Publishers and distributors, Trichy.

Alex K.(2012) Soft Skills Know Yourself & Know the World, S.Chand&Company Ltd., NewDelhi

Book Recommended:

1. Francis Thamburaj S.J.(2009).Communication soft skills for Professional Excellence,1st Ed., GracePublishers,

Rathan Reddy B.(2005).Team Development and Leadership, Jaico Publishing House, Mumbai

**HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI–
2B.A./B.Sc./B.Com./BCA&BBA, DEGREE EXAMINATION
SEMESTER II**

**SKILL BASED ELECTIVE II: RURAL ENRICHMENT AND
SUSTAINABLE DEVELOPMENT**

Hrs–2/Week

CODE:U08RE2SBT02

CREDIT: 2

UNIT I:

Green Revolution and industrialization

Cost climate changes and mismanagement of natural resources: Effects of over exploitation of land and water, mono culture practices use of hybrid and genetically modified (GM) seeds dumping of chemical fertilizers and pesticides-reduced economic returns from agriculture- resultant social issues-poverty-farmers suicide.

UNIT II:

Sustainable Development: concept environmental, social and economic aspects of sustainable development-sustainable development as solution to address rural issues- successful case studies from India .

UNIT III:

Elements in sustainable development I: Water shed management-rain water Harvesting, de- silting, bunds construction ,check dams, managing rain water drainage canals Alternative agricultural models –agro-forestry.

UNIT IV:

Elements in sustainable development II: addressing agricultural issues-biofertilizers-azolla culture, vermicomposting, biopesticides-panchakavya, mulikai puchiviratti ,amirthakarasal,addressing health and sanitation issues-health, nutrition, vaccination.

UNIT V:

Survey of natural resources and resource mapping in villages, village level participatory approach(VLPA)-role of SHGs and NGOs.
Introduction to disaster Management (fire and flood)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A. /B.Sc. / B.Com. / B.R.Sc. / B.C.A. DEGREECOURSE
LIFE ORIENTED EDUCATION

ETHICS – I: RELIGION AND VALUE SYSTEMS

HRS /Wk:1

CODE: U12VE2LVE01

CREDITS : 1MARKS : 100

OBJECTIVES:

- To Understand My and Other Religions and Culture
- To Appreciate My and Other Religions and Culture
- To Learn from other Religions and Culture
- To Interact with My and Other Religions and Culture to enhance My faith in My religion.
- To Help the students to become aware of the negative forces of religions.

UNIT – I:RELIGION

Concept of God- Faith, Meaning, Definition, Nature, Characteristics. Basic values of different religions-Globalization.

UNIT – II: DIFFERENT RELIGIONS

Basic characteristics and basic thoughts- Buddhism, Christianity, Hinduism, Islam, Jainism and Sikhism

UNIT – III: UNITY OF RELIGION

Unity of Vision and Purpose- Respect for Other's Faith, 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 concept 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.

HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/ B.Sc/ B.Com/ B.R.Sc./ B.C.A – DEGREE COURSES
LIFE ORIENTED EDUCATION BIBLE STUDIES – I:
NEW TESTAMENT

HRS / WK: 1

CODE:U12VE2LVBO1

CREDIT : 1 MARKS : 100

OBJECTIVE:

- Developing the passion for the Word of God – Jesus and inculcating 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,Micah5:2)
- The Birth and Ministry of John the Baptist (Luke 1:1-80,Mat3:1-17,14:1-12)
- The Birth, Passion 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,John2:1-12)
- Parables (Luke6:46-49,8:4-15,10:25-37,15:1-32)
- 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,Mark14:32-42)
- Rich and Poor (Luke 16:19-31,21:1-4)
- Women Liberation (John4:1-30,8:1-4)
- Women in the New Testament
- Mary(Mother of Jesus)-(Luke 1:27-35, John 2:1-12, 19:35, Acts1:13-14)
- Martha & Maria (Luke 10: 38- 42, John 11:1-46)

UNIT – III: CHURCH – BIRTH AND GROWTH

- EarlyChurch
- Birth (Acts 2:1-41)
- Unity and sharing (Acts2:42-47,4:1-37,5:1-11)
- Witnessing life (Acts 3:1-26,5:12-42,8:26-40,16:20-34)
- Comparison between early Church and presentChurch.

UNIT – IV: DISCIPLES AND APOSTLES

- Betrayal and the change in the life of St. Peter (Luke 22:1-7,Acts2:1-41,12:1-17)
- St.Andrew (Mat 4:18-20,John1:35-42,6:1-14)
- St.Stephen (Acts 6,7)
- St.Paul (Acts 8,9,14,17,26 and 28)

UNIT – V: MISSIONARIES

- St. Thomas (John 20:24-31) & Missionary to India\ Pandithar RamaBai
- WilliamCarrie
- Dr.Ida Scuddar & St. Britto(Oriyur)
- AmyCarcheal
- Mother Teresa(Calcutta)
- Devasagayam (Nagercoil)
- Staines &Family

REFERENCES:

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

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI -2
B.A/B.Sc./B.Com/B.R.Sc/B.C.A-DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – I: GOD OF LIFE

HRS /WK:1

CODE:U12VE2LVC01

MARKS: 100

CREDIT :1

OBJECTIVES:

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

UNIT - I: CREATION AND COVENANT

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 savinglove.

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 – specialty 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 forIndia.
- 3.Vaalvin Valizha – St. John’s Gospel – Fr.Eronimus

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – II
(For the candidates admitted from 2008 onwards)
Allied 3 – ALLIED MATHEMATICS III
(For Physics Students)

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U10MA2ACT09

Marks:100

GENERAL OBJECTIVE:

To expose the students standard forms of partial differential equations, Laplace transforms, Inverse Laplace transforms , measures of dispersion, correlation ,Regression ,Test of significance and enable them to apply in problems.

UNIT I : PARTIAL DIFFERENTIAL EQUATIONS (12 HRS)

Formation of equations by eliminating arbitrary constants and arbitrary functions; definition of general, Particular, complete and singular integrals – solutions of first order equations in their standard forms – $F(p,q) = 0$, $F(x,p,q) = 0$, $F(y,p,q) = 0$, $F(z,p,q) = 0$,

$F(x,p) = F(y,q)$, $Z = px+qy+f(p,q)$, Lagrange's equations $Pp+Qq = R$

UNIT II : LAPLACE TRANSFORM (12 HRS)

Laplace Transforms: Definition – Laplace Transform of the functions e^{at} , e^{-at} , $\cos at$, $\sin at$, t^n , $e^{-at}\cos bt$, $e^{-at}\sin bt$, $e^{-at}t^n$, $tf(t)$, $f(t)/t$.

UNIT III: LAPLACE INVERSE TRANSFORMS (12 HRS)

Inverse transforms relating to the above standard functions – application to solution of ordinary differential equations with constant coefficients.

UNIT IV: MEASURES OF DISPERSION AND CORRELATION (12 HRS)

Measures of dispersion – Range – Quartile deviation – Mean deviation – Standard deviation and their coefficients. Karl Pearson's coefficient – Definition and evaluation (frequency distribution not included) and Spearman's rank correlation.

UNIT V: REGRESSION AND TESTS OF SIGNIFICANCE (12 HRS)

Simple linear regression – definition, stating properties on regression lines and problems. Tests of significance based on normal distribution – difference between proportions – difference between means – difference between standard deviations (Problems only)

TEXT BOOKS:

1. Narayanan .S and Manicavachagom Pillay T.K(2006). ANCILLARY MATHEMATICS (VOLUME I – PART II SECTION B) ,S.Viswanathan (Printers and publishers),Chennai. .

2. Pillai R.S.N , Bagavathi .V (2007) STATISTICS.S.Chand and Company ,New Delhi

REFERENCE BOOKS:

1. Arora .S, Sumeet Arora (2002), COMPREHENSIVE STATISTICAL METHODS, S.Chand and Company Ltd ,New Delhi.

2. Gupta .S.C, Indra Gupta (2004) , BUSINESS STATISTICS ,Himalaya Publishing House , New Delhi.

3. Gupta .S.P (2006) , STATISTICAL METHODS, Sultan Chand & Sons ,New Delhi.

4.Sharma J.K, (2006) BUSINESS STATISTICS, Dorling Kindersley, (India) PvtLtd,Licensees of Pearson Education in South Asia.

5.Raisinghania.M.D,(2002),ORDINARYAND PARTIAL DIFFERENTIAL EQUATIONS
,S.Chand&Company ,New Delhi.

6.ZafarAhsan (2006) DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS ,Prentice Hall of India Ltd,New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – II
(For the candidates admitted from 2008 onwards)
ALLIED 3 - BUSINESS STATISTICS
(For commerce students)

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U08MA2ACT10

Marks:100

GENERAL OBJECTIVE:

To understand the various methods of collection of data and representing them through diagrams and graphs. To calculate various statistical parameters.

UNIT I: COLLECTION AND PRESENTATION OF DATA (12 HRS)

Introduction - Collection of Data - Classification and Tabulation - Diagrammatic representation.

UNIT II: MEASURES OF DISPERSION (12 HRS)

Measures of Dispersion - Range - Quartile Deviation - Mean Deviation - Standard Deviation - Relative measures

UNIT III :CORRELATION AND REGRESSION (12 HRS)

Correlation - Scatter Diagram - Karl Pearson's Coefficient of Correlation - Rank Correlation - (Correlation of a bivariate frequency distribution and Coefficient of concurrent Deviation to be excluded)

Regression - Properties, Regression lines and problems.

UNIT IV :ANALYSIS OF TIME SERIES (12 HRS)

Time Series - components of Time Series - measurement of trend - measures of seasonal variation(Methods of simple averages and Link relatives only) - problems (Deseasonalization is excluded)

UNIT V :INDEX NUMBERS (12 HRS)

Index Numbers – Laspeyer's, Fisher's and Paasche's index numbers- tests for Index Numbers - cost of living Index Number - uses of Index Numbers.

TEXT BOOK:

Vittal .P.R (2004) , BUSINESS STATISTICS Margham Publishers, Chennai.

REFERENCE BOOKS:

1.Arora .S,Sumeet Arora (2002),COMPREHENSIVE STATISTICAL METHODS, S.Chand and Company Ltd ,New Delhi.

2.Douglas A.Lind ,William G.Marchall ,Samuel A. Wathen (2003) ,BASIC STATISTICS FOR BUSINESS AND ECONOMICS, McGraw Hill, Delhi.

3.Gupta .S.C, Indra Gupta (2004) , BUSINESS STATISTICS ,Himalaya Publishing House , New Delhi.

4.Gupta .S.P (2006) , STATISTICAL METHODS, Sultan Chand & Sons ,New Delhi.

5.Sharma J.K, (2006) BUSINESS STATISTICS, Dorling Kindersley, (India) PvtLtd,Licensees of Pearson Education in South Asia.

Treatment as in Business Statistics by Dr. P.R. Vittal

UNIT I - Chapters 1 to 4

UNIT II - Chapters 6

UNIT III - Chapters 8, 9

UNIT IV - Chapter 12

UNIT V - Chapter 13

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – II
(For the candidates admitted from 2008 onwards)
Allied 3 - APPLIED MATHEMATICS II
(for Computer science students)

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U08MA2ACT11

Marks:100

GENERAL OBJECTIVE:

This course introduces the basic concepts of mathematics relevant to business and managerial skills.

UNIT I:TRANSPORTATION PROBLEM (12 HRS)

Transportation problem - Initial basic feasible solution – North west corner rule – Vogel’s Approximation method – Matrix minima method(optimal solution excluded)

UNIT II: ASSIGNMENT PROBLEM (12 HRS)

Assignment problem(Travelling salesman problem excluded)

UNIT III: (12 HRS)

MEASURES OF CENTRAL TENDENCY, VARIATION AND SKEWNESS

Mean – Median – Mode – Measures of variation: Range – Quartile deviation &Standard deviation – Karl Pearson’s Coefficient of Skewness.

.UNIT IV: ASSOCIATION OF ATTRIBUTES: (12 HRS)

Yules coefficient of association.Correlation coefficient – rank correlation.

UNIT V: TESTS OF SIGNIFICANCE (12 HRS)

Test of significance based on normal distribution – Difference between proportions – Difference between means – Difference between standard deviation(problems only)

TEXT BOOKS:

1. KandiSwarup , Gupta P.K., Man Mohan (2004), “**OPERATIONS RESEARCH**”, Sultan Chand & Sons, New Delhi.
2. Vittal. P.R.,(2004), “**BUSINES STATISTICS**”, Margham Publishers, Chennai.
3. Pillai R.S.N, Bagavathi.V (2007) “**STATISTICS**”(Theory and Practice), S.Chand and company, New Delhi.

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.compan, New Delhi.
3. Vittal .P.R.,(2004), “**BUSINESS STATISTICS**”, Margham publishers, Chennai.

புனித சிலுவை தன்னாட்சிக் கல்லூரி, திருச்சிராப்பள்ளி – 620 002.

தமிழாய்வுத்துறை

இளம் வணிகவியல் / இளங்கலை / இளம் அறிவியல் பட்ட வகுப்பு

இரண்டாம் ஆண்டு - மூன்றாம் பருவம் - 2014

தாள் - III

Total Hours : 90

Code : U12TL3TAM03

Hrs : 6Hrs /Wk

Marks : 100

Credit : 3

நோக்கங்கள்:

1. வாழ்வின் கூறுகளாகிய அறம், பொருள், இன்பம், வீடுபேறு ஆகியவற்றின் வழிமுறைகளை எடுத்துரைத்தல்.
2. ஊடகங்களின் ஆழமான நுண்ணறிவை வெளிப்படுத்துதல்.

பயன்கள்:

1. காப்பியங்களை பயில்வதன் மூலமாக மாணவர்கள் அறக்கருத்துக்களை உணர்ந்து கொள்ளுதல்.
2. தமிழ் மொழியை செம்மொழியாக அறிவித்துள்ள இக்காலக்கட்டத்தில் தமிழ் இலக்கியத்தின் பயனை மாணவர்கள் முழுமையாக அறிந்துக் கொள்ளுதல்.
3. ஊடகங்கள் வெளிப்படுத்தும் நன்மை, தீமை ஆகியவற்றைப் பகுத்தறியக் கூடிய பக்குவத்தை அடைதல்.

