

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
DEPARTMENT OF BIOCHEMISTRY
UG COURSE PATTERN- B. Sc., BIOCHEMISTRY
(2015-2016)

Semester	Part	Course	Title of the course	Code	Hrs / Week	Credits	Marks
I	I	Language	Tamil Paper I/ Hindi Paper I / French Paper I	U15TL1TAM01 U15HN1HIN01 U15FR1FRE01	6	3	100
	II	English	English Paper I	U15EL1GEN01	6	3	100
	III	Major Core 1	Fundamentals for Biochemistry (theory cum lab)	U15BC1MCT01	7	5	100
		Allied -1 (Compulsory)	Food and Nutrition	U15BC1ACT01	4	4	100
		Allied -2 (Compulsory)	Nutrition and Dietetics Practicals	U15BC1ACP02	4	3	100
	IV	Environment al studies	Environmental studies	U15RE1EST01	2	2	100
		Value Education	Ethics/Bible Studies/Catechism	U15VE2LVE01 U15VE2LVB01 U15VE2LVC01	1	-	-
			Total		30	20	600

Semester	Part	Course	Title of the course	Code	Hrs / Week	Credits	Marks
II	I	Language	Tamil PaperII/ Hindi Paper II/ French PaperII	U15TL2TAM02 U15HN2HIN02 U15FR2FRE02	5	3	100
	II	English	English Paper II	U15EL2GEN02	6	3	100
	III	Major Core 2	Chemistry of Biomolecules	U15BC2MCT02	5	5	100
		Major Core 3	Practicals – I (Analysis of Biomolecules)	U15BC2MCP03	5	4	100
		Allied -3 (Compulsory)	Dietetics	U15BC2ACT03	4	3	100
	IV	Skill Based Elective– 1	Soft Skill Development	U15RE2SBT01	2	2	100
		Skill Based Elective– 2	Rural Enrichment and Sustainable Development	U15RE2SBT02	2	2	100
		Value Education	Ethics/Bible Studies/Catechism	U15VE2LVE01 U15VE2LVB01 U15VE2LVC01	1	1	100
					Total	30	23

Semester	Part	Course	Title of the course	Code	Hrs / Week	Credits	Marks	
III	I	Language	Tamil Paper III / Hindi Paper III/ French PaperIII	U15TL3TAM03 U15HN3HIN03 U15FR3FRE03	6	3	100	
	II	English	English Paper III	U10EL3GEN03	6	3	100	
	III	Major Core -4	Analytical Biochemistry	U15BC3MCT04	5	5	100	
		Major Core- 5	Human Physiology	U15BC3MCT05	5	5	100	
		Allied 4 (Optional)	Microbiology - General	U15BC3AOT04	4	3	100	
	IV	Skill Based Elective-3	Pain Relief Formulations & Cosmetics	U15BC3SBP03	2	2	100	
		Gender Studies	Gender Studies	U15WS3GST01	1	1	100	
		Value Education	Ethics/Bible Studies/Catechism	U12VE4LVE02 U12VE4LVB02 U12VE4LVC02	1	-	-	
					Total	30	22	700

Semester	Part	Course	Title of the course	Code	Hrs / Week	Credits	Marks
IV	I	Language	Tamil Paper IV / Hindi Paper IV/ French PaperIV	U15TL4TAM04 U15HN4HIN04 U15FR4FRE04	5	3	100
	II	English	English Paper IV	U13EL4GEN04	6	3	100
	III	Major Core-6	Enzymes	U15BC4MCT06	5	5	100
		Major Elective 1	Cell and Development Biology / Biophysical chemistry	U15BC4MET01/ U15BC4MET02	5	5	100
		Allied -5 (Optional)	Microbiology - Applied	U15BC4AOT05	4	4	100
		Allied- 6 (Optional)	Microbiology Practicals	U15BC4AOP06	4	3	100
	IV	Value Education	Ethics/Bible Studies/Catechism	U12VE4LVE02 U12VE4LVB02 U12VE4LVC02	1	1	100
				Total	30	24	700

Semester	Part	Course	Title of the course	Code	Hrs / Week	Credits	Marks
V	III	Major Core -7	Intermediary Metabolism	U15BC5MCT07	5	4	100
	III	Major Core -8	Molecular Biology	U15BC5MCT08	5	4	100
	III	Major Core -9	Immunology	U15BC5MCT09	5	4	100
		Major Core -10	Practical-II (Enzymes and Analytical Techniques)	U15BC5MCP10	5	4	100
	Major Elective-2	Drug Biology/Biostatistics	U15BC5MET01/ U15BC5MET02	5	5	100	
	IV	Non-major Elective 1	First Aid Management/ Clinical Biochemistry and Microbiology	U15BC5NMT01/ U15BC5NMT02	2	2	100
		Skill Based Elective 4	Food Preservation Technology	U15BC5SBP04	2	2	100
		Value Education	Ethics/Bible Studies/Catechism	U13VE6LVE03 U12VE6LVB03 U12VE6LVC03	1	-	-
				Total		30	25

Sem	Part	Course	Title of the course	Code	Hrs / Week	Credits	Marks
VI	III	Major Core -11	Genetic Engineering	U15BC6MCT11	6	5	100
		Major Core -12	Clinical Biochemistry	U15BC6MCT12	6	5	100
		Major Core -13	Practical-III (Clinical & Immunochemical analysis)	U15BC6MCP13	6	5	100
		Major Elective-3	Plant Biochemistry/ Basics of Bioinformatics /Pharmaceutical Chemistry and Pharmacognosy	U15BC6MET01/ U15BC6MET02/ U15BC6MET03	5	5	100
	IV	Non-major Elective-2	Nutrition and Dietetics/ Home Management	U15BC6NMT01/ U15BC6NMT02	2	2	100
		Skill Based Elective 5	Tools For Bioinformatics	U15BC6SBP05	2	2	100
		Skill Based Elective 6	Research Methodology	U15DS6SBT06	2	2	100
		Value Education	Ethics/Bible Studies/Catechism	U13VE6LVE03 U12VE6LVB03 U12VE6LVC03	1	-	-
	V	Extension activity	RESCAPES-Impact Study on students.	U15RE6ETF01	-	1	100
					Total	30	27
				Grand Total			

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

TAMIL DEPARTMENT

BA/ B.SC/ B.COM DEGREE

Part - I : Language: Tamil Paper - 1

Total Hours : 90

Hrs : 6Hrs /Wk

Credit : 3

Code : U15TL1TAM01

Marks : 100

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

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

அலகு:2 செய்யுள்

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

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 2015 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

CODE: U15HN1HIN01

HRS/WEEK : 6
CREDITS : 3

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
Chathuraye.

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

UNIT- V : Anuvad Abhyas–II

Books Prescribed :

- Galpa Sanchayan - D.B.H.P. Sabha Publishers, Chennai-17
- Naveen Hindi Patamala – I- D.B.H.P. Sabha Publishers, Chennai-17
- Naveen Hindi Patamala – II- D.B.H.P. Sabha Publishers, Chennai-17
- Sugam Hindi Vyakaran Anuvad Abhyas – II
- - D.B.H.P. Sabha Publishers, Chennai-17 - D.B.H.P. Sabha Publishers,
Chennai-17

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2

DEPARTMENT OF FRENCH

SYLLABUS

SEMESTER I

PART I – LANGUAGE - FRENCH PAPER I [GRAMMAR & CIVILISATION (ÉCHO A1 2^e édition)]

(For candidates admitted 2013 onwards)

HRS/WEEK : 6

CREDIT : 3

CODE : U15FR1FRE01

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 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2015 - 2016

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

HOURS – 6 PER WEEK

CREDIT : 3

CODE : U15EL1GEN01

OBJECTIVES

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

UNIT I - I, ME, MYSELF

Listening for specific information in instructions and directions

Speaking about oneself, family and friends, likes, dislikes, strengths, weaknesses, profession, talents, emotions, feelings, incidents, reactions, opinions, views, aim, vision.

Reading for comprehension of routine work.

Writing -Paragraph guided

Grammar- Articles, Prepositions, Punctuation

Vocabulary-Meanings, Synonyms, Antonyms

Composition –Guided Creative writing

TEXTS

- | | | |
|-----------|---|------------------------------------------------------------------|
| Listening | - | <i>This is the Photograph of me</i> by Margaret Atwood |
| Speaking | - | <i>The Mayonnaise Jar</i> |
| Reading | - | <i>In Prison</i> by Jawaharlal Nehru (edited) |
| Writing | - | Othello's soliloquy (extract from Shakespeare's <i>Othello</i>) |

UNIT II -MY FAMILY AND FRIENDS

Listening to identify the persons/ places/ things from descriptions

Speaking -Describing incidents, favorite places, traits of a person, analyzing the nature of a person.

Reading to get specific information and to analyze characters

Writing -Letters (personal),paragraphs-family profile and history

Grammar -adjectives and verbs

Vocabulary-synonyms and antonyms in context

Composition - Guided paragraph

TEXTS

- | | | |
|-----------|---|----------------------------------------------------------|
| Listening | - | <i>Night of the Scorpion</i> by Nissim Ezekiel |
| Speaking | - | <i>The Old Folks at Home</i> by Alphonse Daudet (edited) |
| Reading | - | <i>Will you? Daddy</i> (Extract from Reader's digest) |
| Writing | - | conversation among King Lear and his daughters |

professing their love for their father (extract from
Shakespeare's *King Lear Act I Scene I*)

UNIT III -THE WORLD AROUND ME

Listening To identify specific information

Speaking –Discussing and expressing opinions

Reading To infer meaning

Writing Descriptive and Diary writing

Grammar Uses of ‘be’ Verbs – subject verb concord

Vocabulary Coining new words with Prefix and suffix- converting one part of speech to another

Composition - Essay writing

TEXTS

- | | | |
|-----------|---|--------------------------------------------------------|
| Listening | - | <i>Snake</i> by D.H. Lawrence (poem) |
| Speaking | - | <i>Floating Fantasy</i> by Vinu Abraham (Prose) |
| Reading | - | <i>Discovery</i> (ed.) (play) |
| Writing | - | <i>A Handful of Dates</i> by Tayeb Salih (Short story) |

UNIT IV - MY CONCERN AND RESPONSIBILITIES

Listening to short speeches and getting main concern- Global comprehension

Speaking Expressing opinions, concerns and responsibilities

Reading To detect one’s perspective

Writing Debate and Dialogue

Grammar Sentence patterns (5 basic types)

Vocabulary Appropriate words in the context ,coinage of new words , use of phrases

Composition-Imaginative writing

TEXTS

- | | | |
|-----------|---|------------------------------------------------------------------------------------------------------|
| Listening | - | <i>I have a Dream</i> by Martin Luther King Jr(edited) |
| Speaking | - | <i>What I have lived for?</i> by Bernard Russell |
| Reading | - | <i>Three days to see</i> by Helen Keller(edited) |
| Writing | - | Quality of Mercy (Portia court scene)
(extract from Shakespeare’s <i>The Merchant of Venice</i>) |

UNIT V - MY PROFESSIONAL WORLD

Listening to short profile to get details –global comprehension

Speaking Discussion on secrets of success learnt from success stories

Reading to infer meaning – to trace the development and analyze the ratio of development

Writing resume and E-mail writing

Grammar- Four Types of sentences

Vocabulary-Idioms and phrases- meaning

Composition – Formal and imaginative writing

TEXTS

- | | | |
|-----------|---|---------------------------------------------|
| Listening | - | Profile of a successful personality |
| Speaking | - | Success story of Indra Krishnamoorthy Nooyi |
| Reading | - | <i>The Verger</i> by Somerset Maugham |

Prescribed Book:

English for Communication –PoGo publication Trichy

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI-2
DEPARTMENT OF BIOCHEMISTRY
I B.Sc., SEMESTER I
MAJOR CORE 1: FUNDAMENTALS FOR BIOCHEMISTRY
(Theory cum lab)

CREDITS:5
HRS/WK:7

CODE:U15BC1MCT01

General Instructional objectives:

The student learns about the structure of major biomolecules, the various types of bonds in the biomolecules, structure and applications of water molecules, different types of isomerism & electrodes and handling of chemicals and glassware in the laboratory.

UNIT: I

CHEMICAL BONDING

Ionic bond formation and factors favoring the formation, lattice energy, Born-Haber cycle & characteristics. Covalent bond – Formation of single and multiple bonds -characteristics – VSEPR theory – shapes of simple molecules. Hydrogen bond – Nature, type and properties, effect on compounds. Applications of hydrogen bond. Importance of bonds in biomolecules : glycosidic linkages in carbohydrates, non-covalent interactions that determine the three-dimensional structures of proteins and nucleic acids - Hydrogen bonding, hydrophobic interaction, ionic bonds, and Vanderwaals force.