அலகு:1 செய்யுள்

இயற்கை

நாட்டுப்பற்று

உழைப்பு

அலகு:2 செய்யுள்

மானம்

பெண்ணூரிமை

அலகு:3

தமிழ் இலக்கிய வரலாறு

சோழர் காலம்

அலகு:4

நாடகம்

தண்ணீர் தண்ணீர் - கோமல் சுவாமிநாதன்

அலகு:5

கோயிற்கலை - திட்டக்கட்டுரை, வினாடி வினா

பாட நூல்கள்

- | | |
|-----------------------------|------------------------|
| 1. செய்யுள் நூல் | - தமிழ்த்துறை வெளியீடு |
| 2. தமிழ் இலக்கிய வரலாறு | - தமிழ்த்துறை வெளியீடு |
| 3. நாடகம் - தண்ணீர் தண்ணீர் | - கோமல் சுவாமிநாதன் |
| 4. கோயிற்கலை | - தமிழ்த்துறை வெளியீடு |

(for the candidates admitted from June 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
PART – I LANGUAGE HINDI FOR B.A, B.Sc & B.Com
HINDI PAPER-III POETRY, PREDICS, HISTORY OF HINDI LITERATURE
SEMESTER – III

HRS/WEEK:6
CREDITS:3

CODE:U14HN3HIN03
MARKS :100

UNIT – I :Shubhagaman, Man, Tere ghar ked war bahuth hym
Memory poem : - Kabir das Ke Dohe - 6
Thulasidas Ke Dohe - 6 Rahim Ke Dohe -6

UNIT-II : History of Hindi Literature:

Essay Type Questions : Veeragatha Kaal

UNIT- III :Bakthi Kaal

UNIT- IV :Poetics

- a. Ras : Shringar, karun, Hasya, Veer
- b. Alankar : Anupras, Yamak, Upama, Roopak
- c. Chand : Choupayee, Baravai

UNIT- V :Kavi Parichaya : Ayodiya singh upadyaya Harioudh, Maithili Sharan Gupth,
Siyaram Sharan Gupth, Kabir, Thulasi das

Books Prescribed :

- NaveenPadhyaRathnakar – D.B.H.P. Sabha Publishers, Chennai-17
- PracheenPadhya Sangrah – D.B.H.P. Sabha Publishers, Chennai-17
- Hindi Sahitya Ka SanshitptaItihas – Rajnath Sharma, Agrwal Publication,
Uttar Prakash
- KavyaPradeep – Ram Bahori Shukla, Hindi Bhavan, Allahabad.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2

**DEPARTMENT OF FRENCH
SEMESTER III**

**PART I - LANGUAGE - FRENCH PAPER III [LANGUAGE & CIVILISATION
(ÉCHO A2 2^e édition)]**

(For candidates admitted 2013 onwards)

HRS/WEEK :6

CREDIT:3

CODE : U14FR3FRE03

MARKS :100

Unit 1 Vivement demain !

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.

Unit 2 Tu as du boulot ?

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 – le travail en France.

Unit 3 Qu'en pensez-vous?

L'emploi du subjonctif , l'expression de la quantité – revue de presse – entrée en politique – la naissance des départements - la vie politique – l'organisation administrative et politique de la France.

Unit 4 C'est tout un programme !

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)

Unit 5 On se retrouve

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.

TEXT BOOKS :

ECHO A2 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D'APPRENTISSAGE

Authors: J. Girardet and J. Pécheur

Publication: CLÉ INTERNATIONAL, 2010.

(for candidates admitted from 2013 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2014 - 2015

II B.A., B.Sc., B.Com., B.R.Sc., B.C.A., B.B.A., SEMESTER III
PART II - ENGLISH III - GENERAL ENGLISH PAPER III

NO.OF HRS/WK:6

CODE:U10EL3GEN03

NO.OF CREDITS: 3

OBJECTIVES

To reinforce the LSRW skills of students.

To enhance their study skills and literary skills through a selection of prose extracts. To develop soft skills such as presentation and group discussion skills.

To strengthen sub skills including vocabulary, grammar, comprehension, argumentative and imaginative writing

UNIT I

A Little Bit of What You Fancy :*Desmond Morris*

UNIT II

The Avenger :*Anton Chekov*

UNIT III

Know When to Say 'It's None of Your Business': *Mark McCormack*

UNIT IV

The Second Crucifixion: *Larry Collins and Dominique Lapierre*

UNIT V

General Essay – 5 topics given

Idioms and Phrases - 20 Idioms and phrases given

BOOKS FOR REFERENCE

Anand, Renu .,& Rajeevan, Geetha. *Images of Life: An Anthology of Prose*. New Delhi: Foundation Books, 2007. Print.

List of Idioms and Phrases:

1. To tuck in
2. In tune with
3. To frown upon
4. In favour of
5. In vogue
6. To gloat at
7. On the contrary
8. Prompted by
9. To pale to nothing
10. To wax enthusiastic
11. To figure one out
12. Crystal clear
13. Grey area
14. To have second thoughts
15. On red alert
16. On a fool's errand
17. To be taken aback
18. To storm
19. Trouble spots
20. Flood of humanity

GENERAL ESSAY TOPICS

1. Women are not as intelligent as men.
2. The use of the internet and the computer.
3. Life in the next decade.
4. The ways of using the cell phone to minimize health hazards.
5. How will you save the planet?

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – III
MAJOR CORE – 4 : SEQUENCES AND SERIES

Total Hours: 75

Hours/Week: 5

Credits: 5

Code: U12MA3MCT04

Marks: 100

GENERAL OBJECTIVES:

To identify the various types of sequences and series and confirm the convergence by applying standard tests.

UNIT I: TYPES OF SEQUENCES (15 HRS)

Sequences – sets – Sequences – Limit of a sequence – bounded sequences – Cauchy's general principle of convergence – monotonic sequence.

UNIT II: CONVERGENCE OF SERIES (15 HRS)

Infinite Series- definition of convergence, divergence and oscillation – some general theorems – convergence of $\sum (1/n^p)$ and Geometric Series.
Tests of convergence.

- 1 Comparison tests
- 2 Cauchy's condensation test
- 3 D'Alembert's Ratio Test
- 4 Cauchy's Root test
- 5 Raabe's test (simple problems only)

UNIT III: ALTERNATING AND BINOMIAL SERIES (15 HRS)

Alternating Series : Absolute convergence – conditional convergence – Leibnitz's test and simple problems.

Binomial theorem for rational index – summation of series and approximations

UNIT IV: EXPONENTIAL AND LOGARITHMIC SERIES (15 HRS)

Exponential and Logarithmic Series – summation.

UNIT V: SUMMATION OF SERIES (15 HRS)

General summation of series – Application of partial fractions – summation by difference series.

TEXT BOOK:

Manicavachagom Pillay, Natrarajan & Ganapathy TREATMENT AS IN ALGEBRA (vol I)
S. Viswanathan (Printers and publishers), Chennai. .

UNIT I: Chapter 2 – Section 4, Section 6, Section 7.

UNIT II: Chapter 2 – Section 8 to Section 20.

UNIT III: Chapter 2 – Section 21 to Section 24.

Chapter 3 – Section 5, 10 & 14.

UNIT IV: Chapter 4 – Section 1 to 10.

UNIT V: Chapter 5 - Section 1 to 6(upto section 6.1)

REFERENCES:

1. M.K. Singal and Asha Rani Singal, A FIRST COURSE IN REAL ANALYSIS
R. Chand & Co, New Delhi.
2. Dr. Arumugam. SEQUENCES AND SERIES ,New gamma publishing
House,Palayamkottai

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – III
MAJOR CORE – 5 – STATICS

Total Hours: 75

Hours/Week: 5

Credits: 5

Code: U08MA3MCT05

Marks: 100

GENERAL OBJECTIVES:

To enable the students to know about the concepts of types of forces, moments, couples, equilibrium of three forces acting on a rigid body, friction & equilibrium of strings.

UNIT : I EQUILIBRIUM OF FORCES (15 HRS)

Force – Types of Forces – Equilibrium – Forces acting at a point Parallelogram of forces – Triangle of forces Polygon of forces - Lami's theorem – Resolution of a force – Composition of forces – Resultant – Conditions of equilibrium.

UNIT: II PARALLEL FORCES AND COUPLES (15 HRS)

Parallel Forces – Like and Unlike parallel forces – Resultants – Moment of a force about a point - Varignon's Theorem on Moments – Principle of Moments – Moment of a force about an axis – Couples – Equilibrium of two couples – Equivalence of two couples – Couples in Parallel Planes – Resultant of Coplanar Couples – Resultant of a couple and a force.

UNIT : III EQUILIBRIUM OF THREE FORCES (15 HRS)

Equilibrium of Three Forces acting on a rigid body – Three coplanar forces – conditions of Equilibrium – Two trigonometrical theorems useful in the solution of statical problems – Problem solving.

UNIT : IV FRICTION (15 HRS)

Friction – Laws of friction – angle of friction – cone of friction – equilibrium of a body on a rough inclined plane – Problems involving the force of friction.

UNIT : V EQUILIBRIUM OF STRINGS (15 HRS)

Equilibrium of strings – Common catenary – equations – tension at any point – geometrical properties – Parabolic catenary – Suspension Bridge.

TEXT BOOKS

Dr. M.K. Venkataraman, TREATMENT AS IN STATICS Agasthiar Publications, Trichy (2008).

Unit: I - Chapters 1 & 2

Unit: II – Chapters 3 & 4

Unit: III – Chapter 5

Unit: IV – Chapter 7

Unit: V – Chapter 11

REFERENCE BOOKS:

1. A.V. Dharmapadam STATICS, VISWANATHAN PUBLISHERS ,CHENNAI

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

B.Sc., MATHEMATICS

(For the candidates admitted from 2008 onwards)

SEMESTER – III

Allied 4 - COMPUTER FUNDAMENTALS AND PC SOFTWARES

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U11MA3AOT22

Marks:100

GENERAL OBJECTIVES:

To implement the concepts of windows, windows accessories and to make the students being aware of Ms word , Ms excel and Power point

UNIT I: COMPUTER APPRECIATION (12 HRS)

Introduction – Characteristics Of A Computer – History Of Computers – Generations Of Computers – Classification Of Computers – Application Of Computers – Computer Architecture And Organization – What Is A Personal Computer ? Other Devices in a PC – What Are Hardware And Software? What Is The Operating System? Popular Operating Systems For PCs – Computer Languages – Application Programs And Custom Software – Networking Concepts.

UNIT II: WINDOWS (12 HRS)

History Of Windows – Starting Windows – The Desktop – Using The Mouse – What Is A Window? Maximizing, Minimizing ,Restoring And Closing A Window – Using The Start Menu – Control Panel – Managing Multiple Windows – Arranging Icons On The Desktop – Creating A New Folder On Desktop – Logging Off And Shutting Down Windows.

WORKING WITH WINDOWS AND WINDOWS ACCESSORIES (12HRS)

My Computer – Windows Explorer – Copying And Moving Files Without Using Windows Explorer – Using Recycle Bin To Restore Items – Managing Fonts – Finding Files Or Folders – Using Notepad – Using Calculator – Using Wordpad – Using Paint.

UNIT III:MS-WORD (12 HRS)

Introduction To Word Processing – Features Of Word Processor – Introduction To Ms Word Parts Of The Screen – Menus In Msword – Toolbars In Msword – Working With Document – Selecting Text – Inserting Autotext – Inserting And Replacing Text - Formatting Documents – Working With Tables – Columns – Spelling And Grammer – Borders And Shading – Working With Graphics – Labeling And Mail Merge.

UNIT IV: MSEXCEL

(12 HRS)

Introduction To Electronic Spreadsheet – Features Of Spreadsheet – Introduction To Ms Excel – Parts Of a Spreadsheet – Working With Worksheet - Formatting Worksheet - Working With Workbooks – Formulas – Functions – Working Data Menus – Excel Charts.

UNIT V: POWERPOINT

(12 HRS)

Introduction To Presentation Software – Parts Of Powerpoint Screen – Opening New / Blank Presentation – Viewing Slides – Creating Slides – Saving A Presentation – Opening An Existing Presentation – Setting A Background Layout – Inserting Objects – Adding Headers And Footers – Working With Colors And Transitions – Animate Objects And Slides – Working With Wizard Presentations.

TEXT BOOKS:

1. R.K.Taxali, **“PC SOFTWARE FOR WINDOWS MADE SIMPLE”**, Tata McGraw Hill Publishing Company Limited.
2. **“STEP BY STEP MICROSOFT OPERATING SYSTEM”**, 2003 Edition.
3. Guy Hart Davis Dreamtech, **“HOW TO DO EVERYTHING WITH MS-OFFICE EXCEL 2003”** A Guide.
4. **“TEACHES POWERPOINT 4.0 FOR WINDOWS”**, PC Learning Labs, Ziff-Davis Press
5. Greg Perry Pearson ,**“ TEACH YOURSELF MS OFFICE 2003 IN 24 HOURS”** Pearson Education.

REFERENCE BOOKS:

1. Richard Allen King, **“THE MS-DOS HANDBOOK”**, Second Edition, BPB Publications, New Delhi.
2. Greg Perry, **“TEACH YOURSELF MICROSOFT OFFICE 2003 IN 24 HOURS”**, Pearson Education.
3. Ron Mansfield, **“WORKING IN MICROSOFT OFFICE”**, Tata McGraw Hill Edition.
4. Peter Weverka, Diane Poremsky, **“THE COMPLETE REFERENCE WORD 2002”**, Tata McGraw Hill Edition.
5. Lonnie E. Moseley, David M.Boodey, **“MASTERING MICROSOFT OFFICE PROFESSIONAL FOR WINDOWS 95”**,BPB Publications.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

B.Sc., MATHEMATICS

(For the candidates admitted from 2008 onwards)

SEMESTER –III

SKILL BASED ELECTIVE 3 - APTITUDE MATHEMATICS

Total Hours: 30

Hours/Week: 2

Credits: 2

Code: U08MA3SBT03

Marks: 100

GENERAL OBJECTIVES:

To revise arithmetic facts related to numbers , ratios , percentages,etc .

To practice doing problems of competitive examination quickly.

UNIT I: (6 HRS)

Number System – Simplification using formulae and rules – L.C.M and H.C.F of 2 or more numbers

UNIT II: (6 HRS)

Percentage – Averages

UNIT III: (6 HRS)

Ratio and Proportion – Profit and Loss

UNIT IV: (6 HRS)

Time and Work – Cisterns and Pipes – Data Analysis (Bar Chart and Pie Diagram only)

UNIT V: (6 HRS)

Time and Distance – Trains - Boats and Streams.

TEXT BOOK:

Aggarwal R.S. (2006), **ARITHMETIC (Subjective and Objective) For Competitive Examinations**, S.Chand and Company Ltd., Ram Nagar, New Delhi.

Unit I: Chapters 1, 2 and 4

Unit II: Chapters 6 and 7

Unit III: Chapters 8 and 16

Unit IV: Chapters 11, 12 and 29

Unit V: Chapters 13, 14 and 15

REFERENCE BOOKS:

1. Competition Success Review for Bank Probationary Officer's Exam.
2. Competition Success Review for MBA Entrance Examinations.
3. Any text book on Competitive Examinations.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A. /B.Sc. / B.Com. / B.R.Sc. / B.C.A./B.B.A DEGREE COURSE
II YEAR: SEMESTER – III
(From 2012 onwards)
GENDER STUDIES

Hours:1Hr/wk

CODE: U12WS3GST01

CREDITS:1

Objectives

To make boys and girls aware of each other's strength and weakness

To develop sensitivity towards both genders in order to lead an ethically enriched life

To promote attitudinal change towards a gender balanced ambience and women empowerment

Unit I Concepts of Gender :

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

Unit II Women's Studies Vs Gender Studies:

UGC's Guidelines – VII to XI Plans –

Gender Studies : Beijing Conference and CEDAW-Exclusiveness and Inclusiveness.