UNIT:II

STEREOCHEMISTRY OF ORGANIC COMPOUNDS

Different types of isomerism – A general idea. Tautomerism – Keto-enol, Amido – Imido, Lactam – lactim and Nitro –aci nitro. Geometrical isomerism – Maleic and fumaric acids. Optical Isomerism – Elements of symmetry, isomerism of compounds containing asymmetric carbon atom – Lactic and tartaric acids, Resolution, Racemisation, Autoracemisation, Asymmetric synthesis, Walden Inversion, Configuration – D and L rotations, R and S notations.

UNIT: III

GASEOUS STATE

Dalton's law of partial pressure – Henry's law – Gas analysis in biological systems – p_{CO_2} & p_{O_2} Gaseous exchanges in the lungs arterial & ventral capillaries.

ELECTRO CHEMICAL TECHNIQUES

Principles of ECT – Reference electrodes, measurement of Ph by glass electrode. Oxygen electrode - Principle, operation of a Clark electrode and application of oxygen electrode.

UNIT: IV

BASIC THERMODYNAMICS: First and second law of thermodynamics. Heat and work – various forms of energy, terminologies viz., heat, process, heat capacity, enthalpy, entropy and heat content, isothermal, adiabatic, reversible and irreversible processes, free energy, molar heat capacity and relation between C_p and C_v .

CHEMICAL KINETICS: Rate, rate law, specific rate constant – order as applied to first,

second, zero and fractional order reactions, molecularity.

UNIT: V

Definitions of pH & pOH – buffer solutions – Preparations and uses - buffer action – Henderson equation – pH of body fluids – buffers in body fluids – measurement of pH by indicator. Concentration expression – Normality, Molarity, Molality & Mole fraction. Principles of titrimetric analysis – acid base, redox & Precipitation titrations. Laboratory hygiene & safety – Corrosive, flammable, explosive, carcinogenic & poisonous chemicals – storage handling & disposal – proper maintenance of reagent antidotes – first aid.

TEXT BOOKS:

1. P.L. Soni H.M. Chawla [1994] Text Book of Organic Chemistry, Sultan Chand and sons, New Delhi.
2. Puri Sharma Pathania: Principles of Physical Chemistry, 30th edn., Vishal Publication.

REFERENCES:

1. P.L. Soni [1994] – Text Book of Inorganic Chemistry Sultan Chand and sons, New Delhi.
2. Upadhyay A., Upadhyay K & Nath N. (1993) Biophysical chemistry 1st edn., Himalaya Publishing House.
3. Bahl. B.S., Tuli. G.D. and Arun Bahl : Essentials of physical chemistry.
4. Murray R.K. Granner D.K. Mayes P.A Rodwell V.W. Harper's Biochemistry – 24th edn., A Lange medical Book – Prentice Hall International Inc.,

Practical Work:

1. Weighing and making up of solution
2. Calculation of different strengths of solution.
3. Preparation of standard curve
4. Estimation of ferrous ion by titrimetric method.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
I B.Sc., SEMESTER – I
ALLIED 1 (COMPULSORY) - FOOD AND NUTRITION
For candidates admitted from 2015 onwards

CREDITS:4

CODE:U15BC1ACT01

HRS/WK: 4

General Instructional objectives:

The student learns about the nutritional status of an individual, anthropometry measurements, nutritional problems, and importance of various food constituents such as carbohydrates, proteins, fats, vitamins and minerals and the energy metabolism BMR and calculation of energy requirement.

UNIT: I

NUTRITIONAL STATUS:

Introduction to nutrition – Food as a source of nutrient, functions of food, definition of nutrition, classification of nutrients. Interrelationship between Nutrients and Health - visible symptoms of good health. Loss of nutrient value – light, heat, leaching of nutrients.

COMMUNITY NUTRITION:

Assessment of Nutritional Status – Anthropometry, Malnutrition – Definition, causes of Malnutrition. International organizations, National agencies in community nutrition - FAO, WHO, UNICEF and CARE, ICDS, Midday meal programme, Role of National Institutions-ICMR, CSIR, NIN, CFTRI.

UNIT: II

FOOD CONSTITUENTS:

Carbohydrates – kinds, function, sources, requirements, deficiency. Fibres – Definition, classification, sources, role of fibre in human nutrition.

Fats - kinds, function, sources, RDA. Saturated and unsaturated fatty acids. Cholesterol deficiency (phyrynoderma).

Proteins – Kinds, function, sources, evaluation of protein quality (PER, BV, and N balance). Deficiency state – Kwashiorkor and Marasmus.

UNIT: III

MINERALS AND WATER

Mineral Nutrition: Macro Nutrients – Calcium, Phosphorous Magnesium, Sodium, Potassium, Sulphur, Chlorine. Micro Nutrients – Iron, Iodine, Copper, Cobalt, Zinc, Manganese, Fluorine, Selenium, Bromine, Molybdenum- their distribution, sources, absorption, metabolism, functions, deficiency and requirements.

WATER

Importance, distribution, functions, sources, water balance, impairment, dehydration, edema.

UNIT: IV**VITAMINS**

Vitamins – definition, classification (structure not included) A,D,E,K,C,B Complex (B1, B2,B6, B12, Folic acid, Biotin, Choline)- sources, distribution, absorption, metabolism, function,requirement, deficiency conditions and allowance. Hypervitaminosis A and D.

UNIT: V**ENERGY:**

Definition of Calorie and joule, measurement of Calorific values of foods, physical, physiological fuel value.

Basal metabolism – (BMR), factors affecting BMR, specific dynamic action of foods, energy needs of the body measurement of energy balance of the body.

Direct and indirect calorimetry. Calculation of energy requirement, the ideal proportion of calories from protein, carbohydrates and fats.

TEXT BOOK:

1. Swaminathan, M.(1985) Advanced Text Book on Food and Nutrition. 2nd Edn. The Bangalore printing and publishing Co., Ltd.

REFERENCE:

1. Davidson. S.Passmore, R.Brook JF and Truswell (1985) Human Nutrition and Dietetics. The English Language Book society, Living Stone.(Latest Edition)
2. David, S. Robinson, Food Biochemistry and Nutritional Value.Longman Scientific and Technical, John Wiley and sons, Inc., NewYork.
3. Raheena Begum, M.(1989) A Text Book of Foods, Nutrition and Dietetics Sterling Publishers Pvt., Ltd.,NewDelhi.
4. Shynbhangini, A. Joshi, (1992) Nutrition and Dietetics, Tata McGraw- Hill publishing Co., Ltd.,NewDelhi.
5. Sue Rodwell Williams, (1985), “Nutrition and Diet Therapy” The C.V Mosby SaintLouis.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI – 2

DEPARTMENT OF BIOCHEMISTRY

I B.Sc., SEMESTER- I

ALLIED 2 (COMPULSORY): NUTRITION & DIETETICS PRACTICAL

For candidates admitted from 2015 onwards

CREDITS:3

CODE:U15BC1ACP02

HRS/WK: 4

I. QUANTITATIVE ANALYSIS:

Estimation of Phosphorous, Calcium and Magnesium in milk. Estimation of Iron in Greens. Acidity in curds.

II. ENERGY CONTENT IN FOOD

III. DAILY FOOD GUIDE

Food adulteration

IV. PRACTICAL RELATED EXPERIENCE:

1. Preparation and weaning foods for infants.
 2. Planning, preparing and evaluating menu for preschool age, school age, adolescence and adult. Planning, preparing and evaluating menus for special conditions like pregnancy, lactation and old age.
Modifying normal diets and preparation of soft, clear liquid diets.
Planning, preparation, serving and evaluation of the diets for
 1. Obesity and underweight
 2. Diabetes mellitus
 3. Diarrhoea, Constipation
 4. Peptic Ulcer
 5. Atherosclerosis, hypertension
- i. Low and medium cost diets for deficiency diseases protein, energy, iron, Vitamin A.

(For candidates admitted from 2015 onwards)
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

Hrs – 2/Week

CODE: U15RE1EST01
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 programs

REFERENCES:

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

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

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

Hodges,L. (1977). Environmental Pollution, II Edition. Holt, Rinehart and Winston, New York.

Krebs,C.J.(2001). Ecology.VI Edition. Benjamin Cummings.

(For Candidates admitted from June 2015 onwards)
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: U15VE2LVE01

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

God – concept of faith, Faith, Meaning, Definition, Nature, Characteristics and Basic values of different religions. Impact of Globalization on religion – Importance of worship in holy places – celebration, come-union, socialization.

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.

(For Candidates admitted from June 2015 onwards)
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: U15VE2LVBO1

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
- Messiah Prophecies(Isaiah 9:6,40:3,53:1-12,61:1-3,Micah 5:2)
- The Birth and Ministry of John the Baptist (Luke 1:1-80,Mat 3:1-17,14:1-12)
- The Birth, Passion and Resurrection of Jesus (Luke 1:26-80,2:1-52,John 1 :18-21)

UNIT – II: MINISTRY OF JESUS

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

UNIT – III: CHURCH – BIRTH AND GROWTH

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

UNIT – IV: DISCIPLES AND APOSTLES

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

UNIT – V: MISSIONARIES AND EVANGELISTS

- St.Thomas (John 20:24-31) & Missionary to India\Pandithar Rama Bai
- William Carrie
- Dr.Ida Scudder& St. Britto (Oriyur)
- Amy Carcheal
- Mother Teresa (Calcutta)
- Devasagayam (Nagercoil)
- Staines & Family

REFERENCES:

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

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

HRS / Wk: 1

CODE: U15VE2LVC01

CREDIT: 1

MARKS: 100

OBJECTIVES:

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

UNIT – I: CREATION AND COVENANT

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

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

UNIT – II: GOD OF THE PROPHETS

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

UNIT – III: GOD OF WISDOM

God experience through wisdom Literature, its origin and growth

UNIT – IV: SYNOPTIC GOSPELS

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

UNIT – V: LUKE'S GOSPEL

Study of Luke's Gospel in detail – 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 for India.
3. VaalvinValizha – St. John's Gospel – Fr. Eronimus

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

TAMIL DEPARTMENT

BA/ B.SC/ B.COM DEGREE

Part - I : Language: Tamil Paper - II

Total Hours : 75

Code : U15TL2TAM02

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.

பாடத்திட்டம்

அலகு:1 செய்யுள்

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

அலகு:2 செய்யுள்

6. மீனாட்சியம்மை பிள்ளைத்தமிழ் - குமரகுருபரர்
7. இரட்சணிய யாத்திரிகம் - எச்.ஏ.கிருட்டிணப்பிள்ளை
8. வேதநாயகம் சாஸ்திரியார் பாடல்கள் - வேதநாயகம் பிள்ளை
9. நபிகள் நாயக மான்மிய மஞ்சரி - செய்கு தம்பிப் பாவலர்

அலகு:3

தமிழ் இலக்கிய வரலாறு - தமிழாய்வுத்துறை வெளியீடு
பல்லவர்காலம்
நாயக்கர்காலம்

அலகு:4

படைப்பிலக்கியம் - புதினம்
கல்கி - பார்த்திபன் கனவு

அலகு:5

கடிதம் எழுதுதல்

	பாட நூல்கள்	
செய்யுள்	- தமிழாய்வுத்துறை	வெளியீடு
தமிழ் இலக்கிய வரலாறு	- தமிழாய்வுத்துறை	வெளியீடு
கல்கி	- பார்த்திபன் கனவு	
கடித இலக்கியம்	- பயிற்சி ஏடு.	

(for the candidates admitted from June 2015 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
CREDITS : 3

CODE: U15HN2HIN02
MARKS : 100

UNIT – I :

Bharat matha, Premchand, Taj mahal ki Aathma Kahani, Mahakavi Prasadh, Meritheertha 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–Prose passages

Books Prescribed :

- | | | | |
|--------------------------|-------------------------|---|---------------------------------------|
| <input type="checkbox"/> | Naveen Gadhya Chayanika | – | D.B.H.P. Sabha Publishers, Chennai-17 |
| <input type="checkbox"/> | Sathyameva Jayathe | – | D.B.H.P. Sabha Publishers, Chennai-17 |
| <input type="checkbox"/> | General Grammar | – | D.B.H.P. Sabha Publishers, Chennai-17 |

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2

DEPARTMENT OF FRENCH

SYLLABUS

SEMESTER II

PART I - LANGUAGE - FRENCH PAPER II [GRAMMAR, CIVILISATION & TRANSLATION (ÉCHO A1 2^e édition)]

(For candidates admitted 2013 onwards)

HRS/WEEK : 5

CREDIT : 3

CODE : U15FR2FRE02

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 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2015 - 2016

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

HOURS – 6 PER WEEK

CREDIT : 3

CODE : U15EL2GEN02

OBJECTIVES

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

UNIT I – SELF

Listening- Specific information from demonstration and instructions, transfer of information.

Speaking - Sharing expressions, dreams and expressing opinions.

Reading -Skimming and Scanning for specific information, reading for local comprehension.

Writing - Story Writing

Grammar - Articles and Sentence Pattern

Vocabulary - Meanings, Synonyms, Antonyms

Composition - Transfer of information: Paragraph to Bar graph/pie chart
General Essay - Courage is the key to success

TEXTS

1. *When I have fears* by John Keats (poem)
2. *Key to courage* by I.A.R. Wylie (prose)
3. *The Far and the Near* by Thomas Wolfe (Short Story)

UNIT II – STRENGTHS

Listening - Listening to a process

Speaking - Telephone Etiquette

Reading - Loud reading with pause, intonation and expression in dialogue form

Writing - Writing about oneself (strengths& weaknesses, Have's & Have not's)

Grammar- Subject verb agreement, Prepositions

Vocabulary- One word substitute in the context

Composition- Letter Writing - informal letters

General essay – A bird in hand is worth two in bush.

TEXTS

1. *My early days* (An extract from *Wings of fire* by A.P.J. Abdul Kalam (prose)
2. *The robe of peace* by O. Henry (Short Story)
3. An extract from *Androcles and the lion* by G.B. Shaw (play)
4. *Give me the strength* by Tagore's *Gitanjali* (poem)

UNIT III - POSITIVE SHORTCOMINGS

Listening - Listening to facts and opinions and trying to differentiate it

Speaking - Pair Work – about have's & have not's, understanding the strengths and overcoming the weaknesses

Reading - Reading newspapers, articles, magazines, anecdotes for global and specific in analytical thinking

Writing - Filing Complaints, Travelogues

Grammar - Tenses, Direct and Indirect Speech

Vocabulary - Compound words

Composition - Dialogue Writing

General essay – Adversity is the seed of success.

TEXTS

1. *The Ballad of father Gilligan* by Alexander Pope (poem)

2. *Six thinking hats* by Edward de Bono (prose)

3. *A cup of tea* by Katherin Mansfield (Short Story)

4. An extract from Shakespeare's *As you like it (Act II Scene I lines 12 -17)*

UNIT IV POTENTIALS

Listening - Listening to the description of personalities, historical places and monuments

Speaking - Group Discussion – Totally controlled, partially controlled, Free

Reading - Parallel Reading, reading for pleasure

Writing - Letter writing – formal letters

Grammar - Adjectives, Degrees of Comparisons

Vocabulary - Idioms and Phrases

Composition - Debates and Discussions

General essay – My potentials

TEXTS

1. *The flower* by Tennyson (poem)

2. *How to avoid argument* by Sam Horn (prose)

3. *The child is father of man* by Wordsworth (poem)

4. An extract from *Pygmalion* by G.B. Shaw

UNIT V ACHIEVEMENTS

Listening - Listening to comparisons and arguments

Speaking - Performance

Reading - In-depth reading

Writing - Script writing of story to play

Grammar - Question Tags

Vocabulary - Homophones

Composition - Essay Writing

General essay - The reward of hard work.

TEXTS

1. *The Garden* by Dom Moraes (poem)

2. *On saying please* by A.G. Gardiner (prose)

3. *One good turn* by A.E.M. Bayliss (play)

**HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2 DEPARTMENT
OF BIOCHEMISTRY
I B.Sc., SEMESTER II
MAJOR CORE 2: CHEMISTRY OF BIOMOLECULES
For candidates admitted from 2015 onwards**

**CREDITS:5
HRS/WK: 5**

CODE: U15BC2MCT02

General Instructional Objectives:

The student learns about the occurrence, structure, properties & importance of different biomolecules.

UNIT: I CARBOHYDRATES

Introduction: Natural occurrence and physiological importance, classification - aldoses and ketoses, mono, oligo and polysaccharides, structural elucidation of glucose. Reactions of carbohydrates due to glycosidic OH, alcoholic OH and functional (aldehyde and ketone) groups.

Di and trisaccharides: Occurrence, structure and physiological importance of maltose, sucrose, lactose, cellobiose, trehalose and raffinose.

Polysaccharides: Occurrence, structure and physiological importance of starch, glycogen, cellulose, hemicellulose, dextrin, chitin, inulin, pectin, agar – agar. Glycosaminoglycans - occurrence, structure and physiological importance of hyaluronic acid, heparin and chondroitin sulfates. Sugar derivatives of biological importance - Amino sugars, deoxy sugars, sugar phosphates; cell-wall polysaccharides, blood group substances.

UNIT: II AMINO ACIDS

Introduction to amino acids and proteins: Structure and classification of amino acids (common amino acids of proteins). Essential amino acids - their structure and importance. The acid base properties of amino acids (amphoteric nature of amino acids, titration curve of acids), color reactions of amino acids, physical properties and chemical properties of amino acids.

UNIT: III PROTEINS

Proteins: Peptide bonds - formation and chemical nature. Classification of protein based on structure – (fibrous and globular proteins); based on function (simple, conjugated and Derived proteins). Structure of protein: Primary, secondary, tertiary and quaternary structure of proteins. Determination of amino acid composition and sequence in proteins. Ramachandran plot - basic concepts.

UNIT: IV

FATTY ACIDS AND LIPIDS

Introduction occurrence and classification of lipids.

Fatty acids : Classification, physical and chemical properties of fatty acids, distribution of naturally occurring fatty acids, essential fatty acids and their importance. Fats: Triglycerides, waxes and polyunsaturated fatty acids and their importance, Phospholipids - classification and

properties; rancidity of fats. Chemical constants of fats, detergents- their action and importance. Sphingolipids & glycolipids - their classification, basic structure and importance. Sulfolipids and gangliosides - their structure and biological importance. Prostaglandins: their basic structure and importance. Sterols: Structure and properties of animal sterols. Cholesterol, its structure and properties; colour reactions of cholesterol. Molecular components of membrane.

UNIT:V

NUCLEIC ACIDS

Introduction to nucleic acids: DNA and RNA - their difference and similarities, structure of nitrogen bases - normal and rare, properties of base, nucleosides and nucleotides, physical and chemical properties of RNA and DNA. Isolation, separation and purification of DNA and RNA). RNA –Types. DNA polymorphism, different forms of DNA (A,B&Z), unusual structure of DNA, linkages in nucleotides and nucleosides, Watson – Crick model of DNA, Protein-Nucleic Acid(PNA) and DNA –drug interaction.

TEXT BOOKS:

1. J.L. Jain, (2005): Fundamentals of Biochemistry, 6th Revised Edition, Sultan Chand and Company, New Delhi
2. E.S. West, W.R. Todd and H.S. Mason (1974): Text book of Biochemistry, 4th Edition, New Delhi, Oxford and IBH.
3. James Darnell, Harvey Lodish and David Baltimore (1990): Molecular Cell Biology, 2nd Edition, Scientific American Books, W.H. Freeman and Company, New York.

REFERENCES:

1. P.L. Soni and Mohan Katyal [2000] – Text Book of Inorganic Chemistry (a Modern Approach) Sultan Chand and sons, New Delhi.
2. R.K. Murray, D.K. Granner and P.A. Mayes (2003): Harper's Illustrated Biochemistry, 25th edition, New Delhi: Tata McGraw Hill Publishing Company Ltd.
3. A.L. Lehninger, D.L. Nelson and M.M. Cox (1993): Principles of Biochemistry, 2nd edition, CBS Publishers and Distributors.
4. David Rawn, J., (2004): Biochemistry, Panima Publishing Corporation, New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2

DEPARTMENT OF BIOCHEMISTRY

I B.Sc., SEMESTER III MAJOR CORE 5: PRACTICAL – I

ANALYSIS OF BIOMOLECULES

For candidates admitted from 2015 onwards

CREDITS:4

CODE:U15BC2MCP03

HRS/WK: 5

I QUALITATIVE ANALYSIS:

Reactions of simple sugars - glucose, fructose, galactose, xylose, lactose, maltose, sucrose, starch and dextrin.

Reactions of proteins – solubility, Biuret, Millon's and Xanthoproteic tests, denaturation by heat, pH change, precipitation by heavy metals and by acidic reagents, color reactions of amino acids like Try, Tyr, Arg, Pro, His.

Reactions of lipids – Solubility, saponification, acrolein test for unsaturation, Liebermann–Burchard test for cholesterol.

PREPARATION

1. Preparation of starch from potatoes.
2. Preparation of casein from milk.

QUANTITATIVE ANALYSIS

1. Estimation of reducing sugar by Benedict's titrimetric method.
2. Estimation of amino acids by formal titration.
3. Determination of acid number of an edible oil.
4. Estimation of DNA by diphenylamine method
5. Estimation of RNA by orcinol method.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2
DEPARTMENT OF BIOCHEMISTRY
I B.Sc., SEMESTER II
ALLIED 3(COMPULSORY): DIETETICS
For candidates admitted from 2015 onwards

CREDITS:3
HRS/WK: 4

CODE:U15BC2ACT03

General Instructional objectives:

The student learns the basis for recommending the dietary allowances for different income groups & the nutritional requirement for special groups like pregnancy, lactation and infancy, nutrition related problems of early childhood, school children, adolescence, adults and old age. Diet therapy and special feeding method and the causes, symptoms and dietetic management of diabetes mellitus, disease of gastro intestinal tract, liver & renal system, febrile conditions, cardiovascular system & allergic condition.

UNIT: I

NUTRITION IN HEALTH

Basis for recommending the dietary allowances, factors to be considered in formulating diets for different income groups.

NUTRITION FOR SPECIAL GROUP

Nutrition in pregnancy – Physiological stages in pregnancy, nutritional requirements, foods selection.

Nutrition during lactation: Physiology of lactation, Nutritional requirements. Nutrition during infancy

– Growth and development, Nutritional requirements, Breast feeding, problems in weaning – proportion of carbohydrates and proteins in weaning food. Infant formula, introduction of supplementary foods.

UNIT: II

Nutrition during early childhood (Toddler/preschool) - Growth and nutrient needs, nutrition related problems, feeding pattern. Nutrition of school children: Nutritional requirements, importance of snacks, school lunch. Nutrition during adolescence – growth and Nutrient needs, Food choices, Eating habits, Factors influencing. Nutrition of adults: Sedentary, moderate and heavy activity needs. Geriatric Nutrition: factors affecting food intake and nutrient use, nutrient needs, Nutrition related problems.

UNIT:III

NUTRITION IN DISEASE

Concepts of diet therapy. Growth and scope of dietetics, purposes and principles of therapeutic diet, modification of normal diets based on causative factors. Special feeding methods (Tube feeding, IV feeding). Classification of therapeutic diets. Diet in obesity and underweight. Diet in febrile conditions: Typhoid, Tuberculosis, Malaria, Pneumonia and influenza. Exchange list in diet planning.

UNIT:IV

DIETETIC MANAGEMENT OF DISEASES

Gastro intestinal tract diseases: peptic ulcer (Gastric and duodenal), gastritis, Diarrhoea, dysentery and constipation. Diseases of the liver – Hepatitis and Cirrhosis. Diabetes Mellitus, anemia.

Diseases of the renal system: glomerulo nephritis, nephrotic syndromes, renal stones, uremia.

UNIT:V

Diet in disease of cardiovascular system – atherosclerosis, hypertension, hyperlipidemia, different sodium restricted diets. Diet in Hypo and hyperthyroidism. Diet in allergy – Definition, classification, manifestations, common food allergies, tests for allergy, dietetic treatment.

TEXT BOOKS:

1. Swaminathan, M., (1985). Essential of food and Nutrition. Vol 2. The Bangalore reprinting and Publishing Co., Ltd., 2nd Edn., Bangalore.
2. Srilakshmi, B., (1997). Dietetics, New Age International (P) limited publishers, New Delhi.

REFERENCE:

1. Davidson, S. Passmore, R. Brook J.F and Truswell (1975), Human Nutrition and Dietetics. The English Language Book society, living stone, (Latest Edition)
2. David, S. Robinson, Food Biochemistry and Nutritional value. Longman scientific and technical John Wiley and son, Inc., New York.
3. Raheena Begum, M. (1989) A text book of Foods, Nutrition and Dietetics, steeling Publishers Pvt., Ltd., New Delhi
4. Shunbhagini, A. Joshi, (1992) Nutrition and Dietetics, Tata McGraw–Hill Publishing co., Ltd., New Delhi.
5. Anita F.P (1973), Clinical Dietetics and Nutrition Oxford University press London.

(For the candidates admitted from 2015 onwards)
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

Credits -2

Hrs – 2/Week

Code: U15RE2SBT01

General Objective:

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

UNIT I:

Individual Capacity Building

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

UNIT II :

Interpersonal skills

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

UNIT III:

Corporate skills

Vision, mission and goals: Concepts, vision setting, goal setting, 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 Prioritization Importance and urgent activities-Time management to move towards life vision.