Unit –III 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.

Unit – IV 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.

Unit – V 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 – 73rd Amendment for PRIs.

BOOK FOR STUDY

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

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2

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

LIFE ORIENTED EDUCATION

ETHICS – II: EMPOWERMENT OF WOMEN

HRS / Wk: 1

CODE:U12VE4LVE02

CREDIT : 1 MARKS : 100

OBJECTIVES:

- To make the learners aware of various Social, Gender issues and CyberCrimes.
- To make them aware of the propertyrights.
- To make them understand and appreciate the role of media, in facing the challenges on various lifeissues.

UNIT – I: GENDER ISSUES

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

UNIT – II: WOMEN AND MEDIA

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

UNIT – III: 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 – 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-Mother Teresa, Indira Gandhi, and 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, and twitter

REFERENCES:

1. Dr.M.Arumairaj et al., 1999, "Marching towards the Milleniumahead".
2. Thomas Anjugandam, 1999, "Grow Free Live Free" SalesianPublicaiton.
3. H.C Prett Nandhini Upreti, jaipur 2000 "Women and problems of GenderDiscrimination".
4. Thomas B.Jayaseelan, 2002, "Women: Rights and law" Indian Social Institute, NewDelhi.
5. Reni Jacob vol I & II, April- June 2004, "Vikasimi – The journal of Women's Empowerment,Ed,"

HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.Sc./B.Com/B.R.Sc/B.C.A – DEGREE COURSES
LIFE ORIENTED EDUCATION
BIBLE STUDIES – II: OLD TESTAMENT

HRS /WK:1

CODE:U12VE4LVBO2

CREDIT:1

MARKS : 100

OBJECTIVE:

- Understanding the desires of God through Prophetic revelation and becoming 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 (Exo4-5);
- Joshua (Joshua1-8)

UNIT – II: JUDGES AND KINGS

- **JUDGES:** Deborah (Judges 4); Samson (Judges 6-8); Gideon (Judges13-16)
- **KINGS:** David (I Sam 17-31, II Sam 1-12); Solomon (I Kings 1-11, Proverbs1-5,31)

UNIT – III: WOMEN IN THE BIBLE

- Women in the Old Testament
- Eve (Gen3)
- Ruth (Ruth1-4)
- Hannah (I Sam1:1-28)
- Esther (Esther1-6)

UNIT – IV: MINOR PROPHETS

- Brief Life History and teachings of
- Amos
- Jonah

- Micah
- Nahum
- Habakkuk

UNIT – V: MAJOR PROPHETS

- Brief Life History and teachings of
- Elijah (I Kings 17-19)
- Elisha (II Kings 4-6)
- Isaiah (Is 1, 6, 11, 36-38, 40-42, 44, 50, 53, 61)
- Jeremiah (Jer 1-3, 7-12, 18-19, 23)
- Daniel (Daniel 1-6)

REFERENCES:

1. Missionaries Biographies. 1995, Amazon.com
2. Russell Fueller (1999) The Text book of the Twelve Minor Prophets. Wipf & Stock Publishers, UK.
3. Willis Judson Beecher (2002) The Prophets and The Promise. Wipf & Stock Publishers, UK

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
B.A./ B.Sc./ B.Com/ B.R.SC/ B.C.A - DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – II: CHURCH AND SACRAMENTS

HRS / Wk: 1 **CODE :U12VE4LVC02**
CREDIT : 1 **MARKS : 100**

OBJECTIVES:

- To instruct the students to live in relationship with God.
- To offer God's gift of the Holy Spirit.
- To build relationship with Jesus.
- To learn Sacraments and Prayer life through which a Christian is able to live in relationship with Christ.
- To enrich our devotion to Mother Mary and Saints.

UNIT - I: MISSION OF THE CHURCH

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

UNIT – II: PARTICIPATORY CHURCH (AS LAY FAITHFUL) AS A COMMUNITY

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 characteristic 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.

Sacraments – Initiation- Social – Healing (all the seven) - stress on Confession, Confirmation and Holy Communion. Sacramental: holy “things” used –their sanctity.

UNIT – IV: SACRAMENTS AND SACRAMENTAL

Sacraments-Initiation-Social-Healing (all the seven)-stress 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, Theologies. Saints in the Church- 10 women saints.

REFERENCES :

1. "Vatican II Revised" Archbishop Angelo Fernandes Published by X.Diax de RioS.J. Gujarat Sahitya Prakash, P.O.Box. 70, Gujarat, 388001, India.
2. "The Sacraments The Word of God at the Mercy of theBody" Claretian Publications, Malleswaram, Bangalore560055.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – III

(For the candidates admitted from 2008 onwards)

Allied 4 - APPLIED MATHEMATICS III

(for Computer science students)

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U11MA3AOT13

Marks:100

GENERAL OBJECTIVE:

To enable the students to acquire the knowledge on numerical and certain statistical concepts.

**UNIT I : INTERPOLATION AND SOLUTION OF ALGEBRAIC AND
TRANSCENDENTAL EQUATIONS (12 HRS)**

Newton Gregory forward and backward interpolation formulae-Lagrange's Interpolation formula.Solving algebraic and transcendental equations – Bisection, False position and Newton Raphson methods.

UNIT II : 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.

UNITIII : NUMERICAL INTEGRATION: (12 HRS)

Trapezoidal rule and simpsons 1/3 rule. Solving differential equations (1st order differential equations only) – solutions by Euler's method – rungeKutta 2nd and 4th order method.

UNIT IV :ANALYSIS OF TIME SERIES (12 HRS)

Time Series - components of Time Series - measurement of trend - measures of seasonal variation(Methods of simple averages and Link relatives only) - problems (Deseasonalization is excluded)

UNIT V :INDEX NUMBERS (12 HRS)

Index Numbers – Laspeyer's,Fisher's and Paasche's index numbers- tests for Index Numbers - cost of living Index Number - uses of Index Numbers.

TEXT BOOKS:

- 1.Venkataraman M.K(2006), “NUMERICAL METHODS IN SCIENCE AND ENGINEERING”, National Publishing House, Chennai
2. PillaiR.S.N ,Bagavathi .V (2007) “STATISTICS”S.Chand and Company ,New Delhi

REFERENCE:

- 1.Freedman,David,(2006), “STATISTICS”, Viva Books PvtLtd,New Delhi.
- 2.Kalavathy .S,(2004),”NUMERICAL METHODS “, Thomson Publishers ,Newdelhi.
- 3.Kandaswamy .P,(2001), “NUMERICAL METHODS” , S.Chand& co, Newdelhi.
- 4.Vedamuruthy.V.N,(2005),”NUMERICAL METHODS” ,VikasPublishers,Newdelhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – III
(For the candidates admitted from 2008 onwards)
Allied 4 - CALCULUS AND TRIGONOMETRY

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U11MA3AOT14

Marks:100

GENERAL OBJECTIVE:

To acquire knowledge to expand trigonometric functions and fourier series to identify and solve standard forms of partial differential equations.

UNIT I:TRIGONOMETRY: (12 HRS)

Expansions of $\text{Cos}^n\theta$, $\text{Sin}^n\theta$ and $\text{Tan}^n\theta$ (n being a positive integer) – Expansions of $\text{Sin}^n\theta$ and $\text{Cos}^n\theta$ in a series of sines and cosines of multiples of θ (n being a positive integer and θ in radians) – Expansions of $\text{Sin}\theta$, $\text{Cos}\theta$ and $\text{Tan}\theta$ in a series of powers of θ

UNIT II: HYPERBOLIC FUNCTIONS (12 HRS)

Hyperbolic functions, inverse hyperbolic functions, separation into real and imaginary parts .

UNIT III : DIFFERENTIAL CALCULUS: (12 HRS)

Successive differentiation – nth derivative of standard functions – Leibnitz theorem (without proof) Application to simple problems .

UNIT IV : PARTIAL DIFFERENTIAL EQUATIONS (12 HRS)

Solutions of first order equations in their standard forms – $F(p,q) = 0$, $F(x,p,q) = 0$, $F(y,p,q) = 0$, $F(z,p,q) = 0$, $F(x,p) = F(y,q)$, $Z = px+qy+f(p,q)$.

UNIT V: FOURIER SERIES: (12 HRS)

Fourier series-full range and half range series.

TEXT BOOKS

1.S.Narayanan and T.K.ManicavachagomPillayANCILLARY MATHEMATICS

(Trigonometry) ViswanathanPublishers Chennai

For UNITS I,II

1.S.Narayanan and T.K.ManicavachagomPillayANCILIARY MATHEMATICS

(Calculus) ViswanathanPublishers Chennai

For UNITS III,IV ,V

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – III

(For the candidates admitted from 2008 onwards)

Allied 4 - MATHEMATICS FOR COMPETITIVE EXAMINATIONS

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U11MA3AOT21

Marks:100

GENERAL OBJECTIVES:

To bring in basic knowledge about number system.

To make students familiar with the problems involving ratio and proportion , percentage, Time and work, simple interest and compound interest etc.

To Practise solving problems quickly.

UNIT: I (12 HRS)

Numbers – Sum, difference, Multiplication and Division, squares and square roots, L.C.M. & H.C.F. of 2 or more numbers, Decimal fractions- Sum, Difference, Multiplication and Division only

UNIT: II (12 HRS)

Percentage - Averages -Ratio and proportion.

UNIT: III (12 HRS)

Time and work – Pipes and Cisterns - Time and Distance - Problems involving trains,boats and streams.

UNIT: IV (12 HRS)

Simple interest, compound interest and Profit and Loss.

UNIT: V (12 HRS)

Area of plane figures - Triangle, square, rhombus, rectangle, quadrilateral ,circle

Data analysis – Bar diagram and Pie diagram only.

TEXT BOOK:

Aggarwal R.S. (2006), **ARITHMETIC (Subjective and Objective) For Competitive Examinations**, S.Chand and Company Ltd., Ram Nagar, New Delhi.

Unit I: Chapters 1, 2, 3

Unit II: Chapters 6,7,8

Unit III: Chapters 11 to 15

Unit IV: Chapters 16, 18 and 19

Unit V: Chapters 20 and 29.

REFERENCE BOOKS:

1. Competition Success Review for Bank Probationary Officer's Exam.
2. Competition Success Review for MBA Entrance Examinations.
3. Any text book on Competitive Examinations.
4. Arithmetic for Competitive Examinations by V.K. Subburaj.

புனித சிலுவை தன்னாட்சிக் கல்லூரி, திருச்சிராப்பள்ளி – 620 002.

தமிழாய்வுத்துறை

இளம் வணிகவியல் / இளங்கலை / இளம் அறிவியல் பட்ட வகுப்பு

இரண்டாம் ஆண்டு – நான்காம் பருவம் - 2014

தாள் - IV

Total Hours : 75

Code : U12TL4TAM04

Hrs : 5Hrs /Wk

Marks : 100

Credit : 3

நோக்கங்கள்:

1. மாணவர்களுக்குத் தமிழர்தம் வாழ்வியல் விழுமியங்களை உணர்த்துதல்.
2. அறநெறிகள் வாழ்க்கைக்கு வழிகாட்டும் விதத்தினை எடுத்துரைத்தல்
3. சிகரம் தொட்ட படைப்பாளிகளின் சிந்தனைகளை வெளிப்படுத்துதல்
4. மொழித்திறன் வளர்த்தல்.

பயன்கள்:

1. வாழ்க்கையின் பல்வகை நிலைகளையும் உணர்ந்து செயல்படச் செய்தல்
2. தன்னைத் தானே நெறிப்படுத்திக்கொள்ள, பயன்பாடடைய இலக்கியம் வழிகாட்டுவதை புரிந்துகொள்ளச் செய்தல்.
3. இடைவிடாத முயற்சியின் வெற்றிப்படிக்களைக் கண்டுணர்ந்து மேன்மை அடையச் செய்தல்.
4. இருமொழிப் புலமையை வளர்த்தல்.

அலகு:1 செய்யுள்

கடமை

காலந்தவறாமை

ஒற்றுமை உணர்வு

அலகு:2 செய்யுள்

நட்பு

குடும்பமும் விருந்தோம்பலும்

அலகு:3

தமிழ் இலக்கிய வரலாறு

சங்ககாலம் - சங்கம் மருவியகாலம்

எட்டுத்தொகை, பத்துப்பாட்டு, பதினெண்கீழ்க்கணக்கு நூல்கள்

அலகு:4

உரைநடை

சங்க இலக்கியம் (பெண்பாற் புலவர்கள்)

கட்டுரைத் தொகுப்பு

அலகு:5

பொது- மொழிபெயர்ப்பு

பாட நூல்கள்

- | | |
|--------------------------------------|----------------------------|
| 1. செய்யுள் நூல் | - தமிழாய்வுத்துறை வெளியீடு |
| 2. தமிழ் இலக்கிய வரலாறு | - தமிழாய்வுத்துறை வெளியீடு |
| 3. சங்க இலக்கியம் கட்டுரைத் தொகுப்பு | - தமிழாய்வுத்துறை வெளியீடு |
| 4. மொழிபெயர்ப்பு | - தமிழாய்வுத்துறை வெளியீடு |

(for the candidates admitted from June 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-620002
DEPARTMENT OF HINDI
PART – I LANGUAGE HINDI FOR B.A, B.Sc & B.Com
HINDI PAPER-IV FUNCTIONAL HINDI
&TRANSLATION SEMESTER –IV

HRS/WEEK:5

CODE:U14HN4HIN04

CREDITS:3

MARKS :100

UNIT-I Functional Hindi

UNIT-II Adhunic Kaal

UNIT- III GeneralEssays

Parishram Ka Mahatva, Anushasan, Paropakar, Jawaharlal Nehru,
Deepavalli, Bharath Mein Computer

UNIT-IV LetterWriting

UNIT-V Anuvad Abhyas - III **Books**

Prescribed:

- | | |
|--|--|
| <input type="checkbox"/> GeneralEssays | - D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> AbinavaPatra Lekhan | - D.B.H.P. Sabha Publishers,Chennai-17 |
| <input type="checkbox"/> AnuvadAbhyas – III | - D.B.H.P. Sabha Publishers,Chennai-17 |

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2
DEPARTMENT OF FRENCH
SEMESTER IV
PART I - LANGUAGE - FRENCH PAPER IV [LANGUAGE & CULTURE
(ÉCHO A2 2^e édition)]
(For candidates admitted 2013 onwards)

HRS/WEEK :5
CREDIT:3

CODE : U14FR4FRE04
MARKS :100

Unit 1 C'est la fête !

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 – le calendrier – les fêtes traditionnelles, importées, francophones.

Unit 2 Vous plaisantez !

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 20^e siècle – le plaisir de jeux de mots.

Unit 3 On s'entend bien !

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.

Unit 4 À vos risqué et périls !