UNIT V:

Self Development Plan

Concept and Need for Self Development Plan–Preparing Self Development Plan9 Format is used to complete the self development Plan), Monitoring and Evaluation of self Development plan– Developing indicators for self development introduction to National Skill Development Mission.

REFERENCES:

Delhi Meena K.AyothiV. (2013). A Book on Development of Soft Skills (Soft Skills: A Road Map to Success), P.R. Publishers & Distributors, Trichy.

Francis Thamburaj S.J.(2009).Communications of skills for Professional Excellence,1st Ed., Grace Publishers,

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

For candidates admitted from 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
B.A./B.Sc./B.Com./BCA&BBA, DEGREE EXAMINATION
SEMESTER II
RURAL ENRICHMENT AND SUSTAINABLE DEVELOPMENT

Hrs – 2/Week

Code: U15RE2SBT02
CREDITS :2

Course Objective:

The students are able to understand practically the Environmental concerns of rural areas and develop an alternative thinking through various field based intervention.

Unit-I

Village–Public Administration- Survey of natural resources and resource mapping of villages, village level Participating Approach (VLPA) – Role of NGO’S and SHG’S, Department of Rural development(central and state):

Unit-II

Green Revolution and industrialization cost climatic changes and mismanagement of natural resources- Reduced economic returns from agriculture-resultant social issues- poverty and farmer suicide- introduction to WTO, GATT and LPG and its impact on green Revolution.

Unit-III

Sustainable Development-Concepts , Environmental , social and economic aspects of sustainable development, sustainable development as solution to address rural issue-successful case studies from India

Unit-IV

Elements in sustainable development-Comparison and Compliments of Traditional water shed and modern water shed management techniques-water shed management practices-rain water harvesting, managing existing rain water drainage canals, desilting, buns construction, check dams, micro irrigation, agro forestry and alternative agriculture models and agriculture implements –Afforestation- Honey Bee rearing-dairy farming.

Unit-V

Elements in sustainable development –addressing agriculture issues-traditional farming technology-organic farming-Zero budget farming-organic manures vermicompost-azolla cultivation panchakavya- amirthakaraisal, organic pesticides mulikaipuchiviratti-neem products-natural management in soil-precision farming soil fertility. Ecological sanitation-bio-diversity and natural resource-terrace farming-seed banking and kitchen garden.

REFERENCES:

1. Packages of organic practices from Tamil Nadu Center for Indian Knowledge System(CIKS)
2. www.fao.org.in

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

TAMIL DEPARTMENT

BA/ B.SC/ B.COM DEGREE

Part - I : Language: Tamil Paper - III

Total Hours : 90

Code : U15TL3TAM03

Hrs : 6Hrs /Wk

Marks : 100

Credit : 3

நோக்கங்கள்:

1. வாழ்வியல் நெறிகளாகிய அறம், பொருள், இன்பம், வீடுபேறு ஆகியவற்றின் மேன்மையை எடுத்துரைத்தல்
2. சமூக வாழ்க்கைப் பற்றிய விழிப்புணர்வினைத் தோற்றுவித்தல்
3. ஆன்மீக உணர்வுகளை வலுப்படுத்துதல்

பயன்கள்:

1. காப்பியங்களைப் பயில்வதன் மூலமாக மாணவர்கள் அறக்கருத்துக்களை உணர்ந்து கொள்ளுதல்.
2. சமூக மாற்றங்களைக் கண்டறிந்து மேம்பாடுகளை உருவாக்கச் செய்தல்
3. கலைநுட்பங்களையும் பண்பாட்டுச் சிறப்புக்களையும் உணர்ந்து கொள்ளச் செய்தல்

அலகு:1 செய்யுள்

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

அலகு:2 செய்யுள்

4. இரட்சணிய யாத்திரிகம் - மரணப் படலம்
5. சீறாப்புராணம் - ஒட்டகை பேசிய படலம்

அலகு:3

தமிழ் இலக்கிய வரலாறு
சோழர் காலம்

அலகு:4

நாடகம்
சத்திய வேள்வி – அய்க்கண்

அலகு:5

கோயிற்கலை - திட்டக்கட்டுரை, வினாடி வினா
ல

பாட நூல்கள்

1. செய்யுள் - தமிழ்த்துறை வெளியீடு
2. தமிழ் இலக்கிய வரலாறு - தமிழ்த்துறை வெளியீடு
3. நாடகம்
அய்க்கண் - சத்திய வேள்வி
4. கோயிற்கலை - தமிழ்த்துறை வெளியீடு

(for the candidates admitted from June 2015 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: U15HN3HIN03
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 :

- Naveen Padhya Rathnakar– D.B.H.P. Sabha Publishers, Chennai-17
- Pracheen Padhya Sangrah– D.B.H.P. Sabha Publishers, Chennai-17
- Hindi Sahitya Ka Sanshitpta Itihas – Rajnath Sharma, Agrwal Publication,
Uttar Prakash
- Kavya Pradeep – Ram Bahori Shukla, Hindi Bhavan, Illahabad.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2

DEPARTMENT OF FRENCH

SYLLABUS

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 : U15FR3FRE03

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 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2015 - 2016

I 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

HOURS – 6 PER WEEK

CREDIT : 3
CODE :U10EL3GEN03

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) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
II B.Sc., SEMESTER III
MAJOR CORE 4: ANALYTICAL BIOCHEMISTRY
For candidates admitted from 2015 onwards

CREDITS:5
HRS/WK: 5

CODE:U15BC3MCT04

General Instructional objectives:

- The student learns about the principle, materials, methods, and applications of various biochemical techniques

UNIT: I

SPECTROMETRIC METHODS

Basic principles of electromagnetic radiation, energy, wave length, wave number, absorption and emission spectra. Beer-Lambert law- Colorimetry and Spectrophotometry, Emissionspectra, Spectrofluorometry - principles, instrumentation and applications in vitamin assays(riboflavin and Thiamine), flame photometry and atomic absorption spectrophotometry –application and NMR spectroscopy, IR and FT-IR spectroscopy.

UNIT: II CHROMATOGRAPHY

Chromatography: Principle, materials, methods and applications of Paper chromatography, Thin layer chromatography, Column chromatography, Molecular sieve chromatography, Gas – Liquid chromatography, Adsorption, Partition and Ion exchange chromatography, Affinity chromatography, High performance liquid chromatography and HPTLC

UNIT: III

CENTRIFUGATION METHODS

Basic principles of sedimentation, centrifugal force, Svedberg constant, types of centrifuges & rotors. Preparative ultracentrifugation – differential and density gradient. Analytical ultracentrifuge and its application in determination of molecular weight of proteins and nucleic acids.

UNIT: IV

ELECTROPHORETIC TECHNIQUES

General principles, factors affecting the migration rate-electric field, sample, buffer and the Supporting medium. Types- Tiselius moving boundary electrophoresis, electrophoresis with Paper, cellulose acetate, starch, agarose and polyacrylamide gel. SDS-PAGE, 2Delectrophoresis, Immunoelectrophoresis, High voltage electrophoresis and isoelectric focusing.

UNIT: V

RADIOISOTOPE TECHNIQUES

Atomic structure, radiations, types of radioactive decay, half-life period, units of radioactivity detection and measurement of radioactivity – Methods based on ionization & excitation (GM counter & scintillation counter)- advantages and disadvantages, Autoradiography. Applications of radioisotopes in the elucidation of metabolic pathway, clinical diagnosis and radio dating. Safety aspects of the use of radioisotopes.

TEXT BOOK:

1. A. Upadhyay, K. Upadhyay and N. Nath (2003): Biophysical Chemistry, 3rd edition, Himalaya Publishing House, New Delhi
2. Keith Wilson and John Walker (2004): Principles and Techniques of Practical Biochemistry, 5th edition, United Kingdom, Cambridge University Press

REFERENCES:

1. G.R. Chatwal and S. Anand (1999): Instrumental Methods of Chemical Analysis, Himalaya Publishing, Mumbai
2. Srivastava V.K. and K.K. Srivastava (1981): Introduction to Chromatography-Theory and Practicals, 2nd edition, S. Chand and Company, New Delhi.
3. Chatwal. G. and S. Anand (1995): Spectroscopy (atomic and molecular), Himalaya Publishing House, Mumbai.
4. Sharma B.K. (1993): Chromatography, 1st edition Goel Publishing House.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
DEPARTMENT OF BIOCHEMISTRY
II B.Sc., SEMESTER –III
MAJOR CORE 5-HUMANPHYSIOLOGY
For candidates admitted from 2015 onwards

CREDITS:5
HRS/WK: 5

CODE:U15BC3MCT05

General Instructional objectives:

The student

- Learns about the structure, operational mechanism and functions of the various organs and organ system in human body
- Learns about the chemistry and functioning of various endocrine secretions.

UNIT: I

DIGESTIVE AND CIRCULATORY SYSTEM:

Gross anatomy of the Gastro- Intestinal tract with relation to its function – types of glands and their secretion. Basic structure and function of heart, rhythmicity of heart, origin and conduction of heart beat, cardiac cycle, heart sounds, Blood pressure, heart rate, Cardiac output, electrocardiogram.

UNIT: II

RESPIRATORY SYSTEM:

Respiration - Definition, Basic structure of lungs, transport of gases (CO₂ & O₂).
Body fluids – Extracellular fluid, plasma volume, interstitial fluid, transcellular fluid, intracellular fluid, ionic composition of body fluids, imbalances in sodium and potassium ions, body buffers, lymph-formation, composition and flow.

UNIT: III

EXCRETORY SYSTEM:

Excretion: Basic structure and function of kidney, structure of nephron, glomerular filtration rate, Tubular Transport maximum, tubular load, plasma clearance. Formation of urine – Threshold substances, filtration pressure, filtration, reabsorption, secretion, acidification. Normal and abnormal constituents of urine. Physiology of reproduction.

UNIT: IV

NERVOUS AND MUSCULAR SYSTEM:

Structure of neuron, nerve impulse and neurotransmission, synapse – chemical and electrical synapse, functional properties of nerve fibre, action potential. Reflex action and reflex arc. Molecular organization, mechanism of excitation and contraction of striated muscles, neuromuscular functions, Biochemistry of muscle contraction.

UNIT: V

BASIC ENDOCRINOLOGY:

Introduction to Hormones: Mode of action of hormones. Hypothalamus and Hypophysis: Structure, hormones secreted.

Thyroid, Parathyroid and Pancreas: Chemical nature of hormone, synthesis, storage, release, transport and functions.

Adrenal and Gonadal hormones: Chemical nature of hormone, synthesis, and storage, release, and transport and functions.

TEXT BOOK:

1. Chatterjee, C.C.(2016) Human Physiology, Vol. I & Vol. II, 11th edition, CBS Publishers,
2. Kim E Barrett, (2012) Ganong's Review of Medical Physiology, 24th edition, Tata McGraw Hill, Lange publishing company Ltd., New Delhi.

REFERENCE:

1. Talwar G.P. (1980) Text Book of Biochemistry, Prentice-Hall of India.
2. Guyton, A.C. (1991) Text Book of Medical Physiology W.B Saunders Company, Philadelphia, London, Toronto.
3. Harper, H.A., Rodwell, V.W. Mayes.P.A [1997]. Review of Physiological chemistry, A Lange Medical Publications, Maruzen Asia Pvt., Ltd.,
4. Murray, R.K. Gramer, D.K. Mayes, P.A and Rodwell, V.W.(1999). Harper's Biochemistry, 25th Edn., A Lange Medical Book, Prentice-Hall International.
5. West, E.S., Todd, W.R., Mason, H.S. and Bruggen, J.T.V. (1974). Text Book of Biochemistry. The Macmillan Company, Collier – Macmillan Limited/London.
6. Frederic.H.Martini., William. C. Ober., Clare W. Garrison., (2006). Fundamentals of Anatomy and Physiology 7th Edn., Pearson Benjamin Cummings Publications, San Francisco.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI-2

DEPARTMENT OF BIOCHEMISTRY

II B.Sc., SEMESTER- III

ALLIED 4(OPTIONAL): MICROBIOLOGY – GENERAL

For candidates admitted from 2015 onwards

CREDITS:3

CODE:U15BC3AOT04

HRS /WK: 4

General Instructional objectives:

The student learns about the history & scope of microbiology, classification, types, morphology, reproduction and control of microorganism.

UNIT: I

HISTORY AND SCOPE OF MICROBIOLOGY:

Scope of Microbiology, History – Discovery era; Transition period; Golden age; twentieth century. Classification of Microorganism- Haeckel's and Whittaker's, differences between Prokaryotes and Eukaryotes. Carl Woese-3 domain Concept. An introduction to microscopy- A brief account on Compound, Dark field, Bright field, Phase contrast, Fluorescent and Electron microscope.

UNIT: II

BACTERIA - MORPHOLOGY AND ITS GROWTH CHARACTERISTICS:

Bacteria: Nomenclature, morphology and fine structure; Nutritional requirements, nutritional types; Growth curve; Types of Culture medium, Culture methods, Cultural characteristics, Identification. Reproduction and Photosynthesis.

UNIT: III

Brief and general account: Mycoplasmas, Rickettsiae, Chlamydia, Myxobacteria. Viruses: General properties and types - TMV, T-even phage-Morphology and reproduction.

UNIT: IV

STRUCTURE AND REPRODUCTION OF ALGAE, FUNGI AND PROTOZOA:

Cyanobacteria: General account on structure, reproduction. **Actinomycetes:** General account on structure, reproduction. **Microalgae:** General account on structure and reproduction. *Chlorella*, *Volvox*, *Diatoms*. **Microfungi:** General account on structure and reproduction of *Yeast*, *Mucor*, *Penicillium*, *Aspergillus*. **Protozoa:** General account on structure and reproduction of *Entamoeba*, *Paramecium*, *Plasmodium*, *Trypanosoma*.

UNIT: V

CONTROL OF MICROORGANISMS:

Physical Agents - High temperatures, Low temperatures, Desiccation, Radiation, Filtration. Chemical Agents – Characteristics of an ideal antimicrobial chemical agent, Phenols, Alcohols, Halogens, Heavy metals, Dyes, Detergents, Aldehydes, Gaseous agents. Antibiotics- Classification based on their mode of action- Penicillin, Polymyxins, Streptomycin, Sulfonamides and other chemotherapeutic agents, antibiotic resistance.

TEXT BOOK:

1. Pelczar M.J. Chan E.C. S Noel R.Krieg, (2004) Microbiology, Fifth Edn., Tata McGraw Hill publishing company Limited, New Delhi.

REFERENCE:

1. Ananthanarayan R. & Jeyaraman Paniker C.K (2013): Text Book of Microbiology, Ninth Edn, Hyderabad : University Press(India).
2. Lansing M.Prescott, John P.Harley, Donald A. Klein (2005): Microbiology, 6th Edn., Tata McGraw – Hill Companies, New York.
3. Power C.B & Dagainawala H.F (1996): General Microbiology volume I & II. Himalaya Publishing House, Bombay.
4. Purohit S.S (1999): Microbiology Fundamentals and Applications, Agro Botanical Publishers, India.
5. Sharma P.D. (2005): Microbiology, Rastogi and Co., Meerut.
6. Stainer R.Y. Ingraham J.L., wheels M.L. (2004): General Microbiology, Macmillan, London.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
II B.Sc., SEMESTER III

SBE 3: PAIN RELIEF FORMULATION AND COSMETICS

For candidates admitted from 2015 onwards

CREDITS:2

CODE: U15BC3SBP03

HRS/WK:2

PREPARATION OF

1. Turpentinelineiment
2. Soaplineiment
3. Pain balm preparation.
4. Simple ointment & Sulphurointment
5. Calamine lotion
6. Calamine Benzoate Lotion
7. Cold cream
8. Vanishing cream
9. Hair cream
10. Liquid tincture of liquorice
11. Compound Tincture of Benzoin
12. Tincture of Orange
13. Shampoo
14. Nail bleach
15. Cuticle remover
16. Compound syrup of ferrous phosphate
17. Commercial cough syrup
18. Talcum powder
19. Baby powder
20. Tooth powder.

REFERENCE

1. Arthur J. Winfield, R. Michael and E. Richard, Pharmaceutical Practice (2000), 3rd edition, Elsevier Publications.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2

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

II YEAR: SEMESTER - III

(Students who are admitted from 2015 onwards)

GENDER STUDIES

Hours: 1Hr/wk

CODE: U15WS3GST01

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-

GenderDiscrimination-Gender Division of Labour -Gender stereotyping – Gender Sensitivity-Gender Equity

– Equality – Gender Mainstreaming – Empowerment.

Unit II Women's Studies Vs Gender Studies: UGC's Guidelines –VII to XI Plans–

GenderStudies :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'sDecade – 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

forWomen (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 Cyber Crimes.
- To make them aware of the property rights.
- To make them understand and appreciate the role of media, in facing the challenges on various life issues.

UNIT – I: GENDER ISSUES

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

UNIT – II: 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 Millenium ahead”.
2. Thomas Anjugandam, 1999, “Grow Free Live Free” Salesian Publicaiton.
3. H.C PrettinandhiniUpreti, jaipur 2000 “Women and problems of Gender Discrimination”.
4. Thomas B.Jayaseelan, 2002, “Women: Rights and law” Indian Social Institute, New Delhi.
5. Reni Jacob vol I & II, April- June 2004, ”Vikasimi – The journal of Women’s Empowerment, Ed,”

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 (Exo 4-5);
- Joshua (Joshua 1-8)

UNIT – II: JUDGES AND KINGS

- **JUDGES:** Deborah (Judges 4); Samson (Judges 6-8); Gideon (Judges 13-16)
- **KINGS:** David (I Sam 17-31, II Sam 1-12); Solomon (I Kings 1-11, Proverbs 1-5,31)

UNIT – III: WOMEN IN THE BIBLE

- Women in the Old Testament
- Eve (Gen 3)
- Ruth (Ruth 1-4)
- Hannah (I Sam 1:1-28)
- Esther (Esther 1-6)

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

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 WOMEN IN THE BIBLE- RUTH, ESTHER, JUDITH

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. Ex. Mother Teresa, St.Alphonse.

REFERENCES:

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

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

BA/ B.SC/ B.COM DEGREE Part - I : Language: Tamil Paper - IV

Total Hours : 75

Code : U15TL4TAM04 Hrs

: 5Hrs /Wk

Marks : 100 Credit : 3

Nehf;fq;fs;:

1. khzth;fSf;Fj; jkpoh;jk; tho;tpay; tpOkpaq;fis czh;j;Jjy;.
2. mwnewpfs; tho;f;iff;F topfhl;Lk; tpjj;jpid vLj;Jiuj;jy;
3. rpfuk; njhl;l rhjidahsupd; tho;tpaiyg; Gyg;gLj;Jjy;
4. nkhopj;jpwd; tsh;j;jy;. gad;fs;:
1. tho;f;ifapd; gy;tif epiyfisAk; czh;e;J nray;glr; nra;jy;
2. jd;idj; jhNd newpg;gLj;jpf;nfhs;s> gad;ghlila ,yf;fpak; topfhl;Ltij Ghpe;Jnfhs;sr ;nra;jy;.
3. ,iltplhj Kaw;rpapd; ntw;wpg;gbfisf; fz;Lzh;e;J Nkd;ik milar; nra;jy;.
4. ,Unkhopg; Gyikia tsh;j;jy;. yF:1 nra;As;
1. FWen;jhif 1. nfhq;F Nju; tho;f;if mQ;rpiwj; Jk;gp - ,iwadhu;
2. ahUk; ,y;iy jhNd fs;td; - fgpyu; 3. Ntk;gpd; igq;fhav;d; Njhop jupNd – kpisf; fe;jd; 4. cs;sJ rpijg;Nghu; csnudg; glhmu ;- ghiy ghba ngUq;fLq;Nfh
5. Nehw;Nwhu; kd;w Njhop – FWq;Fb kUjd;
2. ew;wpiz 1. kidAiw Gwtpd; nrqf;hy; Ngil
2. ePs;kiyf; fypj;j ngUq;Nfhw; FwpQ;rp - ghz;bad; khwd; tOjp
3. Ma;kyu; kiof;fz; njz;gdp ciwg;gTk; - ey;tpsf;fdhu;
4. rpWt PKy;iyg; ngupJ fko; myup - kJiu Nguhythau;
3. fypj;njhif 1. vwpi;jU fjpu;jhq;fp Ve;jpa FilePoy; - fgpyu;
2. ghLfk; th thop Njhop - fgpyu; myF:2 nra;As; 4.GwehD}W 1. epd; eae;J ciweu;f;Fk; - ngUQ;rpj;jpudhu; 2. fha;ney; mWj;Jf; ftsk; nfhsPnd - gprpuhe;ijahu; 3. gilg;Gg; gygilj;J - ghz;bad; mwpTilek;gp 4. Nfl;ly; khj;jpiu – Nfhg;ngUQN;rhod; 5. <d;W Gwe;jUjy ;vd;jiyf; flNd - nghd;Kbahu; 5. gjpw;Wg;gj;J - Ie;jhk; gj;J
1. Rlu; tP Ntq;if 2. jRk;G JsQF; ,Uf;if 3. Cd;Jit mbrpy; 6. jpUf;Fws; 1. mwj;Jg;ghy; - ,dpait \$wy;
2. nghUl;ghy; - tpid nray;tif 3. fhkj;Jg;ghy; - Gytp EZf;fk; myF:
- 3 jkpo; ,yf;fpa tuyhW (Jiw ntspaPL) rq;ffhyk; - rq;fk; kUtpafhyk; vl;Lj;njhif> gj;Jg;ghl;L> gjpndz;fPo;f;fzf;F E}y;fs; myF:
- 4 tho;f;if tuyhW md;id njurh - gh. jPdjahsd; myF:

5 nghJ – nkhopngah;gG;

ghl E}y;fs; 1. nra;As; E}y; - jkpoha;Tj;Jiw ntspaLP 2. jkpo ;,yf;fpa tuyhW - jkpoha;Tj;Jiw
ntspaLP 3. tho;f;if tuyhW gh.jPdjahsd; - md;id njurh 4. nkhopngah;gG; -
jkpoha;Tj;Jiw ntspaLP

(for the candidates admitted from June 2015 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
CREDITS : 3

CODE: U15HN4HIN04
MARKS : 10

UNIT – I Functional Hindi

UNIT- II Adhunic Kaal

UNIT- III General Essays

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

UNIT- IV Letter Writing

UNIT- V Anuvad Abhyas - III

Books Prescribed :

- General Essays - D.B.H.P. Sabha Publishers, Chennai-17
- Abinava Patra Lekhan - D.B.H.P. Sabha Publishers, Chennai-17
- Anuvad Abhyas – III - D.B.H.P. Sabha Publishers, Chennai-17

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

HRS/WEEK : 5

CODE : U15FR4FRE04

CREDIT : 3

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 d'aujourd'hui – travailler pour la planète – réussites et échecs - marathon de Paris – plaisir des sports – les sports les plus regardés et pratiqués - les français et les sports– 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 2014 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2.
2015 - 2016

I 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

HOURS – 6 PER WEEK

CREDIT : 3

CODE : U13EL4GEN04

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. Note making
2. Dialogue
3. Creative Writing
4. Narrative Writing
5. Imaginative Writing

GENERAL ESSAY – 5 TOPICS

1. Should capital punishment be abolished?
2. Is a corruption- free India a dream?
3. The nuclear family and its consequent changes in society.
4. The threat of terrorism.
5. If man becomes immortal...

THINK BETTER - READ AND COMMUNICATE : MODERN FABLES

1 – 10 for Internal Testing

BOOKS FOR REFERENCE

Oranee Jansz : *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 take over
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-2
DEPARTMENT OF BIOCHEMISTRY
II B.Sc., SEMESTER IV MAJOR CORE 6: ENZYMES
For candidates admitted from 2015 onwards

CREDITS:5
HRS/WK: 5

CODE:U15BC4MCT06

General Instructional objectives:

The student

- learns about the intracellular localization of enzymes and its nomenclature.
- learns the various techniques to isolate and purify enzyme, the kinetics of enzyme action and its various applications.

UNIT:I

CLASSIFICATION AND STRUCTURE

Nomenclature (EC System) – structure of ribonuclease and lysozymes. Co-factors – coenzymes - metalloenzymes. Marker Enzyme - Isozymes-LDH.

UNIT:II

ISOLATION AND PURIFICATION OF ENZYMES

Classical methods of purification and crystallization. Homogenization – Separation of cellular organelles by differential centrifugation (intracellular localization). Separation based on solubility differences, isoelectric precipitation, salting in and salting out, dialysis, solvent fractionation, Chromatographic techniques and Electrophoresis.

UNIT:III

MECHANISM OF ENZYMES ACTION

Energy of activation, catalytic mechanism of enzyme action-lock & key theory and induced fit model, acid base catalysis, covalent catalysis, metal ion catalysis, electrostatic catalysis, catalysis through proximity and orientation effects, catalysis by preferential transition state binding.