Le subjonctif présent, la voix passive – l'aventure 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 – les jeunes issus de l'immigration.

Unit 5 La vie est dure

Les pronoms possessifs, les adjectifs, les pronoms indéfinis – parler de ses activités quotidiennes, exprimer la confiance ou la méfiance – les tâches ménagères – la France insatisfaite - sans travail – la chanteuse Diam's – le film 'Le Couperet de Costa-Gavras'.

TEXT BOOKS:

ECHO A2 – METHODE DE FRANÇAIS & CAHIER PERSONNEL D'APPRENTISSAGE

Authors: J. Girardet and J. Pécheur Publication: CLÉ INTERNATIONAL, 2010.

(for candidates admitted from 2013 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2014 - 2015

II B.A., B.Sc., B.Com., B.R.Sc., B.C.A., B.B.A., SEMESTER IV
PART II - ENGLISH IV - GENERAL ENGLISH PAPER IV

NO.OF HRS/WK:6

CODE:U13EL4GEN04

NO.OF CREDITS: 3

OBJECTIVES

To strengthen the LSRW skills of students through inter-active approaches, participatory methods and activity oriented exercises.

To develop skills required for referential and independent learning.

To focus on writing skills like creative and comparative writing and book reviews.

To reinforce sub skills including vocabulary, grammar, dialogue, report writing and note making.

UNIT I: READ AND COMMUNICATE: HISTORICAL SKETCHES

The Renaissance

India under the British Raj

UNIT II: READ AND COMMUNICATE : MODERN FABLES

Nonchi Nona and Kotiya the Cat

The Competition

UNIT III: READ AND COMMUNICATE : MODERN FABLES

The Nightingale and the Rose

The Butterfly that Stamped

UNIT IV -READ AND COMMUNICATE : BIOGRAPHIES AND MODERN FABLES

Napoleon Bonaparte

The Hiding Place

UNIT V

GRAMMAR - Tenses

COMPREHENSION -General

COMPOSITION - 1. Notemaking
2. Dialogue
3. CreativeWriting
4. NarrativeWriting
5. Imaginative Writing

GENERAL ESSAY – 5TOPICS

1. Should capital punishment beabolished?
2. Is a corruption- free India adream?
3. The nuclear family and its consequent changes insociety.
4. The threat ofterrorism.
5. If man becomesimmortal...

THINK BETTER - READ AND COMMUNICATE : MODERN FABLES

1 – 10 for Internal Testing

BOOKS FOR REFERENCE

OraneeJansz : *EXPLORATIONS A Course in reading, thinking and communication skills.*

New delhi: Cambridge university press. 2004. Print.

.....
List of words \ compound words\phrases for making sentences:

1. Store house of knowledge
2. Genre
3. To be divided over

4. Taboo
5. To takeover
6. Hump
7. Bushy
8. Tiered
9. To roll from side to side
10. Flickered
11. To sail through
12. To tremble all over
13. Ecstasy
14. Thunder-clap
15. Mousy-quiet
16. Collision
17. Exiled
18. Revolution
19. To come round
20. To fight for a cause

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – IV
MAJOR CORE – 6 - ALGEBRA

Total Hours: 75

Hours/Week: 5

Credits: 5

Code: U08MA4MCT06

Marks: 100

GENERAL OBJECTIVES:

To make the students understand the characteristics of different Algebraic structures like Groups, Rings etc.

UNIT I: GROUPS (15 HRS)

Cosets and Lagrange's theorem - Normal subgroups and quotient groups - isomorphism and homomorphism.

UNIT II: RINGS (15 HRS)

Definition and examples - elementary properties of rings - isomorphism -types of rings - Characteristic of a ring - sub rings-ideals - quotient rings - homomorphism of rings

UNIT III: VECTOR SPACES (15 HRS)

Definition and examples - subspaces - Linear transformation - span of a set - Linear independence.

UNIT IV: VECTOR SPACES (CONTN) (15 HRS)

Basis and dimension – Rank and nullity.

UNIT V: INNER PRODUCT SPACES (15 HRS)

Definition and examples - Orthogonality - Orthogonal complement.

TEXT BOOK

S. Arumugam and A. Thangapandi Isaac “TREATMENT AS IN MODERN ALGEBRA”
“(August 2003) ,Seitech Publications (India) pvt ltd Chennai

UNIT I: (Chapter 3 - Sec.3.8 to 3.11)

UNIT II: (Chapter 4 - Sec.4.1 to 4.8 & 4.10)

UNIT III: (Chapter 5 - Sec 5.1 to 5.5)

UNIT IV: (Chapter 5 - Sec 5.6 , 5.7)

UNIT V: (Chapter 6 - Sec 6.1 to 6.3)

REFERENCE BOOKS

1. Shanti Narayanan, A TEXT BOOK OF MODERN ABSTRACTALGEBRA. Margam Publishers
2. K. Sivasubramanian. , MODERN ALGEBRA ,Allied publishers, New Delhi
3. R. Balakrishnan & N. RamabadranA TEXT BOOK OF MODERN ALGEBRA.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – IV
MAJOR ELECTIVE 1 - NUMERICAL METHODS

Total Hours: 75

Hours/Week: 5

Credits: 5

Code: U08MA4MET01

Marks: 100

GENERAL OBJECTIVE:

To make the students know about different methods of solving numerical equations and differential equations, methods of interpolation and numerical differentiation and integration.

UNIT I :SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS(15 HRS)

Introduction - Bisection Method - Iteration Method - The Method of False Position - Newton - Raphson Method.(exclude Generalized Newton's Method)

UNIT II: INTERPOLATION (15 HRS)

Introduction -Finite Differences – Forward , Backward and central differences only - Newton's formula for interpolation –Gauss central difference Interpolation formulae only - Interpolation with unevenly spaced points - Lagrange's interpolation formula.

UNIT III: NUMERICAL DIFFERENTIATION AND INTEGRATION: (15 HRS)

Introduction - Numerical differentiation - Maximum and minimum values of a tabulated function - Numerical integration – Trapezoidal rule - Simpson's 1/3-rule.

UNIT IV: SOLUTION OF LINEAR SYSTEMS OF EQUATIONS: (15 HRS)

Introduction - Solution of linear systems - Matrix inversion method -Gaussian elimination, Gauss – Jordan, Gauss -Seidel and Gauss Jacobi methods.

UNIT V: NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS: (15 HRS)

Introduction - Solution by Taylor's series - Euler's method - Modified Euler's method - Runge-Kuttamethod .

TEXT BOOK

S.S.Sastry ,INTRODUCTORY METHODS OF NUMERICAL ANALYSIS , New Age Publishing Company, Fourth edition, April 1995.

UNIT I: Chapter 2 - Sec. 2.1 to 2.5

UNIT II: Chapter 3 - Sec. 3.1, 3.3, 3.3.1, 3.3.2,3.3.3, 3.6, 3.7, 3.7.1 , 3.9, 3.9.1

UNIT III: Chapter 5 - Sec. 5.1 ,5.2,5.3,5.4,5.4.1 and 5.4.2 (Omit 5.2.1 &5.2.2)

UNIT IV: Chapter 6 - Sec.6.1, 6.3 to 6.3.2,6.3.3, 6.4.

UNIT V: Chapter 7 - Sec 7.1, 7.2. 7.4, 7.4.2, 7.5

REFERENCE BOOKS :

1.A.Singaravelu (2008) ,ENGINEERING MATHEMATICS ,NUMERICAL METHODS-
MeenakshiPublishers ,Chennai

2.S. Arumugam, A. Thangapandi Isaac & A. SomasundaramNUMERICAL METHODS
Scitech Publishers ,Chennai

3.Dr. M.K. Venkataraman , NUMERICAL METHODS IN SCIENCE AND
ENGINEERING,

National Publishing House, Chennai

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2013 onwards)
SEMESTER – IV
MAJOR ELECTIVE 1 - COMBINATORICS

Total Hours: 75

Hours/Week: 5

Credits: 5

Code: U13MA4MET04

Marks: 100

GENERAL OBJECTIVE:

To introduce some basic concepts and techniques in combinatorics such as basic counting methods, generating functions and recurrence relations

UNIT I : INTRODUCTIONS TO COMBINATORICS (15 HRS)

Basic counting principles, Permutations and Combinations (with and without repetitions), Binomial theorem, Multinomial theorem, Counting subsets, Set-partitions, Stirling numbers

UNIT II: INCLUSION AND EXCLUSION (15 HRS)

Principle of Inclusion and Exclusion, Derangements, Inversion Formulae.

UNIT III: GENERATING FUNCTIONS (15 HRS)

Generating functions: Algebra of formal power series, Generating function models, Calculating generating functions, Exponential generating functions.

UNIT IV: RECURRENCE RELATIONS (15 HRS)

Recurrence relations: Recurrence relation models, Divide and conquer relations, Solution of recurrence relations, Solutions by generating functions

UNIT V: INTEGER PARTITIONS (15 HRS)

Integer partitions, Systems of distinct representatives.

TEXT BOOK

Sane, S. S.: “*Combinatorial Techniques*”, Hindustan Book Agency

REFERENCE BOOKS :

1. Lint, J. H. van, and Wilson, R. M.: "*A Course in Combinatorics*", Cambridge University Press (2ndEd.)
2. Krishnamurthy, V.: "*Combinatorics: Theory and Applications*", Affiliated East-West Press
3. Cameron, P. J.: "*Combinatorics: Topics, Techniques, Algorithms*", Cambridge University Press
4. Hall, M. Jr.: "*Combinatorial Theory*", John Wiley & Sons (2nd Ed.)
5. Brualdi, R. A.: "*Introductory Combinatorics*", Pearson Education Inc. (5th Ed.)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

B.Sc., MATHEMATICS

(For the candidates admitted from 2013 onwards)

SEMESTER – IV

MAJOR ELECTIVE 1 - MATHEMATICAL MODELLING

Total Hours: 75

Hours/Week: 5

Credits: 5

Code: U13MA4MET05

Marks: 100

GENERAL OBJECTIVE:

To study the mathematical models through ode and difference equations and train the students to develop mathematical models in real life problems.

UNIT I :MATHEMATICAL MODELLING THROUGH ORDINARY DIFFERENTIAL EQUATIONS (15 HRS)

Linear Growth and Decay Models – Non-Linear Growth and Decay Models – Compartment Models – Dynamic problems – Geometrical problems.

UNIT II:MATHEMATICAL MODELLING THROUGH SYSTEMS OF ORDINARY DIFFERENTIAL EQUATIONS OF FIRST ORDER (15 HRS)

Population Dynamics – Epidemics – Compartment Models – Economics – Medicine, Arms Race, Battles and International Trade – Dynamics.

UNIT III:MATHEMATICAL MODELLING THROUGH ORDINARY DIFFERENTIAL EQUATIONS OF SECOND ORDER (15 HRS)

Planetary Motions – Circular Motion and Motion of Satellites – Mathematical Modelling through Linear Differential Equations of Second Order – Miscellaneous Mathematical Models.

UNIT IV:MATHEMATICAL MODELLING THROUGH DIFFERENCE EQUATIONS (15 HRS)

Simple Models – Basic Theory of Linear Difference Equations with Constant Coefficients – Economics and Finance – Population Dynamics and Genetics – Probability Theory

UNIT V:MATHEMATICAL MODELLING THROUGH GRAPHS (15 HRS)

Solutions that can be Modelled Through Graphs – Mathematical Modelling in Terms of Directed Graphs, Signed Graphs, Weighted Digraphs and Unoriented Graphs.

TEXT BOOK

1. J.N. Kapur, *Mathematical Modelling*, Wiley Eastern Limited, New Delhi, 1988. Unit 1: Chap 2, Sec 2.1 –2.6
Unit 2: Chap 3, Sec 3.1 –3.6
Unit 3: Chap 4, Sec 4.1 –4.4
Unit 4: Chap 5, Sec 5.1 –5.5
Unit 5: Chap 7, Sec 7.1 –7.5

REFERENCE BOOKS :

1. J.N. Kapur, *Mathematical Models in biology and Medicine*, EWP, New Delhi, 1985.
2. Keshet, L. E., "Mathematical Models in Biology", SIAM Lint, J. H. van, and Wilson, R. M.: "*A Course in Combinatorics*", Cambridge University Press (2ndEd.)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

B.Sc., MATHEMATICS

(For the candidates admitted from 2008 onwards)

SEMESTER – IV

Allied 5 - FORMAL LANGUAGES AND AUTOMATA THEORY

Total Hours: 60

Hours/Week: 4

Credits: 4

Code: U11MA4AOT24

Marks:100

GENERAL OBJECTIVES:

To enable the students to gain basic knowledge in Formal Languages And Automata Theory.

UNIT I:PHRASE- STRUCTURE LANGUAGES (12 HRS)

Phrase- structure, Context- sensitive, Context- free and regular grammars and languages-Chomskian hierarchy.Closure operations- Union, Concatenation, Kleene Closure, Reflection, Substitution, Homomorphism, Inverse Homomorphism and Intersection.

UNIT II:CONTEXT-FREE LANGUAGES: (12 HRS)

Context-free languages :Derivation tree – Ambiguity, Reduced Grammar-Normal forms:Chomsky normal form-Greibach normal form.

UNIT III:FINITE AUTOMATA AND REGULAR EXPRESSIONS: (12 HRS)

Finite State systems, Basic definitions, Automata- Non-deterministic finite automata, ,equivalence of DFA's and NFA's , finite automata with ϵ - moves. Regular Expressions.

UNIT IV:PUSH-DOWN AUTOMATA: (12 HRS)

Push-down Automata : Informal description, Definitions, Instantaneous descriptions, Accepted languages, Deterministic PDA's, Push down Automata and context- free Languages- Equivalence of acceptance by final state and empty stack- equivalence of PDA's and CFL's.

UNIT V:PROPERTIES OF CONTEXT-FREE LANGUAGES: (12 HRS)

Properties of Context-free languages: Pumping lemma for CFL's and its applications-Closure properties for CFL's, Use of Closure Properties.

TEXT BOOKS:

1. Rani Siromoney , “**FORMAL LANGUAGES**” CLS Publishers.
Unit I: Chapter 2,3.

Unit II: Chapter 4 :Sections 4.1 to 4.4
2. John E. Hopcroft& Jeffery D. Ullman (2002), “**INTRODUCTION TOAUTOMATA THEORY, LANGUAGES AND COMPUTATION**”, Narosa Publishing House ,New Delhi.
Unit III: Chapter 2: Section 2.1-2.5

Unit IV: Chapter 5:Section 5.1-5.3

Unit V: Chapter 6:Section 6.1-6.2(Ogden’s lemma in Section 6.1 is not included).

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – IV
Allied 6 - INTERNET AND WEB DESIGNING

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U11MA4AOT26

Marks:100

GENERAL OBJECTIVE:

To enable the students to understand the basic concepts of internet and hypertext markup language.