UNIT:IV

ENZYME KINETICS

Specificity – stereo specificity and geometric specificity. Michaelis-Menten equation, Lineweaver Burk plot. Enzyme inhibition- mechanism of competitive, noncompetitive inhibition, allosteric. Factors regulating enzyme action viz., pH, temperature, substrate and enzyme concentration.

UNIT:V

ENZYME TECHNOLOGY AND ITS APPLICATION:

Industrial use – Amylases and proteases – pectinase for juice clarification; papain for meat tenderization; collagenase for hide purification. Glucose oxidase strips for glucose detection and invertase in sugar hydrolysis. Biotechnological applications of exo and endonuclease. Immobilized enzymes and its applications. Biosensors, abzymes, and biochips.

TEXT BOOK:

1. Keith Wilson and John Walker (2004): Principles and Techniques of
2. Practical Biochemistry, 5th edition, United Kingdom, Cambridge University Press.
3. Donald Voet & Judith G. Voet (1995) Text Book of Biochemistry Second
4. Edition – (1995), By John Wiley & sons, Inc.

REFERENCES:

1. Stryer, L. (1980) Biochemistry WH. Freeman and Company New York.
2. West. E.S., Todd W.R., Mason. H.S. & Bruggen J.T. (1996) Text Book of Biochemistry Fourth Edn., The Macmillan Company, London.
3. Murray R.K. Granner D.K. Mayes P.A. Rodwell V.W. (1996) Harper's Biochemistry
4. – 24th Edition. A Lange Medical Book, Prentice Hall International Inc.
5. Renuka Harekrishnan (2000). An Introduction to Biomolecules & Enzymes. III Edn. Indrajit Pathipagam, Madurai.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2
DEPARTMENT OF BIOCHEMISTRY
I B.Sc., BIOCHEMISTRY, SEMESTER – IV
MAJOR ELECTIVE1 – CELL AND DEVELOPMENTAL BIOLOGY

CREDITS:4
HRS/WK: 5

CODE:U15BC4MET01

COURSE OBJECTIVES:

The students learn about the:

- basic structure and functioning of a cell
- Organization of a cell, which would give a better understanding about the concepts in the forthcoming papers.

UNIT: I

Ultra-structure of a cell. Cytoplasm: physical and biological properties.
Plasma membrane: Ultra structure and membrane models viz., unit membrane and fluid mosaic.
Permeability functions – Passive, facilitated and active diffusion and endocytosis. Introduction to signal transduction and other functions.

CELLULAR COMPONENTS:

UNIT: II

Mitochondria: Morphology, ultra-structure and functions.
Endoplasmic reticulum: Morphology, ultra-structure, types, role in cell secretion and other functions.

UNIT: III

Golgi complex: Morphology, ultra-structure, role in cell secretions, glycosylation and other functions.
Lysosomes: Morphology, chemistry, ultra-structure and functions.

UNIT:IV

Nucleus: Ultra structure and functions. Nucleolus: Ultra structure and functions. Chromosomes: Morphology, structure, types, chemistry, organization and functions.

UNIT:V

Centrosome – Morphology, ultra-structure and functions.
Cell cycle-Events during cell cycle, measurement of cell cycle, duration spindle mechanics, mitotic inhibitors, meiosis and its significance

TEXT BOOK:

1. Power.C.B., Cell Biology, Himalaya publishing House, Delhi, 1996.

REFERENCES

1. Verma P.S and V.K Agarwal – Cell Biology, S.Chand and company Ltd., New Delhi, 1998.
2. De Robertis E.D.P, and De Robertis E.M., Cell and Molecular Biology, 8th Edn. B.I. Waverly pvt. Ltd., New Delhi, 1995.
3. Freifelder.D., Molecular Biology, N.K.Mehra for Narosa publishing House New Delhi, 1990.
4. Kleinsmith, L.J and Kish V.M., Principles of Cell Biology Harper and Row publishers, New York, 1998.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI – 2
DEPARTMENT OF BIOCHEMISTRY
II B.Sc., SEMESTER –IV
MAJOR ELECTIVE 1 -BIOPHYSICAL CHEMISTRY

CREDITS:5
HRS/WEEK: 5

CODE:U15BC4MET02

General Instructional objectives:

The student learns about the laws, concepts and theories of physical chemistry applied in biological systems.

UNIT: I

GASEOUS STATE: Dalton's law of partial pressures – Henry's law – Gas analysis in biological systems – PCO₂ and PO₂ gaseous exchange in the lungs arterial and ventral capillaries.

UNIT: II

CHEMICAL KINETICS: Rate – Definition and Methods of determination – Rate Laws – Specific rate constant – Order as applied to first, second, zero and fractional order reactions – Molecularity.

UNIT:III

THERMODYNAMICS: Heat and work – various forms of energy – Interconversion of forms of energy – Definition of heat, temperature and heatcapacity.

First and second law of thermodynamics – Clausius - Claypeyron equation – Definition of enthalpy, entropy and heat content - Isothermal, Adiabatic, reversible and irreversible processes – Classical example of equipartition of energy.

Hess's law and its application – Free energy changes during chemical reactions. Bond energies and heat of combustion Calculation of free energy change from equilibrium constant of biological transformations – Kirchoff's equation.

Definition of pH and pOH – Buffer solutions – Preparation and uses – Buffer action – Henderson equation – pH of body fluids Buffers in body fluids – Red blood cells and tissues – Measurement of pH by indicators, Hydrogen electrode and glass electrode method.

UNIT: IV

COLLOIDAL STATE: Size of colloidal particles – Types of colloidal dispersions (Sol, aerosols, emulsion forms, gels) Preparation of lyophilic and lyophobic sols – protective colloids – Gold number – Stability of colloids – precipitation – coagulation – Flocculation.

Properties of colloids – colligative, properties, optical properties, Electrical properties.

Gasometric phenomenon and osmoregulation in the body – Electrosmosis - Electrophoresis. Importance and applications of colloids.

UNIT V:

ELECTROCHEMICAL TECHNIQUES: Principles of electrochemical techniques – reference electrodes, Measurement of PH by glass electrode, ion selective electrodes and gas sensors.

Redox potentials principles potentiometric titrations oxygen electrode - principle, operation of a Clark electrode, applications of oxygen electrode.

REFERENCE :

1. Upadhyay A., Upadhyay k. & NathN. (2000).Biophysical chemistry Firstedn., Himalaya publishingHouse.
2. Puri Sharma pathania :Principles of physical chemistry 3rd edn., Vishalpublication[1983]
3. Bahl. B.S. Tuli.G.D and Arun Bahl : Essentials of physicalchemistry[1982]
4. Murray R.K. Granner D. K. Mayes P.A. Rodwell V.W Harper's Biochemisty 24th edn., A lange medical Book – prentice HallInternationalInc[1994]

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
II B.Sc., SEMESTER IV
ALLIED 5 (OPTIONAL) : MICROBIOLOGY-APPLIED
For candidates admitted from 2015 onwards

CREDITS:4
HRS/WK:4

CODE:U15BC4AOT05

General Instructional Objectives:

The student

- learns about the different fermentation processes, the microbiology of food and dairy products. Soil microorganisms and their role in biogeochemical cycles, veterinary, air & water microorganism and the common bacterial and viral diseases of man.

UNIT:I

12Hrs

INDUSTRIAL MICROBIOLOGY

Fermentation Products – enzymes, antibiotics, alcohols – microbes involved, fermentation process of ethyl alcohol, vinegar, penicillin, commercial importance of the products. Effluent treatment

UNIT: II

12Hrs

FOOD MICROBIOLOGY

Normal flora of fresh food, food spoilage & food poisoning. Physicochemical methods in foodpreservation.

DAIRY MICROBIOLOGY

Normal flora of milk, pasteurization, milk products – curd, cheese, butter, fermented milk. Milkborne diseases.

UNIT: III

12Hrs

AGRICULTURAL AND AQUATIC MICROBIOLOGY

Soil microorganisms - types, influence on soil, nitrogen cycle, nitrogen fixation, soil fertility, biofertilizer, Biogas. An introduction to marine microbes.

UNIT: IV

12Hrs

MEDICAL MICROBIOLOGY I

An introduction to Medical Microbiology.Types and analysis of air microorganism, air borne diseases – meningitis, chicken pox, andmeasles.Types and analysis of water microorganism,

water borne diseases – polio, cholera. Zoonotic diseases: Anthrax, Rabies, swine flu – causative agents, pathogenesis and preventive measure.

UNIT:V

12Hrs

MEDICAL MICROBIOLOGY II

Common bacterial, viral diseases of man - diphtheria, tuberculosis, pneumonia, whooping cough, typhoid, cholera, leprosy, tetanus, polio, viral hepatitis, AIDS – causative organism, basic structure, toxicity, pathogenicity, clinical symptoms, preventive measures.

TEXT BOOK:

1. Ananthanarayan.R. and Jeyaram Paniker C.K. (1986) Text Book of Microbiology, Orient Longman Limited Madras.

BOOK OF REFERENCE:

1. Pelczar M.J. Chan E.C.S. Noel R. Krieg (1993 Microbiology), Fifth Edn., Tata McGraw Hill publishing company Ltd., New Delhi.
2. Ananthanarayan.R. and Jeyaram Paniker C.K. (1986) Text Book of Microbiology, Orient Longman Limited Madras.
3. Frazier W.G. (1958) Food Microbiology. McGraw Hill Book of Company New York.
4. Power C.B. & Dagainawala H.F. (1996) General Microbiology Volume I & II. Himalaya Publishing House, Bombay.
5. Stainer R.Y. Ingraham J.L. Wheels M.L. & Painter P.R. (1992) General Microbiology, Macmillan, London.
6. Sharma P.D. (1993) Microbiology, Rastogi and Co., Meerut.
7. Purohit S.S (1992) Microbiology-Fundamentals and applications, Agro Botanical Publishers, India.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI

DEPARTMENT OF BIOCHEMISTRY

II B.Sc., SEMESTER IV

ALLIED 6(OPTIONAL) : MICROBIOLOGY – PRACTICALS

For candidates admitted from 2015 onwards

CREDITS:3

CODE:U15BC4AOP06

HRS/WK: 4

1. Cleaning, Preparation and sterilization of glasswares.
2. Preparation of media for bacteria, fungi and actinomycetes.
3. Inoculation methods.
4. Isolation of pure culture by streak plate & pour plate method.
5. Preservation of cultures – Stab and Slant cultures.
6. Staining of Microorganism – Gram stain, acid fast, methylene blue, Negative staining Hanging drop preparation.
7. Bacteriological examination of soil and milk.
8. Growth curve.
9. Wine production by yeast.
10. Antibiotic disc assay.
11. Enumeration of coliform organism.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
III B.Sc., SEMESTER V
MAJOR CORE 7: INTERMEDIARY METABOLISM
(METABOLIC DISORDERS NOT INCLUDED)
For candidates admitted from 2015 onwards

CREDITS:4
HRS/WK:5

CODE:U15BC5MCT07

General Instructional Objectives:

The student

- learns about the mitochondrial ETS, high energy compounds & photosynthesis
- learns about the metabolism of carbohydrates, proteins and lipids & their regulations.
- understands the metabolism of purines, pyrimidines and Detoxication.

UNIT: I

METABOLISM OF CARBOHYDRATES

Carbohydrate metabolism – Glycogenesis, Glycogenolysis, Glycolysis, Citric acid cycle, Glyoxylate cycle, Gluconeogenesis, HMP shunt pathway, Uronic acid pathway.

UNIT: II

METABOLISM OF LIPIDS & STEROIDS

Biosynthesis of fatty acids and some important phospholipids. Degradation of fats – beta oxidation of saturated and unsaturated fatty acids, degradation of phospholipids. Metabolism of ketone bodies. Steroids – Biosynthesis and degradation of cholesterol – importance.

UNIT: III

AMINOACID METABOLISM

Amino acid pool. Oxidative and non-oxidative deamination, transamination, transmethylation. Urea cycle, Creatinine formation. Outline of various amino acid metabolism. Metabolism of essential amino acids – Phenyl alanine and tyrosine, tryptophan, branched chain amino acids & sulphur containing amino acids.

UNIT: IV

METABOLISM OF NUCLEIC ACIDS

Biosynthesis (de novo and salvage pathway) of purines and pyrimidines with reference to the sources of atoms in the purine and pyrimidine molecules. Catabolism of purines and pyrimidines. Detoxication mechanisms – conjugation, hydrolysis, reduction and oxidation with examples.

UNIT: V**REDOX SYSTEMS OF MITOCHONDRIA AND CHLOROPLAST**

Respiratory chain – functions of NAD⁺, NADP⁺, FMN, FAD, cytochrome and CoQ in hydrogen transfer, formation of ATP. High energy compounds and linkages. Photosynthesis - light reactions and dark reactions.