UNIT I:

(12 HRS)

INTRODUCTION TO THE INTERNET:

Computers In Business – Networking – Internet – Electronic Mail – Resource Sharing – Gopher – World Wide Web – Usenet – Telnet – Bulletin Board Service – Wide Area Information Service.

INTERNET TECHNOLOGIES:

Modem – Internet Addressing - Physical Connections – Telephone Lines.

INTERNET BROWSERS:

Internet Explorer – Netscape Navigator.

UNIT II:

(12 HRS)

INTRODUCTION TO HTML:

Designing A Home Page – History Of Html – Html Generations – Html Documents - Anchor Tag – Hyperlinks - Sample Html Documents.

HEAD AND BODY SECTIONS:

Header Section – Title – Prologue – Links – Colorful Web Page – Comment Lines – Some Sample Html Documents.

UNIT III:

(12 HRS)

DESIGNING THE BODY SECTION:

Heading , Printing – Aligning The Headings – Horizontal Rule – Paragraph – Tab Settings – Images And Pictures – Embedding PNG Format Images.

ORDERED AND UNORDERED LISTS:

Lists – Unordered Lists - Heading In A List – Ordered Lists – Nested Lists.

UNIT IV:

(12 HRS)

TABLE HANDLING:

Tables – Table Creation In Html – Width Of The Table And Cells – Cell Spanning Multiple Rows/Columns – Coloring Cells – Column Specification – Some Sample Tables.

DHTML AND STYLE SHEETS:

Defining Styles – Elements Of Styles – Linking A Style Sheet To An Html Document
– Inline Styles – External Style Sheets – Internal Style Sheets – Multiple Styles.

UNIT V: **(12 HRS)**

FRAMES:

Frameset Definition – Frame Definition - Nested Framesets.

A WEB PAGE DESIGN PROJECT:

Frameset Definition – Animals – Birds – Fish.

FORMS:

Action Attribute – Method Attribute – Enctype Attribute – Dropdown List – Sample Forms.

TEXT BOOK:

1. C. Xavier, “World Wide Web Design With Html”, Tata McGraw Hill Publishing Company Ltd , 2000.

REFERENCE BOOKS:

1. Wendy Willard , “Web Design – A Beginners Guide” , Tata McGraw Hill, 2001.
2. Thomas A. Powell , “The Complete Reference Web Design”, Tata McGraw Hill Publishing Company Ltd , 2000.
3. John Macoy, “ Mastering Web Design”, Bpb Publications, 2002.
4. Jennifer NiederestO’reilly , “Web Design In A Nutshell “,First Edition – Shroff Publishers And Distributors Pvt,Ltd, 2000
5. Andy Holyer , “Html In Easy Steps”, Tata McGraw Hill , 1998.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A. /B.Sc. / B.Com. / B.R.Sc./ B.C.A. DEGREE COURSE
LIFE ORIENTED EDUCATION

ETHICS – II: EMPOWERMENT OF WOMEN

HRS / Wk: 1

CODE:U12VE4LVE02

CREDIT : 1MARKS : 100

OBJECTIVES:

- To make the learners aware of various Social, Gender issues and CyberCrimes.
- To make them aware of the propertyrights.
- To make them understand and appreciate the role of media, in facing the challenges on various lifeissues.

UNIT – I: GENDER ISSUES

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

UNIT – II: WOMEN AND MEDIA

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

UNIT – III: 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 – 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-Mother Teresa, Indira Gandhi, and 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, and twitter

REFERENCES:

1. Dr.M.Arumairaj et al., 1999, "Marching towards the Milleniumahead".
2. Thomas Anjugandam, 1999, "Grow Free Live Free" SalesianPublicaiton.
3. H.C Petti Nandhini Upreti, jaipur 2000 "Women and problems of GenderDiscrimination".
4. Thomas B.Jayaseelan, 2002, "Women: Rights and law" Indian Social Institute, NewDelhi.
5. Reni Jacob vol I & II, April- June 2004, "Vikasimi – The journal of Women's Empowerment,Ed,"

HOLY CROSS COLLEGE(AUTONOMOUS) TRICHIRAPALLI-2.
B.A/B.Sc./B.Com/B.R.Sc/B.C.A – DEGREE COURSES
LIFE ORIENTED EDUCATION
BIBLE STUDIES – II: OLD TESTAMENT

HRS /WK:1

CODE:U12VE4LVBO2

CREDIT:1

MARKS : 100

OBJECTIVE:

- Understanding the desires of God through Prophetic revelation and becoming 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 (Exo4-5);
- Joshua (Joshua1-8)

UNIT – II: JUDGES AND KINGS

- **JUDGES:** Deborah (Judges 4); Samson (Judges 6-8); Gideon (Judges13-16)
- **KINGS:** David (I Sam 17-31, II Sam 1-12); Solomon (I Kings 1-11, Proverbs1-5,31)

UNIT – III: WOMEN IN THE BIBLE

- Women in the Old Testament
- Eve (Gen3)
- Ruth (Ruth1-4)
- Hannah (I Sam1:1-28)
- Esther (Esther1-6)

UNIT – IV: MINOR PROPHETS

- Brief Life History and teachings of
- Amos
- Jonah

- Micah
- Nahum
- Habakkuk

UNIT – V: MAJOR PROPHETS

- Brief Life History and teachings of
- Elijah (I Kings 17-19)
- Elisha (II Kings 4-6)
- Isaiah (Is 1,6,11,36-38,40-42,44,50,53,61)
- Jeremiah (Jer 1-3,7-12,18-19,23)
- Daniel (Daniel 1-6)

REFERENCES:

4. Missionaries Biographies. 1995, Amazon.com
5. Russell Fueller (1999) The Text book of the Twelve Minor Prophets. Wipf & Stock Publishers, UK.
6. Willis Judson Beecher (2002) The Prophets and The Promise. Wipf & Stock Publishers, UK

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
B.A./ B.Sc./ B.Com/ B.R.SC/ B.C.A - DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – II: CHURCH AND SACRAMENTS

HRS / Wk: 1
CREDIT : 1 MARKS : 100

CODE :U12VE4LVC02

OBJECTIVES:

- To instruct the students to live in relationship with God.
- To offer God's gift of the Holy Spirit.
- To build relationship with Jesus.
- To learn Sacraments and Prayer life through which a Christian is able to live in relationship with Christ.
- To enrich our devotion to Mother Mary and Saints.

UNIT - I: MISSION OF THE CHURCH

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

UNIT – II: PARTICIPATORY CHURCH (AS LAY FAITHFUL) AS A COMMUNITY

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 characteristic 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.

Sacraments – Initiation- Social – Healing (all the seven) - stress on Confession, Confirmation and Holy Communion. Sacramental: holy “things” used –their sanctity.

UNIT – IV: SACRAMENTS AND SACRAMENTAL

Sacraments-Initiation-Social-Healing (all the seven)-stress 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, Theologies. Saints in the Church- 10 women saints.

REFERENCES :

1. "Vatican II Revised" Archbishop Angelo Fernandes Published by X.Diax de RioS.J. Gujarat Sahitya Prakash, P.O.Box. 70, Gujarat, 388001, India.
2. "The Sacraments The Word of God at the Mercy of theBody" Claretian Publications, Malleswaram, Bangalore560055.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – IV
(For the candidates admitted from 2011 onwards)
Allied 5 - ANALYTICAL GEOMETRY OF THREE DIMENSIONS, VECTOR
CALCULUS AND LAPLACE TRANSFORMS
(for Chemistry Students)

Total Hours: 60

Hours/Week: 4

Credits: 4

Code: U11MA4AOT19

Marks:100

GENERAL OBJECTIVES:

To expose the students to the concepts of three dimensional geometry and Laplace transforms and introduce the idea of line, surface and volume integrals and vector differentiation.

UNIT I: PLANES (12 HRS)

Cartesian co-ordinates – distance between points – Direction Cosines – Direction ratios – angle between two lines - The Plane – the general equation of the plane – Standard forms of equations of planes.

UNIT II: SKEWLINES (12 HRS)

Skewlines – Shortest distance between two skewlines – equation of the line of shortest distance (Cartesian only) – coplanarity of Straight lines

UNIT III: VECTOR DIFFERENTIATION (12 HRS)

Vector differentiation: Velocity – acceleration – scalar and vector fields – Gradient, Divergence and curl .

UNIT IV: LAPLACE TRANSFORM (12 HRS)

Laplace transforms of the functions e^{at} , e^{-at} , $\cos at$, $\sin at$, $\cosh at$, $\sinh at$, t^n , $e^{-at}\cos bt$, $e^{at}\cos bt$, $e^{at}\sin bt$, $e^{-at}\sin bt$, $e^{-at}\cosh bt$, $e^{at}\cosh bt$, $e^{at}\sinh bt$, $e^{-at}\sinh bt$, $e^{-at}t^n$, $e^{at}t^n$, $f'(t)$, $f''(t)$, $f^{(n)}(t)$ (where n is a positive integer), $t^n f(t)$, $n=1,2,\dots$

UNIT V: INVERSE TRANSFORMS: (12 HRS)

Inverse transforms relating to the above standard functions .

Note: Only problems in all the units (derivations are excluded)

TEXT BOOKS

UNITS I & II

1.T.K. ManicavachagomPillay&Natarajan (2002), “A Text book of Analytical Geometry ,Part II – Three Dimensions”, Viswanathan Publishers ,Chennai

UNITS III

2.K. Viswanathan and S. Selvaraj, “Vector Analysis”, volIII,AlliedPublishers,Chennai

UNITS IV & V.

3.Narayanan and T.K. ManicavachagomPillay. “Ancillary Mathematics” (Volume I – Part II) Viswanathan publishers.

**HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – IV**

**(For the candidates admitted from 2011 onwards)
Allied 5 - DECISION MAKING TECHNIQUES.**

Total Hours: 60

Hours/Week: 4

Credits: 4

Code: U11MA4AOT23

Marks:100

Unit I : (12 HRS)

Introduction to Linear Programming Problem – Mathematical formulation – Graphical Solution Method. Definitions of objective functions, constraints, non negativity restrictions, solution, feasible solution and optimal solution

Unit II : (12 HRS)

Introduction to Game Theory – Two person zero sum game – The maximin– minimax principle – Games without saddle – Solution of 2 x 2 rectangular games – Graphical method.

Unit III: (12 HRS)

Transportation Problem – Definition – Mathematical formulation – Initial basic feasible solution – North – West Corner rule – Row Minima Method – Column Minima Method – Matrix Minima Method – Vogel’s Approximation Method – Unbalanced Transportation Problem – Maximization type.

Unit IV: (12 HRS)

Inventory Control – Types of inventory – Economic order quantity – Deterministic inventory problem (with and without shortages (instantaneous replenishment only)) – EOQ problem with price breaks.

Unit V: (12 HRS)

Network scheduling PERT – CPM – time calculation in Networks – Critical Path Method (CPM) – PERT calculation. (Expected value and variance of μ_i only)

Note: Only Numerical problems (Derivations are excluded)

Text Book:

1. Kanti Swarup, Gupta and Man Mohan, "OPERATION RESEARCH" (2009), Sultan Chand and Sons, New Delhi.

Unit I : Chapter 2: 2.1 – 2.4, Chapter 3: 3.1-3.4

Unit II : Chapter 17: 17.1 to 17.6

Unit III: Chapter10: 10.1, 10.9, 10.15, 10.16

Unit IV:Chapter 19: 19.1-19.6, 19.10 (case1only),19.11(case 1 only)

Unit V:Chapter 25: 25.1 – 25.4 ,25.6

REFERENCE BOOKS:

1. Problems in Operations Research by P.K.Gupta and D.S.Hira

2.Operations Research by Hamdy, Taha ,Prema Publishers,1995,Bangalore

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – IV

(For the candidates admitted from 2011 onwards)

Allied Optional 6- NUMERICAL AND STATISTICAL METHODS

(For Chemistry Students)

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U11MA4AOT25

Marks:100

GENERAL OBJECTIVES:

To introduce numerical methods to solve equations, to interpolate using polynomials, to differentiate and integrate functions. To facilitate students to find statistical measures

UNIT I: ALGEBRAIC AND TRANSCENDENTAL EQUATIONS (12 HRS)

Introduction to Numerical analysis (Excluding Error concepts) Solving algebraic and transcendental equations – Bisection Method-The method of false position- Newton- Raphson Method.(The iteration method and Generalized Newton's method are omitted)

UNIT II: INTERPOLATION: (12 HRS)

Newton Gregory's forward and backward interpolation formulae-Lagrange's Interpolation formula.(Error concepts omitted)

UNIT : III (12 HRS)

NUMERICAL DIFFERENTIATION AND NUMERICAL INTEGRATION

Introduction - Numerical differentiation - Maximum and minimum values of a tabulated function - Numerical integration – Trapezoidal Rule - Simpson's 1/3-rule.

UNIT IV: MEASURES OF DISPERSION (12 HRS)

Measures of dispersion – Range – Quartile deviation – Mean deviation and their co-efficients– Standard deviation –The coefficient of variation.

UNIT V: CORRELATION (12 HRS)

Skewness-measures of skewness-Karl Pearson's coefficient of skewness -Bowley's coefficient of Skewness - Correlation – Scatter Diagram – Karl Pearson's Coefficient of Correlation (Bivariate data excluded) – Spearman's Rank Correlation Co- efficient .

Note :Derivations not included numerical problems only

TEXT BOOKS

1.S.S.Sastry ,INTRODUCTORY METHODS OF NUMERICAL ANALYSIS"(Third Edition, Twenty third printing, June, 1998)

Unit I – Chapter II : Sections 2.1, 2.2, 2.4, 2.5 (2.5.1 omitted)

Unit II – Chapter III : Sections 3.6, 3.9, 3.9.1

Unit III – Sections 5.1, 5.2, (5.2.1;5.2.2 omitted)5.3, 5.4.1, 5.4.2

2.R.S.N. Pillai and Bagavathy ,(2003) STATISTICSSultan and Chand for UNIT IV&V .

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
SEMESTER – IV

(For the candidates admitted from 2011 onwards)

Allied Optional 6 - Numerical Methods and Testing Hypothesis

Total Hours: 60

Hours/Week: 4

Credits: 3

Code: U11MA4AOT27

Marks:100

GENERAL OBJECTIVES:

To introduce numerical methods to solve equations, to interpolate using polynomials, to differentiate and integrate functions using numerical methods.

To facilitate students to apply statistical measures

UNIT I: ALGEBRAIC AND TRANSCENDENTAL EQUATIONS (12 HRS)

Introduction to Numerical analysis .(Excluding Error concepts.) Solving algebraic and transcendental equations – Bisection Method- Method of False position,Newton-Raphson method.

UNIT II: INTERPOLATION: (12 HRS)

Newton Gregory forward and backward interpolation formulae-Lagrange's Interpolation formula.

UNIT : III (12 HRS)

NUMERICAL DIFFERENTIATION AND NUMERICAL INTEGRATION

Introduction - Numerical differentiation - Maximum and minimum values of a tabulated function - Numerical integration – Trapezoidal rule - Simpson's 1/3-rule.

UNIT IV: (12 HRS)

Large sample tests-Introduction – sampling of attributes-Test for single proportion

Test of significance for difference of proportions. Test of significance for a single mean – Test of Significance for difference of means – Test of significance of difference of standard deviations.

Chi _ square Test – chi _ square test for independence of attributes - 2×2 contingency table.

UNIT V: (12 HRS)

Small sample test – test of significance based on t and F distributions- Application of t distribution – Test for single mean – test of significance for difference of means- test of significance of an observed Sample - correlation coefficient – F test for equality of Population variances.

Note : Derivations not included numerical problems only

1 .S.S.SASTRY ,INTRODUCTORY METHODS OF NUMERICAL ANALYSIS"(Third Edition, Twenty third printing, June, 1998)

Unit I – Chapter II : Sections 2.1, 2.2, 2.4, 2.5 (2.5.1 omitted)

Unit II – Chapter III : Sections 3.6, 3.9, 3.9.1

Unit III – Sections 5.1, 5.2, (5.2.1 omitted)5.3, 5.4.1, 5.4.2

For Units IV, V - Treatment as in Fundamentals of statistics by S.C. Gupta, Sixth revised and

Enlarged edition, Himalaya Publishing House, New Delhi (2010).

Unit IV- Chapter 17-17.1 to 17.4 & Chapter 18- 18.6 to 18.9.

Unit V- Chapter 19- 19.4 to 19.6, 19.8, 19.10.4,19.11.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – V
MAJOR CORE – 7 - REAL ANALYSIS

Total Hours: 75
Hours/Week: 5
Credits: 4

Code: U08MA5MCT07
Marks: 100

GENERAL OBJECTIVE:

To introduce the concepts of Real Numbers, completeness property, countable and uncountable sets, neighbourhoods, compactness and connectedness and to enable the students to know more about continuous functions, derivatives and Riemann integration.

UNIT I : REAL NUMBERS (15 HRS)

Introduction to Real Number system - the field axioms and theorems - Order in \mathbb{R} - Absolute value - Completeness - Some important subsets of \mathbb{R} - Representation of real numbers as points on a straight line - Intervals - Countable and uncountable sets .

UNIT II : NEIGHBOURHOOD AND LIMIT POINTS (15 HRS)

Neighbourhoods - Open sets - Closed sets - Limit points of a set - Closure of a set - Interior of a set.

UNIT III : LIMITS AND CONTINUITY (15 HRS)

Limits - Continuous functions - Types of discontinuities - Algebra and boundedness of continuous functions - Intermediate value theorem - Uniform continuity.

UNIT IV : DERIVATIVES (15 HRS)

Introduction - Derivability and continuity - Algebra of derivatives - Darboux's theorem.

MEAN VALUE THEOREMS

Rolle's theorem - Mean value theorems on derivatives (Lagrange's and Cauchy's) - Taylor's theorem with remainder - Taylor's series .

UNIT V : RIEMANN INTEGRATION (15 HRS)

Introduction - Riemann integrability and integral of bounded functions over bounded intervals - Properties of Darboux sums - Darboux's theorems I and II - Equivalent definition of integrability and integral - Conditions for integrability - Particular classes of bounded integrable functions - Properties of integrable functions - Integrability of sum, difference, product, quotient and modulus of integrable functions - Continuity and derivability of the integral function - fundamental theorem of integral calculus.

TEXT BOOK

1.M.K.Singal and Asha Rani Singal (2008) TREATMENT AS IN 'A FIRST COURSE IN REAL ANALYSIS'R.Chand& Co. New Delhi.

UNIT I : CHAPTER 1 (Sec.1 - 10)

UNIT II : CHAPTER 2(Sec.1 - 7)

UNIT III : CHAPTER 5(Sec. 1 – 6, 8)

UNIT IV : CHAPTER 6 (Sec.1 -3, 5) and Chapter 8 (Sec. 1 -5)

2. Shanti Narayan,TREATMENT AS IN "ELEMENTS OF REAL ANALYSIS"
Margaum Publishers

UNIT V : Chapter 9 (Omit Sec 9.12, 9.13, 9.16 and 9.17)

REFERENCE BOOKS:

1. Shanthi Narayan'A COURSE OF MATHEMATICAL ANALYSIS'" Margaum Publishers

2. Arumugamand othersREAL ANALYSIS ,New gamma publishing House,Palayamkottai

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – V
MAJOR CORE 8 -- DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS

Total Hours: 75

Hours/Week: 5

Credits: 4

Code: U08MA5MCT08

Marks: 100

GENERAL OBJECTIVES:

To expose the standard forms of partial differential equations, Laplace transform, inverse of Laplace transform, applications of partial differential equations and enable the students to apply in problems.

UNIT I : ORDINARY DIFFERENTIAL EQUATIONS (15 HRS)

Linear homogeneous equations with variable coefficients. Equations reducible to the linear homogeneous equation. Method of variation of parameters.

UNIT II : PARTIAL DIFFERENTIAL EQUATIONS (15 HRS)

Formation of partial differential equations by eliminating arbitrary constant and functions - solutions - General, particular and complete integrals - solutions to first order equations in four standard forms –

$F(p, q) = 0$, $F(z, p, q) = 0$, $F(x, p, q) = 0$, $F(y, p, q) = 0$, $F_1(x, p) = F_2(y, q)$, $z = px + qy + f(p, q)$,
Lagrange's method of solving linear equation $Pp + Qq = R$.

UNIT III : LAPLACE TRANSFORMS (15 HRS)

Definition - Laplace transforms of functions e^{at} , $\cos at$, $\sin at$, t^n (n is a +ve integer), $e^{at}\cos bt$, $e^{at}\sin bt$, $f'(t)$, $f''(t)$, $f^n(t)$, $t^n f(t)$, $f(t)/t$

UNIT IV : INVERSE LAPLACE TRANSFORMS (15 HRS)

Inverse transforms relating to the above standard functions - application to solution of ordinary differential equations with constant coefficients.

UNIT V : APPLICATION OF PARTIAL DIFFERENTIAL EQUATIONS (15 HRS)

Second order linear partial differential equation with constant coefficients - Particular integrals for functions of the type e^{ax+by} , $\sin(ax+by)$, $\cos(ax+by)$, $x^r y^s$

TEXT BOOK:

1. Narayanan.S, Manicavachagom Pillay.T.K, DIFFERENTIAL EQUATIONS,
S.Viswanathan (Printers and publishers), Chennai.

UNIT:I Chapter V - Section 5 & 6 and Chapter VII - Section 4

UNIT:II Chapter XII (Omit from Section 5.5)

UNIT:III Chapter IX – Sections 1 to 5

UNIT:IV Chapter IX – Sections 6 to 9

2.Venkatraman.M.K (2006)ENGINEERING MATHEMATICS , Third year Part B
,National Publishers, Chennai.

UNIT:V Chapter 2 (Section 13 to Section 19)

REFERENCE BOOKS:

1.Arumugam.S,ThangapandiIssac.A,Somasundaram.A,(2002) ENGINEERING MATHEMATICSVol III ,SCITECH Publishers, Chennai

2.Raisinghania.M.D,(2002),ORDINARYAND PARTIAL DIFFERENTIAL EQUATIONS
,S.Chand&Company ,New Delhi.

3.ZafarAhsan (2006) DIFFERENTIAL EQUATIONS AND THEIR APPLICATIONS
,Prentice Hall of India Ltd,New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – V
MAJOR CORE 9 - GRAPH THEORY

Total Hours: 75
Hours/Week: 5
Credits: 4

Code: U08MA5MCT10
Marks: 100

GENERAL OBJECTIVES:

To understand the concepts of graph theory as an application of mathematics in information technology related fields.

UNIT I : INTRODUCTION AND OPERATIONS ON GRAPHS (15 HRS)

Introduction- graphs and subgraphs-isomorphism- Independent sets and coverings - Matrices - Operations on graphs.

UNIT II : CHARACTERISTICS OF GRAPH (15 HRS)

Degree sequence-graphic sequences-walks, trails and paths-connectedness & components-blocks-connectivity.

UNIT III :SPECIAL GRAPHS (15 HRS)

Eulerian and Hamiltonian graphs and trees.

UNIT IV : DIRECTED GRAPHS (15 HRS)

Introduction – Definitions and Basic Concepts –Paths and Connections –Digraphs and Matrices –Tournaments .

UNIT V : APPLICATIONS OF GRAPH THEORY (15 HRS)

Introduction –Connector Problem –Shortest Path Problem –Transformation and kinematic Graph –Designing One Way Traffic System – Applications - The travelling salesman problem – Job sequencing problem.

TEXT BOOK

Dr.S.Arumugam and Dr.S.Ramachandran TREATMENT AS IN "INVITATION TO GRAPH THEORY" by 1994 edition.

UNIT I : Chapters 1 and 2(omit sections 2.5 & 2.7)

UNIT II : Chapters 3 and 4

UNIT III : Chapter 5 and 6

UNIT IV : Chapter 10

UNIT V : Chapter 11

REFERENCE BOOKS:

1. Harary ,GRAPH THEORY, Narosa Publishing House ,New Delhi,
2. NarsinghDeo, GRAPH THEORY WITH APPLICATIONS TO ENGINEERING AND COMPUTER SCIENCE Prentice Hall of India, New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – V
MAJOR CORE 10 - OPTIMIZATION TECHNIQUES - I

Total Hours: 75
Hours/Week: 5
Credits: 4

Code: U08MA5MCT12
Marks: 100

GENERAL OBJECTIVES:

To enable the students to convert any real life situation into a mathematical model and solve them using an appropriate algorithm.

UNIT I : LINEAR PROGRAMMING PROBLEM (15 HRS)

Introduction to OR - Mathematical formulation of the problem - Graphical solution methods - General Linear Programming Problem - Slack and Surplus variables. Canonical and standard forms of L.P.P.

UNIT II : SIMPLEX ALGORITHM (15 HRS)

The Simplex Method - Simplex Algorithm - Artificial variables - Charnes Method of penalties (Big - M method) - Two-Phase Simplex method.

UNIT III : ASSIGNMENT ALGORITHM (15 HRS)

Assignment Problem - Hungarian method - Unbalanced assignment problem - Travelling Salesman Problem.

UNIT IV : TRANSPORTATION PROBLEM (15 HRS)

Transportation Problem - Initial basic feasible solution - Northwest corner rule - Row minima method - Column minima method - Matrix minima Method - Vogel's approximation method - Optimal solution - u - v method - Degeneracy - Unbalanced Transportation Problem.

UNIT V. SEQUENCING PROBLEM (15 HRS)

Introduction - Problem of sequencing - Problems with n jobs and Two machines - Problems with n jobs and Three machines - problems with n jobs and m machines - Graphic solution

TEXT BOOK :

Kantiswarup,P.K.Gupta& Man Mohan , (2004) OPERATIONS RESEARCH , Twelfth Thouroughly revised edition.

UNIT - I - Chapters 2 & 3

UNIT - II - Chapter 4 – Sections 4:1 to 4:4

UNIT - III - Chapter 11 Sections 11:1 -11:4.

UNIT - IV - Chapter 10 Sections 10:1-10:14

UNIT V - Chapter 12 (Sec 12:1 to 12:6)

REFERENCE BOOKS:

1.H.Taha , IV edition OPERATIONS RESEARCH ,Prentice Hall of India

2.P.K.Gupta,D.S.Hira, (2001) PROBLEMS IN OPERATION RESEARCH,S.Chand ,New Delhi

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – V
MAJOR ELECTIVE 2 - C PROGRAMMING AND ITS APPLICATION TO
NUMERICAL METHODS

Total Hours: 75
Hours/Week: 5
Credits: 5

Code: U08MA5MET02
Marks: 100

GENERAL OBJECTIVES:

To introduce the concepts of C language which will enable them to write programmes for numerical methods.

UNIT - I:INTRODUCTION (15 HRS)

Constants, variables, data types, symbolic constants - operators and expressions - evaluation of expressions - reading and writing a character - formatted input and output - handling of character strings - operations on strings - string handling functions.

UNIT - II: DECISION MAKING AND CONTROL STATEMENTS (15 HRS)

Decision making and branching - Using IF, IF-ELSE, Nesting of IF-ELSE statements - ELSE-IF ladder - Switch statement - the conditional operator - GOTO statement - Decision making and looping - the WHILE, DO, FOR statements.

UNIT - III: ARRAYS AND STRUCTURES (15 HRS)

Arrays - one dimensional, two dimensional, multi dimensional groups - structure - definition giving values to members - Initialization - Comparison - arrays of structures - Arrays within structures - structures within structures and functions - Unions - Size of structures.

UNIT - IV: USER DEFINED FUNCTIONS (15 HRS)

User defined functions - the form of C functions - Return values and their types - calling a function - category of functions - no arguments and no return values - Arguments but no return values - Arguments with return values - Nesting of functions - Recursion - Function and arrays - the scope and life time of variables in functions.

UNIT - V: FILE MANAGEMENT (15 HRS)

File management - Defining and opening a file - Closing a file - I/O operations on files

TEXT BOOK

E. Balagurusamy.(2006) PROGRAMMING IN ANSI C Second Edition Mcgraw Hill Publishing company ,New Delhi

UNIT - I: Chapters 2,3,4 and 8

UNIT - II: Chapters 5 and 6

UNIT - III: Chapters 7 and 10

UNIT - IV: Chapter 9

UNIT - V: Chapter 12

REFERENCE BOOKS:

C - V.Rajaraman ,PROGRAMMING IN C - Schaum's Series

ANNEXURE

C Programming for Theory and Practicals:

ROOTS OF EQUATIONS : ITERATIVE METHOD

1. Bisection Method
2. False Position Method
3. Newton - Raphson Method

INTERPOLATION:

4. Lagrange's Method
5. Newton - Forward Method
6. Newton - Backward Method

NUMERICAL DIFFERENTIATION:

7. Euler Method
8. Predictor - Corrector Method
9. Runge-kutta IV order method

NUMERICAL INTEGRATION:

10. Simpson's 1/3 rule
11. Trapezoidal rule

TEXT BOOKS

TREATMENT AS IN

Kumaravel,S.andSusheela Kumaravel,*Astronomy*,8th Edition,SKV Publications,2004.

Unit 1: Sec: 39-79

Unit 2: Sec: 80-90,106-116

Unit3: Sec: 117-144

Unit 4: Sec:146-162,173-178

Unit 5: Sec:229-241,256-275

REFERENCE BOOKS:

1. G V Ramachandran, Text Book of Astronomy, Mission Press, Palayamkottai, 1965.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

III UG

(For the candidates admitted from 2008 onwards)

SEMESTER – V

NON MAJOR ELECTIVE 1 - QUICK MATHEMATICS

Total Hours: 30

Hours/Week: 2

Code: U08MA5NMT01

Credits: 2

Marks: 100

GENERAL OBJECTIVES:

To revise arithmetic facts related to numbers , ratios , percentages,etc .