TEXTBOOKS:

1. Murray *et al* (2006) Harper's Biochemistry, Twenty seventh Edn., Prentice Hall, International Inc.
2. Dr. Deb, A.C. (1999) – Fundamentals of Biochemistry, New Central Book Agency (P) Limited

REFERENCES:

1. Lehninger, A.L. Nelson, D.L. and Co., M.M. (1993). Principles of Biochemistry, CBS publishers and Distributors, India.
2. Stryer, L. (2006) Biochemistry, W.H. Freeman and Company, New York.
3. Dr. S. Ramakrishnan, K.G. Prasanna & R. Rajan (1994). Second Edn., Text Book of Medical Biochemistry, Orient Longman Limited, Madras.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
DEPARTMENT OF BIOCHEMISTRY
III B.Sc., BIOCHEMISTRY, SEMESTER V
MAJOR CORE 8: PRINCIPLES OF MOLECULAR BIOLOGY
For candidates admitted from 2015 onwards

CREDITS: 4
HRS/WK: 5

CODE:U15BC5MCT08

General instructional objectives:

The students learn about the:

- basic principles of inheritance and the significance of the organization of genome
- mechanisms in the expression of genetic material and its regulation

UNIT: I

REPLICATION OF DNA

Nucleic acids as carriers of genetic information carriers. Nucleosomes: organization of DNA. Semi conservative method: mechanism, experimental evidence. Enzymology of DNA replication, events at the replication fork, rolling circle method of DNA replication, inhibitors of DNA replication

UNIT: II

TRANSCRIPTION

Transcription in prokaryotes and Eukaryotes – initiation, elongation, termination, inhibitors of transcription, antisense RNA. Post transcriptional processing of mRNA – splicing, introns, exons, capping, polyadenylation

UNIT: III

TRANSLATION

The genetic code and its features. Protein synthesis in E.coli - charged tRNA, F.met- tRNA, initiator codon, Shine – Dalgarno sequence, formation of initiation complex, role of EF – Tu, Ef-Ts, Ef-g and GTP, non-sense codons; and release factors- RF1 and RF2. Post translational modification of protein.

UNIT: IV

GENE REGULATION:

Enzyme induction, repression, operon concept, Lac-operon, trp operon, co-ordinateregulation, positive and negative regulation.

DNA repair light repair, dark repair– Excision, recombination and SOS repair systems in E.coli.

UNIT: V

Mutation types and molecular mechanisms; mutagens. Variation in chromosomes: Structural - deletion, duplication, inversion and translocation and Numerical – aneuploidy and its types.

Syndromes in man- Down's, Turner's and Klinefelter's syndrome.

Polyploidy – types, origin, induction and significance.

Mutation detection-CLB method.

TEXT BOOK:

1. Verma, P.S., and Agarwal, V.K., Genetics A. Chand and Company Ltd., NewDelhi, 2005.
2. Freifelder D., Molecular Biology, Jones and Bartlett, BostonUSA, 1989.
3. Power.C.B., Cell Biology, Himalaya publishing House,Delhi,1996.
4. SC Rastogi., Molecular Biology. 2 nd edition. CBSPublishers, 2011.
5. Manju Yadav, Genetics, 1st edition, Discovery PublishingHouse, 2003.

REFERENCES:

1. Gardner., Principles of Genetics, Wiley Eastern Ltd, NewYork,1984.
2. Griffiths, A,J.F., An Introduction to genetic analysis Freeman and company,New York,1993.
3. Lewis Richi, Human Genetics :Concepts and its application 8th Edn., Tata Mc. Graw Hill NewDelhi,2005.
4. Ursula Goodenough.,Genetics, Holt Reinhart and Winston, NewYork,1985.
5. Tamarein, Robert H., Principles of Genetics, Tata Mc. Graw Hills, NewDelhi,2004.
6. De Robertis E.D.P, and De Robertis E.M.,Cell and Molecular Biology, 8th Edn. B.I Waverly Pvt. Ltd., NewDelhi,1995.
7. Freifelder.D.,MolecularBiology,N.K.MehraforNarosapublishingHouseNewDelhi, 1990.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
III B.Sc., SEMESTER-V
MAJOR CORE-9: IMMUNOLOGY

For candidates admitted from 2015 onwards

CREDITS: 4

HRS/WK:5

CODE:U15BC5MCT09

General Instructional objectives

The student

- learns about the structure, mechanisms of action and functional roles of the various cells (T, B & Macrophages) and organs (primary & secondary lymphoid organs) of the immune system.
- understands the concept of autoimmunity, hypersensitivity, transplantation and tumor immunology.
- understands the principle and applications of various immunological techniques

UNIT: I

Types of immunity: Innate and acquired, Passive and active.

Lymphoid organs: Primary and secondary lymphoid organs-thymus, bone marrow, bursa fabricius, spleen, lymph node, GALT & BALT.

Lymphocytes: Macrophages, T and B cells –origin, differentiation and functions. Role of lymphokines and cytokines in an immune response.

UNIT:II

Antigen: Super Antigen, haptens – structure, general properties and functions.

Immunoglobulin: structure, types & functions. Genetic basis of Antibody diversity.

Vaccines and Toxoids, preparation and immunization.

Complements: Components, mode of activation, classical and alternate pathway and its functions.

UNIT:III

Acquired Immune Response: Primary and Secondary immune response.

Humoral immunity: Antigen recognition, cell interactions, clonal proliferation, interleukins, antibody synthesis, regulation of antibody synthesis.

Cell mediated immunity: Role of cytotoxic T lymphocytes, TD cells, NK cells and macrophages.

Immunity to infection: Mechanism, Antigenic drift, antigenic shift, antigen mimicry, antigenic masking, antigenic variation.

UNIT: IV

HLA: structure & functions, HLA typing, organ transplantation

Autoimmunity: Concept, mechanism & autoimmune diseases viz., Grave's diseases, SLE, serum sickness and Rheumatoid arthritis.

Hypersensitivity: Definition, mechanism & types with example.

Tumor immunology: Tumor antigens immune surveillance and Tumor immunotherapy.

UNIT:V

Recombinant hormones: concept, applications (Insulin and Growth Hormone).

Vaccines:Subunit vaccines, Recombinant vaccines, edible vaccines.Monoclonal

Antibodies:Methods of production (Hybridoma, vectors) and its application.

Agglutination and precipitation reactions, immunodiffusion, immune electrophoresis andimmunofluorescent techniques.

Principle, technique and applications of RIA, ELISA.

TEXT BOOK:

1. Kuby, T. (2007)Immunology, W.H. Freeman & company,NewYork.
2. Male D. (2006), Immunology, 7thedition,Elsevier.
3. Abul K Abbas, (2011), Cellular and molecular immunology, 7th edition,Saunders publications.

REFERENCES:

1. Chakravarthy.A.K.(1996)Immunology,Tata MC Graw Hill publishing company limited.NewDelhi.
2. Daniel P.Stites & Abbas I. Tarr (1991) Basis and Clinical Immunology,Prentice – Hall InternationalInc.,
3. Sell. S.(1987). Basic immunology–An Introduction, IV Ed.,Saunderscollege publications,Philadelphia.
4. Roit. I.M, (2012)EssentialImmunology, 8th Edn.,EIBS/Blackwellscientific publication,Oxford.
5. Fathima, D. & Armugam (1996). Immunology, SarasPublication.Kanyakumari.
6. Nandini.S.(1994) – Immunology Introductory text book. New age Int,(P)Ltd. Publication,NewDelhi.

HOLY CROSS COLLEGE (AUTONOMOUS),TIRUCHIRAPALLI-2
DEPARTMENT OFBIOCHEMISTRY
III B.Sc., SEMESTER V
MAJOR CORE 10: PRACTICALS –II
ENZYMES AND ANALYTICAL TECHNIQUES
For candidates admitted from 2015 onwards

CREDITS:4

CODE:U15BC5MCP10

HRS/WK: 5

ENZYMES

Preparation of acid phosphatase from potatoes, effect of pH, Temperature, Enzyme and Substrate concentration ontheenzyme.

Preparation of catalase from Chowchow-effect of pH, temperature, enzymes and substrate concentration ontheenzyme.

Preparation of Line weaver – Burk plot and determination of Michaelis Menten constant of acid phosphatase andcatalase.

ANALYTICAL TECHNIQUES

1. RectangularPaperchromatography.
2. CircularPaperchromatography.
3. Thin layer chromatography of aminoacids
4. Separation of plant pigments by column chromatography
5. Paper Electrophoresis.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
III B.Sc., SEMESTER V
MAJOR CORE ELECTIVE-2: DRUG BIOLOGY

CREDITS:4
HRS/WK:4

CODE:U15BC5MET01

UNIT- I

History and development of medicinal plants, sources and classification of drugs. Routes of drugs administration, dosage forms. Drug distribution, pKa values, hydrogen bonding, protein binding, chelation, steric effect, surface activity. Mechanism of action of drugs, combined effect of drugs. Factors modifying drug action, tolerance and dependence. Pharmacogenetics.

UNIT- II

Drug metabolism – general pathways of drug metabolism (different types of reaction in phase I and phase II with examples), metabolism and excretion of drugs. Adverse drug reactions and treatment of poisoning. Drug interactions, factors affecting drug metabolism including stereo chemical aspects, significance of drug metabolism in medicinal chemistry.

UNIT- III

Autonomic nervous system, central nervous system, autocoids, chemotherapy of parasite infections, chemotherapy of microbial diseases, immunomodulators. Gene therapy. Therapeutic gases. Free radical biology and antioxidants, pharmacology of biophosphonates.

UNIT- IV

General toxicology: Basic principles of diagnosis. Mechanism of toxic effect, toxicokinetics – chemical carcinogens and teratogens, treatment of intoxication. Response of respiratory system, reproductive system, liver, kidney to toxic agents. Toxic effects of metals, solvents, environmental pollutants. Antidotes in the management of poisoning. Applied analytical toxicology and toxicovigilance.

UNIT- V

Basic constituents of plants (chemical classification). Isolation of active constituents from plant material. Percolation and maceration. Qualitative constituent characterization techniques. Utilization of HPTLC for the constituent analysis. Estimation of marker compounds on biological fluid after crude plant material. Introduction and medicinal terminology – IT enabled services, need of medical transcription, equipments used. Medical terminology – word root, combining form, suffixes prefixes, formation and defining medical words.

REFERENCE BOOKS

1. The pharmacology volume I and II – Goodman and Gillman
2. Basic pharmacology – Foxter Cox
3. Principles of medicinal chemistry 4th edition by Willam.O.Foye, B.I. Waverks, LW&W., (1995)
4. Burgers medicinal chemistry and drug discovery- principles and practice- Manfred. E.Wolf
5. Oxford text book of clinical pharmacology and drug therapy, D.G Grahme Smith and J.K.Aronson
6. Pharmacology and pharmatherapeutics- R.S. Satoskr,S.D.Bhandhakar and
7. Essential of pharmacotherapeutics, Barav.F.S.K
8. Introduction to medicinal chemistry, Batrick.G.L
9. Lippincotts illustrated review pahamacology, Mary. J.Mcek, Richarts, Pamela.C.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
III B.Sc., SEMESTER V
MAJOR CORE ELECTIVE-2: BIOSTATISTICS
For candidates admitted from 2015 onwards

CREDITS: 5
HRS/WK: 5

CODE: U15BC5MET02

General Instructional Objectives

The student learns about illustrative and descriptive statistics and understands the use of the various statistical measures (correlation, various significance test and SAS package) to be applied in biological sciences.

UNIT: I

Definition – Scope of Biostatistics, Variables in Biology. Collection, classification and tabulation of data. Graphical and diagrammatic representation- scale diagram – Histogram – frequency polygon – frequency curves.

UNIT: II

Descriptive statistics – Measures of central tendency – Mean (Arithmetic, Harmonic and Geometric), Median and Mode. Measures of dispersion – Mean deviation, Quartile deviation and Standard deviation (Derivations not included).

UNIT: III

Simple correlations – correlation co-efficient. Regression – Simple linear regression.

UNIT: IV

Basic idea of significance test – Hypothesis testing, level of significance. Tests based on student 't' test, 'Chi' square and goodness of fit. Theoretical distribution – Normal, Binomial and Poisson distributions.

UNIT: V

Probability: Principle- (Permutations and Combinations) and types. ANOVA, ANOCOVA and its applications (One way and two way classification). An introduction to SAS.

TEXTBOOK:

1. S.Palanichamy & M. Manoharan, (1991) Statistical methods for Biologists. Palani paramount publications.
2. Jerrold H. Zar, (2010) Zar's Biostatistical Analysis, Fifth Edition, Pearson's education.
3. Wayne W. Daniel (2009), Biostatistics: Basic Concepts and Methodology for the Health Sciences, John Wiley and Sons Ltd.