To practice doing problems quickly for competitive examination

UNIT I: (6 HRS)

Number System – Simplification using formulae and rules – L.C.M and H.C.F of 2 or more numbers

UNIT II: (6 HRS)

Percentage – Averages

UNIT III: (6 HRS)

Ratio and Proportion – Profit and Loss

UNIT IV: (6 HRS)

Time and Work – Cisterns and Pipes – Data Analysis (Bar Chart and Pie Diagram only)

UNIT V: (6 HRS)

Time and Distance – Trains - Boats and Streams.

TEXT BOOK:

Aggarwal R.S. (2006), **ARITHMETIC (Subjective and Objective) For Competitive Examinations**, S.Chand and Company Ltd., Ram Nagar, New Delhi.

Unit I: Chapters 1, 2 and 4

Unit II: Chapters 6 and 7

Unit III: Chapters 8 and 16

Unit IV: Chapters 11, 12 and 29

Unit V: Chapters 13, 14 and 15

REFERENCE BOOKS:

1. Competition Success Review for Bank Probationary Officer's Exam.
2. Competition Success Review for MBA Entrance Examinations.
3. Any text book on Competitive Examinations.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – V
SKILL BASED ELECTIVE 4 - PROGRAMMING SKILLS

Total Hours: 30
Hours/Week: 2
Credits: 2

Code: U08MA5SBT04
Marks:100

GENERAL OBJECTIVES:

To acquire knowledge about Algorithms ,Flow Chart .

To Facilitate to write Simple programs independently.

UNIT I : FLOW CHART (6 HRS)

Flow chart –Definition – Symbols

Flow Chart for:

- (i) To find the area of a square , rectangle ,circle and triangle
- (ii) To calculate simple interest and compound interest
- (iii)To find the sum of first n natural numbers
- (iv)To find the sum of n given numbers and their average and standard deviation
- (v)To pick the largest of 3 given numbers.

UNIT II : ALGORITHMS (6 HRS)

Algorithm-Definition-Algorithm for those ((i) to (v)) mentioned in unit I

UNIT III:CONSTANTS,VARIABLES AND EXPRESSIONS (6 HRS)

Low level and High Level Languages – Hardware and Software

Alphabet- Constants- Variables- Arithmetic Expressions-Precedence rules of arithmetic operators-Logical expressions-Library functions – SIN , COS ,TAN,SQRT,EXP and LOG.

UNIT IV:STATEMENTS (6 HRS)

Comment Statement

Input –Output Statements

Assignment Statement

Conditional Statement –THE BLOCK IF CONSTRUCT

Loop Statement – THE BLOCK DO LOOP

UNIT V: SIMPLE PROGRAMS

(6 HRS)

Arrays –Format Specification (IW,FW.d, EW. d)

PROGRAMS:

For those mentioned in Unit I ((i) to (v))

(vi) For income Tax Calculation **(Example Program 6.6)**

(vii) To find the result of students in a class and the % of pass **(Example Program 8.1 / 8.3**

)

(viii) To find the first mark in a class of n students **(Example Program 7.11)**

(ix) To find the average height of boys and girls in a class **(Example Program 7.4)**

(x) For adding / multiplying two matrices

TEXT BOOK

1.P.S.Grover 1996 COMPUTER PROGRAMMING IN BASIC Allied Publishers Ltd,New Delhi for Units I &II

2. V.Rajaraman ,COMPUTER PROGRAMMING IN FORTRAN 90 AND 95 Prentice Hallof India ,New Delhi for Units III, IV &V

Unit III :

Chapter 3 (3.1 and 3.2)

Chapter 4 (4.1 and 4.5)

Chapter 6 (6.1)

Chapter 8 (8.2 and 8.3)

Unit IV: Chapter 4 (4.6 and 4.7)Chapter 5 (5.1 and 5.2)

Chapter 6 (6.2)Chapter 7 (7.1)

Unit V:Chapter 10 (10.2 , 10.3)

HOLY CROSS COLLEGE(AUTONOMOUS), TIRUCHIRAPPALLI-2

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

LIFE ORIENTED EDUCATION

ETHICS – III: FAMILY AND CAREER DEVELOPMENT

HRS / Wk: 1

CODE:U13VE6LVE03

CREDIT : 1 MARKS : 100

OBJECTIVES:

- To help the students learn skills, knowledge, talent to lead a meaningful life.
- To help the students understand marriage life.
- To make the students learn skills of nurturing family and children.
- To make them aware of emotional intelligence and choose their carrier.

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: MOTHERHOOD

Bringing up Children - Development stages (Eric Ericson model), Spirituality:
Spirituality in Family - Prayer, God’s Will, and 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.R.Sc./B.C.A – DEGREE COURSES

LIFE ORIENTED EDUCATION

BIBLE STUDIES – III: ESSENCE OF CHRISTIAN FAITH

HRS / WK: 1

CODE:U12VE6LVBO3

CREDIT:1

MARKS : 100

OBJECTIVE:

- Prepare to practice Christian principles in family, church and society as a youngwomen.

UNIT - I: ESSENTIALS OF CHRISTIAN FAITH

- Salvation – Deliverance from sin (Is 53), Assurance of salvation and New life (II Cor5:17)
- 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: MARIAGE AND FAMILY LIFE

- Finding the God’s Will - Issac (Gen24)
- Man and woman as Partners – Abraham and Sarah (Gen16-18,22)
Aquila and Priscilla (Acts 18: 1-3,26)
- Evils to be avoided – Premarital Sex, ExtramaritalSex,
Homosexuality, Abortion(Heb 13: 4, Psalm 127 : 4)
- Ideal Wife – Sarah (I Peter 3: 1-6), Ruth, Eph5

UNIT – III: CHRISTIAN HOME

- Parental Responsibilities and bringing up children – Abraham (Gen22),
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)
- Entertainments (I Cor 10:23)

UNIT – IV: CHRISTIAN ETHICS

- Holiness – Joseph (Gen 39:9)Levi 11: 45, Ecc12
- Obedience to God - Abraham (Gen 12) ; St.Paul (Acts9)
- Freedom and Accountability
- Justice andLove
- Choices in Life – Making Decisions(Studies, job, lifePartner)

- Model to follow – Who is your model? (John 15:1-17)
- Social Evils – Dowry, Caste discrimination, Accumulation of wealth
- Freedom of Options, Time Management, Work Ethics (I Peter 2:11-25)

UNIT – V: ROLE IN CHURCH AND SOCIETY

- Man is the temple of God (I Cor 3: 11-17, 6: 19-20) Individual responsibility in Gospelwork
- Church –Body of Christ (I Cor 12:14-27)
- Unity (John 17: 20-23, Mat 10: 37-39, 16:24-26, Mark 13:11-13)
- Discipleship (I & II Timothy, Titus)
- Social Responsibilities (Phil 2; 1-11, James 1: 27, 2: 14-17, 4: 17, 5:14-15)

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.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
B.A./B.Sc/B.Com/B,R.SC/B.C.A - DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – III: LITURGY AND CHRISTIAN LIFE

HRS / WK:1

CODE:U12VE6LVC03

CREDIT: 1MARKS: 100

OBJECTIVES:

- To prepare the students to participate meaningfully in the liturgical celebration and experience GOD in their day todaylife.
- To become a living witness to Jesus Christ in their personal, family and sociallife.

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-Populardevotion

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. –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-Come follow me-I have chosen you-Servant hood- Baptism-Common priesthood-Discipleship-Lay vocation-Lay participation-Lay associates.

UNIT – IV: CHRISTIAN FAMILY

Holy family- characteristic of good family – role of families in the church and society- Responsibilities of parents, and children in the family – church – laws towards marriage- Prolife (Abortion, Euthanasia).

UNIT – V: CONSECRATED LIFE

“Come and follow me” – special disciples - “I have called you to be mine”- - 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 for 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.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – VI
MAJOR CORE 11 - THEORY OF FUNCTIONS OF A COMPLEX VARIABLE

Total Hours: 90
Hours/Week: 6
Credits: 5

Code: U08MA6MCT14
Marks: 100

GENERAL OBJECTIVES:

To extend the idea of integration in the complex field by using residues and evaluating contour integrals. To understand the concept of bilinear transformation and visualizing their images

UNIT I : ANALYTIC FUNCTIONS (18 HRS)

Introduction –Function of a complex variable- Limits – Theorems on limits-Continuous functions –Differentiability- Cauchy - Riemann equations- Analytic Functions -Harmonic functions .

UNIT II : BILINEAR TRANSFORMATIONS(18 HRS)

Introduction-Elementary transformation - Bilinear transformation - Cross ratio - Fixed points of Bilinear transformation - some special bilinear transformations.

UNIT III : COMPLEX INTEGRATION (18 HRS)

Introduction –Definite integral- Cauchy's theorem -Cauchy's integral theorem (Riemann's proof only) and its extension – Higher derivatives.

UNIT IV : SERIES EXPANSION (18 HRS)

Introduction -Taylor's theorem - Laurent's theorem – Zeros of an analytic function - Pole - singularities.

UNIT V : CALCULUS OF RESIDUES (18 HRS)

Introduction -Residues - Cauchy's Residue theorem - Evaluation of Definite Integrals between limits $(-\infty$ to $\infty)$ - Jordan's lemma (Statement only)- Evaluation of

$\int_{-\infty}^{\infty} f(x) dx$, $\int_{-\infty}^{\infty} f(x) dx$ where $a > 0$ and (i) $f(z)$ does not have a pole on the real axis
(ii) $f(z)$ have poles on the real axis .

TEXT BOOK :

S.Arumugam, A.Thankapandi Isaac and A.Somasundaram (2006) , **COMPLEX ANALYSIS** ,Scitech Publishers, Chennai

UNIT I: Chapter 2(Sec 2.0 to 2.8)

UNIT II : Chapter 3 (Sec.3.0 to 3.5)

UNIT III : Chapter 6 (Sec 6.0 to 6.4)

UNIT IV : Chapter 7 (Sec 7.0 to 7.4)

UNIT V : Chapter 8 (Sec 8.0 to 8.3)

REFERENCE BOOKS:

1. V.Karunakaran , (2006) **COMPLEX ANALYSIS** , Narosa publishing House ,New Delhi.

2.Howie, M.John (2008), **COMPLEX ANALYSIS** ,WileyDremtechpvt ltd

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – VI
MAJOR CORE 12 - OPTIMIZATION TECHNIQUES -II

Total Hours: 90
Hours/Week: 6
Credits: 5

Code: U08MA6MCT15
Marks: 100

GENERAL OBJECTIVES:

To expose the mathematical tools applied in social and managerial sciences.

UNIT - I: GAME THEORY (18 HRS)

Two person zero - sum games - the maximin and minimax principle - saddle points - graphical solution of $2 \times n$ and $m \times 2$ games Dominance property.

UNIT - II: QUEUEING THEORY (18 HRS)

Poisson process and exponential distribution - classification of queues - Poisson queues.

UNIT - III: INVENTORY CONTROL (18 HRS)

Types of inventory - Economic order quantity - Deterministic inventory problem - EOQ problem with price breaks.

UNIT - IV: MULTI-ITEM DETERMINISTIC PROBLEM (18 HRS)

Inventory problem with uncertain demand - systems of inventory control (Q system and P system) Probabilistic inventory problems.

UNIT - V: NETWORK SCHEDULING (18 HRS)

PERT - CPM time calculations in Networks -Critical Path method (CPM) - PERT calculation

TEXT BOOK

Kantiswarup P.K.Gupta and Manmohan (2010) OPERATIONS RESEARCH , Sultan Chand Publishers , Fifteenth edition.

UNIT - I: Chapter 17 (Sec 17:1 to 17:7)

UNIT - II: Chapter 21(Sec 21:1 to 21:9(upto model IV))

UNIT - III: Chapter 19 Sec 19:1-19:12)

UNIT - IV: Chapter 19 (Sec 19:13 to 20:1-3,5)

UNIT - V : Chapter 25 (25:1 – 25:7)

REFERENCE BOOKS:

1. H. Taha(IV Edition) OPERATION RESEARCH ,Prentice Hall of India

2. P. K. Gupta, D. S. Hira, (2001) PROBLEMS IN OPERATION RESEARCH, S.Chand ,New Delhi

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – VI
MAJOR CORE 13 - INTRODUCTION TO FUZZY MATHEMATICS.

Total Hours: 90

Hours/Week: 6

Credits: 5

Code: U08MA6MCT17

Marks: 100

GENERAL OBJECTIVES:

To enable the students to have better applications of uncertainty through fuzzy mathematics for problems in physical and social sciences.

UNIT I : FUZZY SET THEORY (18 HRS)

Introduction-Concept of a fuzzy set-Relation between fuzzy sets-Numbers and Crisp set associated with a fuzzy set-Fuzzy sets associated with a given fuzzy set- Extension Principle.

UNIT II: OPERATIONS ON FUZZY SET (18 HRS)

Introduction-Fuzzy Complement- Fuzzy Union-Fuzzy Intersection.

UNIT III : FUZZY RELATIONS (18 HRS)

Introduction- Operations on Fuzzy Relations- α -cuts of Fuzzy Relations-Compositions of Fuzzy Relations-Projections of Relations-Cylindric Extensions.

UNIT IV : FUZZY LOGIC (18 HRS)

Introduction-Three valued logics-N valued logics for $N > 4$ - Infinite valued logics-Fuzzy logic-Fuzzy Propositions and Rules- Reasoning.

UNIT V : APPLICATIONS (18 HRS)

Fuzzy methods in Control Theory-Introduction-Fuzzy Expert Systems-Classical Control Theory Vs Fuzzy Control Theory-Examples-Components of FLC-Formulation of FLC.

TEXT BOOKS

1.M.Ganesh , (2006) INTRODUCTION TO FUZZY SETS AND FUZZY LOGIC,
Prentice Hall of India Pvt. Limited, New Delhi.

UNIT I : CHAPTER 6 - Secs. 6.1 to 6.9.

UNIT III : CHAPTER 7 - Secs. 7.1 to 7.7

UNIT IV : CHAPTER 8 - Secs. 8.1 to 8.8

UNIT V : CHAPTER 9 - Secs. 9.1 to 9.8

2.George J .Kler /Bo yuan(2005) , .FUZZY SETS AND FUZZY LOGIC –THEORY
AND APPLICATIONS , Prentice Hall of India ,New Delhi .

UNIT II : Chapter 3 secs (3.1 to 3.4)

REFERENCE BOOKS:

1. A.Kaufmann, (2005)INTRODUCTION TO FUZZY THEORY,Academic press
,Newyork .

2. George J .Kler /Bo yuan, (2005).FUZZY SETS AND FUZZY LOGIC –THEORY
AND APPLICATIONS, Prentice Hall of India ,New Delhi .

3. T.M.Ross(2006),FUZZY ENGINEERING APPLICATION ,Wiley Western
Company

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – VI
MAJOR ELECTIVE 3 - DYNAMICS

Total Hours: 75
Hours/Week: 5
Credits: 5

Code: U08MA6MET03
Marks: 100

GENERAL OBJECTIVE:

To make the students familiar with different types of motions of particles and finding different parameters from their equations.

UNIT I : THE LAWS OF MOTION (15 HRS)

Momentum – Newton’s Laws of Motion – Absolute units of forces – Conservation of linear momentum – Motion of a particle on planes – Motion of connected particles.

UNIT II : PROJECTILE ON HORIZONTAL PLANE (15 HRS)

Projectiles – Path of a projectile – Characteristics of the motion of a projectile – Greatest height - Time of flight - Horizontal range – Maximum horizontal range – Directions of projection – Velocity of the projectile – Simple problems.

UNIT III: PROJECTILE ON INCLINED PLANE (15 HRS)

Motion of a projectile on an inclined plane – Range on an inclined plane – Time of flight – Greatest distance from the inclined plane – Maximum range on an inclined plane – Directions of projection on an inclined plane – Enveloping parabola – Simple problems.

UNIT IV: IMPULSIVE FORCES (15 HRS)

Impulsive forces – Impact of two bodies – Motion of a shot and gun – Collision of elastic bodies – Fundamental laws of impact – Impact of a smooth sphere on a fixed plane – Direct impact – Oblique impact – Simple problems.

UNIT V :SIMPLE HARMONIC MOTION (15 HRS)

Simple harmonic motion in a straight line – Definitions – General solution of a simple harmonic motion equation – Composition of two simple harmonic motions – Simple problems.

TEXT BOOK :

Venkatraman. M.K.(2008), DYNAMICS, Agasthiar Publications, Tiruchy-2.

Unit: I – Chapter IV – 4.1 to 4.18, 4.20 to 4.23

Unit:II- Chapter VI – 6.1 to 6.11

Unit:III – Chapter VI – 6.12 to 6.17

Unit:IV – Chapter VII – 7.1 to 7.5, Chapter VIII - 8.1 to 8.8

Unit:V – Chapter X – 10.1 to 10.3, 10.6, 10.7

REFERENCE BOOKS:

1. Raisinghania M.D (2006)...,DYNAMICS S.Chand&Company Ltd, New Delhi.
2. Venkatachalapathy.S.G (2002), MECHANICS, MarghamPublication,Chennai.
3. ViswanathaNaik .K ,Kasi M.S (2001) , DYNAMICS, Emerald Publishers,Chennai.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620002
B.Sc. MATHEMATICS
(For the candidates admitted from 2013 onwards)
SEMESTER VI
MAJOR ELECTIVE – 3: NUMBER THEORY

Total Hours: 75

Hours/Week: 5

Credits:5

Code: U13MA6MET07

Marks: 100

Objective:

To highlight the niceties and nuances in the world of numbers and prepare the students for coding through congruences.

UNIT I : DIVISIBILITY (15 HRS)

Euclid's Division Lemma – Divisibility – The Linear Diophantine Equation – The Fundamental Theorem of Arithmetic

UNIT II : PERMUTATIONS AND COMBINATIONS (15 HRS)

Permutations and Combinations – Fermat's Little Theorem – Wilson's Theorem – Generating Functions

UNIT III : CONGRUENCES (15 HRS)

Basic Properties of Congruences - Residue Systems. Linear Congruences – The Theorems of Fermat and Wilson Revisited.

UNIT IV : POLYNOMIAL CONGRUENCES (15 HRS)

The Chinese Remainder Theorem – Polynomial Congruences – Combinational Study of $F(n)$.

UNIT V : ARITHMETIC FUNCTION (15 HRS)

Formulae for $d(n)$ and $s(n)$ – Multiplicative Arithmetic Function – The Mobius Inversion Formula.

TEXT BOOK :

Number Theory by *George E. Andrews*, Hindustan Publishing Corporation – 1984, Edition.

Unit I	: Chapter - 2 Sec. 2.1 – 2.4 pages 12-29
Unit II	: Chapter – 3 Sec. 3.1, 3.4 pages 30-44
Unit III	: Chapter – 4 Sec. 4.1 – 4.2 Pages 49 – 55, Sec. 5.1- 5.2 Pages 58-65
Unit IV	: Chapter – 4 Sec. 5.3 – 5.4 pages 66-74, Sec. 6.1 Pages 75-81
Unit V	: Chapter – 5 Sec. 6.2 – 6.3 Pages 82-92

REFERENCE BOOKS:

1. Basic Number Theory by S.B.Malik, Vikas Publishing House Pvt.Ltd.,
2. A First Course Theory of Numbers by K.C.Chowdhury. Asian Books Pvt. Ltd.,I Edition(2004)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

III UG

(For the candidates admitted from 2008 onwards)

SEMESTER – VI

NON MAJOR ELECTIVE 2 -- ART OF PROGRAMMING

Total Hours: 30

Hours/Week: 2

Credits: 2

Code: U08MA6NMT02

Marks: 100

GENERAL OBJECTIVES:

To acquire knowledge about Algorithms ,Flow Chart .

To Facilitate to write Simple programs independently.

UNIT I : FLOW CHART

(6 HRS)

Flow chart –Definition – Symbols

Flow Chart for:

(i) To find the area of a square , rectangle ,circle and triangle

(ii) To calculate simple interest and compound interest

(iii)To find the sum of first n natural numbers

(iv)To find the sum of n given numbers and their average and standard deviation

(v)To pick the largest of 3 given numbers.

UNIT II : ALGORITHMS

(6 HRS)

Algorithm-Definition-Algorithm for those ((i) to (v)) mentioned in unit I

UNIT III:CONSTANTS,VARIABLES AND EXPRESSIONS

(6 HRS)

Low level and High Level Languages – Hardware and Software

Alphabet- Constants- Variables- Arithmetic Expressions-Precedence rules of arithmetic operators-Logical expressions-Library functions – SIN , COS ,TAN,SQRT,EXP and LOG.

UNIT IV:STATEMENTS

(6 HRS)

Comment Statement

Input –Output Statements

Assignment Statement

Conditional Statement –THE BLOCK IF CONSTRUCT

Loop Statement – THE BLOCK DO LOOP

UNIT V: SIMPLE PROGRAMS

(6 HRS)

Arrays –Format Specification (IW,FW.d, EW. d)

PROGRAMS:

For those mentioned in Unit I ((i) to (v))

(vi) For income Tax Calculation **(Example Program 6.6)**

(vii) To find the result of students in a class and the % of pass **(Example Program 8.1 / 8.3)**

(viii) To find the first mark in a class of n students **(Example Program 7.11)**

(ix) To find the average height of boys and girls in a class **(Example Program 7.4)**

(x) For adding / multiplying two matrices

TEXT BOOK

1.P.S .Crover 1996 COMPUTER PROGRAMMING IN BASIC Allied Publishers Ltd,

New De hi for Units I &II

2. V.Rajaraman ,COMPUTER PROGRAMMING IN FORTRAN 90 AND 95 Prentice
Hallof India, New Delhi for Units III, IV &V

Unit III :

Chapter 3 (3.1 & 3.2),Chapter 4 (4.1 & 4.5) ,Chapter 6 (6.1),Chapter 8 (8.2 & 8.3)

Unit IV:Chapter 4 (4.6 & 4.7)Chapter 5 (5.1 & 5.2) Chapter 6 (6.2)Chapter 7 (7.1)

Unit V:Chapter 10 (10.2 & 10.3)

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.

B.Sc., MATHEMATICS

(For the candidates admitted from 2008 onwards)

SEMESTER – VI

SKILL BASED ELECTIVE 5 - APPLICATION OF ALGORITHMS

Total Hours: 30

Hours/Week: 2

Credits: 2

Code: U08MA6SBT05

Marks:100

GENERAL OBJECTIVE:

Motivating the students to take interest in understanding the matrix representation of a graph and algorithmic approach for various aspects of graph theory.

MATRIX REPRESENTATION

Unit I: (6 HRS)

Incidence matrix – Reduced incidence matrix – Circuit matrix – Fundamental circuit matrix

Unit II: (6 HRS)

Cut set matrix – Fundamental cut set matrix – Relationship between matrices –
Adjacency matrix – Path matrix-

Unit III: (6 HRS)

ALGORITHMIC APPROACH

Introduction – Computer representation of a graph –Kruskal algorithm and R.C Prism algorithm for finding minimal spanning tree.

Unit IV: (6 HRS)

All fundamental circuits algorithm – Dijkstras algorithm for shortest path in a weighted graph and in a weighted digraph.

Unit V: (6 HRS)

Travelling salesman problem algorithm to find a Hamiltonian circuit – Algorithm for finding all spanning trees – David Huffman algorithm to develop a prefix code.

TEXT BOOK:

Treatment as in ,“**A TEXT BOOK OF GRAPH THEORY AND ITS APPLICATIONS**”
by

B. SOORYANARAYANAN and G. K. RANGANATH,(2001), S. Chand company ltd , New Delhi.

Unit 1 :Chapter 8(8.1-8.4)

Unit 2: Chapter 8(8.5-8.9)

Unit 3 : Chapter 11(11.1 , 11.2, 11.5 and 11.6)

Unit 4:Chapter 11(11.7, 11.10 and 11.11)

Unit 5: Chapter 11 (11.13, 11.14 and 11.16)

REFERENCE BOOKS:

1. Kenneth H. Rosen(2005)Fifth edition “**DISCRETE MATHEMATICS AND IT’S APPLICATIONS**” , Tata McGraw Hill Publishing company limited , New Delhi.

2. Harary ,“**GRAPH THEORY**” , Narosa Publishing House New Delhi, Bombay.

3. NarsinghDeo , “**GRAPH THEORY WITH APPLICATIONS TO ENGINEERING AND COMPUTER SCIENCE**”, Prentice Hall of India, New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 620 002.
B.Sc., MATHEMATICS
(For the candidates admitted from 2008 onwards)
SEMESTER – VI
SKILL BASED ELECTIVE 6 – RESEARCH METHODOLOGY

Total Hours: 30

Hours/Week: 2

Credits: 2

Code: U13DS6SBT06

Marks:100

GENERAL OBJECTIVE:

Students get introduced to concept of research and to carrying out of research projects.

UNIT I : (6 HRS)

Introduction To Research: Concept of Research-Types of Research- Introduction to Research Literature Base-Collection of Research Information from different Sources;Maintenance of Information.

UNIT II : (6 HRS)

Research Focusing: Identifying Research area-Drawing Objectives\Hypothesis –Designing the Work-Data Collection-Analysis.

UNIT III : (6 HRS)

Preparation of Dissertation :Structure of Dissertation-Editing –Bibliography.

UNIT IV: Project Work (6 HRS)

UNIT V :Project Work (6 HRS)

REFERENCE BOOKS :

Blaxter,L.,Hughes,C.Aned Tight(1999) How To Research.Viva Book Private Limited.

Kothari.,C.R(2004)Research Methodology-Methods And Techniques,New Age InterationalPublishers,India.

Lal,B.,(2002) Research Methodology,AbdPublishers,India

HOLY CROSS COLLEGE(AUTONOMOUS), TIRUCHIRAPPALLI-2

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

LIFE ORIENTED EDUCATION

ETHICS – III: FAMILY AND CAREER DEVELOPMENT

HRS / Wk: 1

CODE:U13VE6LVE03

CREDIT : 1

MARKS : 100

OBJECTIVES:

- To help the students learn skills, knowledge, talent to lead a meaningful life.
- To help the students understand marriage life.
- To make the students learn skills of nurturing family and children.
- To make them aware of emotional intelligence and choose their carrier.

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: MOTHERHOOD

Bringing up Children - Development stages (Eric Ericson model), Spirituality:
Spirituality in Family - Prayer, God's Will, and 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, MindMapping

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”, DominantPublishers.

HOLY CROSS COLLEGE (AUTONOMOUS), TRICHIRAPALLI - 2.

B.A/B.Sc./B.COM/B.R.Sc./B.C.A – DEGREE COURSES

LIFE ORIENTED EDUCATION

BIBLE STUDIES – III: ESSENCE OF CHRISTIAN FAITH

HRS / WK: 1

CODE:U12VE6LVBO3

CREDIT:1

MARKS : 100

OBJECTIVE:

- Prepare to practice Christian principles in family, church and society as a youngwomen.

UNIT - I: ESSENTIALS OF CHRISTIAN FAITH

- Salvation – Deliverance from sin (Is 53), Assurance of salvation and New life (II Cor5:17)
- 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: MARIAGE AND FAMILY LIFE

- Finding the God’s Will - Issac (Gen24)
- Man and woman as Partners – Abraham and Sarah (Gen16-18,22)
Aquila and Priscilla (Acts 18: 1-3,26)
- Evils to be avoided – Premarital Sex, ExtramaritalSex,
Homosexuality, Abortion(Heb 13: 4, Psalm 127 : 4)
- Ideal Wife – Sarah (I Peter 3: 1-6), Ruth, Eph5

UNIT – III: CHRISTIAN HOME

- Parental Responsibilities and bringing up children – Abraham (Gen22),
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)
- Entertainments (I Cor 10:23)

UNIT – IV: CHRISTIAN ETHICS

- Holiness – Joseph (Gen 39:9)Levi 11: 45, Ecc12
- Obedience to God - Abraham (Gen 12) ; St.Paul (Acts9)
- Freedom and Accountability
- Justice andLove
- Choices in Life – Making Decisions(Studies, job, lifePartner)

- Model to follow – Who is your model? (John 15:1-17)
- Social Evils – Dowry, Caste discrimination, Accumulation of wealth
- Freedom of Options, Time Management, Work Ethics (I Peter 2:11-25)

UNIT – V: ROLE IN CHURCH AND SOCIETY

- Man is the temple of God (I Cor 3: 11-17, 6: 19-20) Individual responsibility in Gospelwork
- Church –Body of Christ (I Cor 12:14-27)
- Unity (John 17: 20-23, Mat 10: 37-39, 16:24-26, Mark 13:11-13)
- Discipleship (I & II Timothy, Titus)
- Social Responsibilities (Phil 2; 1-11, James 1: 27, 2: 14-17, 4: 17, 5:14-15)

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.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
B.A./B.Sc/B.Com/B,R.SC/B.C.A - DEGREE COURSES
LIFE ORIENTED EDUCATION
CATECHISM – III: LITURGY AND CHRISTIAN LIFE

HRS / WK:1
CREDIT: 1
OBJECTIVES:

CODE:U12VE6LVC03
MARKS: 100

- To prepare the students to participate meaningfully in the liturgical celebration and experience GOD in their day todaylife.
- To become a living witness to Jesus Christ in their personal, family and sociallife.

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-Populardevotion

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. –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-Come follow me-I have chosen you-Servant hood- Baptism-Common priesthood-Discipleship-Lay vocation-Lay participation-Lay associates.

UNIT – IV: CHRISTIAN FAMILY

Holy family- characteristic of good family – role of families in the church and society- Responsibilities of parents, and children in the family – church – laws towards marriage- Prolife (Abortion, Euthanasia).

UNIT – V: CONSECRATED LIFE

“Come and follow me” – special disciples - “I have called you to be mine”- - 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 for 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.