BOOK OF REFERENCE:

1. Gupta, C.D. (1973) An Introduction to statistical Methods. Vikas Publishing Pvt.Ltd., NewDelhi.
2. Veer Bala Rastogi. Fundamentals of Biostatistics.
3. Ipsen, J & Feigl, P. (1970) Bancrofts Introduction of Biostatistics Haper and Row Publishers, New York, London.
4. Snedecor, G.W & William (1975) Statistical Methods Harvard University, Oxford & IBH publication Co., Calcutta Bombay.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2

DEPARTMENT OF BIOCHEMISTRY

SEMESTER V- NME 1: NON MAJOR ELECTIVE PAPER

I FIRST AID MANAGEMENT

For candidates admitted from 2015 onwards

CREDITS:2

CODE:U15BC5NMT01

HRS/WK: 2

General Instructional & Objectives

The student learns about principles & objectives of first aid & acquires a basic knowledge on the various first aid measures to be given during various emergency situations.

UNIT: I

Principles and objectives of First Aid, casualty assessment. Priorities of First Aid. Patient management and care.

UNIT: II

Management of common illness and Thermal illness. Risk assessment and risk reductions- Fainting, Anaphylaxis, Asthma, Epilepsy, Diabetes, Burns and Scalds.

UNIT: III

INJURIES: Internal and external bleeding injuries to muscles, back, chest, abdomen, joints and bones, stroke and head injury and eye irrigation. Sudden illness-poisoning, Bites and Stings.

UNIT: IV

Accident reporting, breathing emergencies, Cardiac emergencies. Oxygen therapy – resuscitation, defibrillation – Heart attack. Common gastrointestinal sickness, Altitude sickness.

UNIT: V

First Aid rooms and equipments, First aid kits, cleaning of wounds and dressing injury assessment.

TEXT BOOK:

1. John A Eastman,(2007). First Aid to the Injured – Authorized manual of St. John’s Ambulance, Red Cross Road, New Delhi.

REFERENCE:

1. Subramanian. R. (2006) First aid Home nursing, 1st edn, Bharat printers Trichy.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPPALLI – 2
DEPARTMENT OF BIOCHEMISTRY
SEMESTER V- NME 1: NON MAJOR ELECTIVE PAPER I
CLINICAL BIOCHEMISTRY AND MICROBIOLOGY

CREDITS: 4

CODE:U14BC5NMT02

HRS/WK: 4

General and instructional objectives:

The student learns about the basics of sampling, normal values for the different hematological tests and its significance.

UNIT:I

Introduction to laboratory equipment and basic laboratory operations: Use and care of common laboratory Glass wares and Instruments- Microscope, Colorimeter, Centrifuge, Incubator, Hot air oven, Autoclave. Practicals : Demonstration of glass wares and instruments

UNIT:II

GENERAL COMMENTS ON SAMPLE COLLECTION

Collection of Urine: Random, 24hrs, changes on keeping. Preservative of Urine. Collection of blood by fingertip and venipuncture.

Types of blood to be collected - whole blood, serum plasma, RBC. Routine analysis of urine (qualitative) colour, appearance and pH, specific gravity, Albumin, glucose, ketone bodies, blood, urinary deposits, bile salts, bile pigments and urobilinogen.

Practicals: Demonstration – Abnormal chemical Constituents of Urine.

UNIT: III

INTRODUCTION TO HAEMATOLOGY

Components of blood and their functions, Routine Haematological Tests – Haemoglobin estimation and Anaemia, Blood Grouping, the ABO and Rhesus blood group system, making and staining of a blood film and identification of cellular elements in it. Differential leukocyte count.

Practicals: Hb, DLC, Blood Grouping.

UNIT: IV

CLINICAL BIOCHEMISTRY

Routine Biochemical Test- Blood glucose, protein, Urea, creatinine, Cholesterol (lipid profile), Calcium, Phosphorous and Enzymes (SGOT, SGPT) – their estimation and significance.

Practicals: – Glucose, Protein, Urea and Creatinine estimations. Demonstration.

UNIT:V

INTRODUCTION TO BACTERIOLOGY

Morphology and examination of Microorganism, Microorganism in stained preparation and culturing of microorganisms.

Laboratory diagnosis – Typhoid, cholera, Meningitis, Tuberculosis Staphylococcal and streptococcal infection.

Practicals: Gram's staining and culture method.

TEXT BOOK:

1. Kanai L. Mukherjee (1993) Medical laboratory Technology, Vol. I, I, III Tata Mc Graw- Hill Publishing Co. Ltd., New Delhi.

REFERNCES:

1. Monical Cheesbrough and John McArthr. A Laboratory manualforRural tropical hospitals. The English LanguageBooksociety.
2. Kanai L. Mukherjee (1993) Medical laboratory Technology, Vol. I, I, III TataMc Graw- Hill Publishing Co. Ltd., NewDelhi.
3. Ramakrishnan, Prasanna and Rajan (1994) Textbook of Medical Biochemistry orient Longman, Madras
4. Harold Varley alan H. Gowenlock and Mairing Bell (1991) Practical Clinical biochemistry Vol. I & II Fifty Edn., CBS Publishers 7 Distributors, NewDelhi.
5. Ambika Shanmugam, (1997) Fundamentals of Biochemistry for Medicalstudents, Chennai.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
III B.Sc., SEMESTER V
SBE 4: FOOD PRESERVATION TECHNOLOGY
For candidates admitted from 2015 onwards

CREDITS:2

CODE:U15BC5SBP04

HRS/WK: 2

General Instructional Objectives:

The students learn about the processes and different methods involved in preserving foods from spoilage. An overview about commercial foods, milk and milk products and food additives.

Preparation of

1. Jams, jellies and fruit preserves
2. Squashes, vegetables and fruit products
3. Pickles & Chutneys
4. Sauces & Ketchups
5. Ready mixes & Paneer Preparations
6. Bakery products (Cakes & Biscuits)
7. Classification of food and importance of food preservation. Principles and methods of food preservation.
8. Milk and Milk Products (Flow chart for processing of milk powder, condensed milk and cheese).

TEXT BOOKS:

1. Srilakshmi, B. (2001). Food Science, New Age International (P) limited publishers, New Delhi.

REFERENCE:

1. Shakuntala Manay, N. and Shadaksharasswamy, M., (1998), Foods – Facts and Principles New Age International (P) Limited, Publishers, New Delhi.
2. Shirley J. VanGrade and Margy Woodburn., (1999) Food Preservation and Safety- Principles and Practice Surabhi Publications, Jaipur.

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 , 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”, VaigaraiPathipagam.
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 : 10

Objective:

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

UNIT – I: ESSENTIALS OF CHRISTIAN FAITH

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

UNIT – II: MARRIAGE AND FAMILY LIFE

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

UNIT – III: CHRISTIAN HOME

- Parental Responsibilities and bringing up children – Abraham (Gen 22),
- 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, Ecc 12
- Obedience to God - Abraham (Gen 12) ; St. Paul (Acts 9)
- Freedom and Accountability
- Justice and Love
- Choices in Life – Making Decisions(Studies, job, life Partner)
- Model to follow – Who is your model? (John 15: 1-17)
- Social Evils – Dowry, Caste discrimination, Accumulation of wealth
- 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 Gospel work
- 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 :1

MARKS : 100

OBJECTIVES:

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

UNIT – I: LITURGY

Personal prayer (Know oneself) – Vocal prayer – Community prayer – Meditation – Contemplation – Knowing the prayers : Our Father – Hail Mary – Holy Rosary – Mysteries of the Rosary- Litany of Mary – family prayer-Popular devotion

UNIT – II: HOLY SACRIFICE OF THE MASS

Significance – meaning and need for spiritual growth – mass prayers – part of the mass – liturgical year, its division and its significance. –Creed – Act of contrition – Discernment of spirits – Counseling – Spiritual direction.

UNIT – III: CHRISTIAN VOCATION AS DISCIPLE FOR THE KINGDOM OF GOD

Who am I as a Christian? – Christian dignity and others – The values of the Kingdom opposing to the values of the World – Christian social conscience – Christian in the reformation of the world – a call to be salt and light in today’s context.

UNIT – IV: CHRISTIAN FAMILY

Holy family- characteristic of good family – Bible centered, Prayer centered, Christian centered–Responsibilities of parents, and children in the family – church – laws towards marriage-Pro life (Abortion, Euthanasia) – Lay Vocation – Lay Participation – Lay associates.

UNIT – V: CONSECRATED LIFE

“Come and follow me” – special disciples - Religious vocation – “I have called you to be mine”- Role of Nuns and Priest - called to be prophets and agents for God’s Kingdom – nucleus of the church – Eschatological signs of the God’s Kingdom.

REFERENCES:

1. Compendium – Catechism 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) TIRUCHIRAPALLI-2

DEPARTMENT OF BIOCHEMISTRY

III B.Sc., SEMESTER VI

MAJOR CORE 11: GENETIC ENGINEERING

For candidates admitted from 2015 onwards

CREDITS:5

CODE:U15BC6MCT11

HRS/WK: 6

General Instructional Objectives:

The student learns about the restriction enzymes and their uses, an introduction about vectors, application in constructing libraries, various gene transfer techniques, Plant tissue culture and its importance, Animal cell culture, rules in biotechnology, production of recombinant hormones, vaccines and monoclonal antibodies, an introduction to Nanobiotechnology.

UNIT: I

Restriction enzymes:discovery, nomenclature, types and uses. Linking of DNA- ligases, linkers, adaptors and Homopolymer tails. Gene libraries: Genomic and cDNA libraries.Cloning vectors: Plasmids (pBR322), Bacteriophage (λ , M13) and Cosmids. Ti plasmid,Retrovirus, phagemid, YACs.

UNIT:II

Gene transfer techniques –calcium phosphate co precipitation, transduction, protoplastfusion, electroporation, Microinjection and lipofection.Selection and Screening: Insertional inactivation Immunological screening, DNA Hybridization. Northern, Southern, Western Blotting and PCR- Principle, technique,types, and applications.

UNIT:III

Biotechnology: Definition, Scope, Biotechnology as an interdisciplinary pursuit.

Transgenic plants: Plant tissue culture methods-callus culture, micropropagation, protoplast culture. Cloning of disease resistant plants-Agrobacterium tumefaciens, cloning of *Bacillus thuringiensis*, crystal protein gene in plants, Nif gene cloning. Application of plant tissueculture.

Transgenic microbes: SCP and its applications.

UNIT:IV

Animal cell culture – culture media, primary and continuous culture, cell lines anditsapplications andlymphocyte culture.Stem cells and its applications.

FishBiotechnology: ploidy induction, transgenic animals, IVF, embryo transfer.

Transgeniclivestock production and application, Knockout mice.

UNIT: V

Bioethics- Patent (IPR), copyright safety, ethics and hazards. Ethics in cloning and stemcell research.

TEXT BOOKS:

1. Dubey, P.C. (2014) Text Book of Biotechnology, Chand and coNewDelhi.
2. Old R.W and primrose, S.B (1989). Principles of Gene manipulationBlackwell scientificpublications,Newyork.
3. Sathyanarayana, Biotechnology, Books And Allied (P)Limited,2013
4. A.K.Srivastava, R.K.Singh and M.P.Yadav., Animal Biotechnology, OxfordandIBH, 2005.
5. D.S.T. Nicholl, An introduction to genetic engineering, Cambridge Univ.Press,2ndedition, 2002.
6. Bernard R., Glick Jack, J.Pasternak, (2003) Molecular Biotechnology-Principle and application of recombinant DNA, Library of Congress cataloging in publication data, 4thedition.

REFERENCES:

1. Kumar, H.D. (1994) Mol. Bio., and Biotech., Vikas publishing House (P) Ltd.,New Delhi.
2. Smith John, E. (1988) Biotech EdwardArnoldLondon.
3. Trehan, K. (1990) Biotechnology, Wiley Eastern Ltd.,NewDelhi.

**HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2 DEPARTMENT OF
BIOCHEMISTRY**

III B.Sc., SEMESTER VI

MAJOR CORE 12 -CLINICAL BIOCHEMISTRY

For candidates admitted from 2015 onwards

CREDITS: 5

CODE: U15BC6MCT12

HRS/WK: 6

General Instructional Objectives:

The student

- learns about the disorders of carbohydrate, protein, lipid and nucleic acid metabolism.
- learns about liver, kidney, pancreatic and endocrine function tests, renal and liver transport disorder, diagnostic enzymology and coagulation disorders.

UNIT: I

DISORDERS OF CARBOHYDRATE METABOLISM

Regulation of Blood Glucose, effect of hormones – Insulin, Glucagon & Catecholamines. Abnormal sugar levels - Hypo and Hyperglycemia, glycosuria. Diabetes mellitus-classification, metabolic changes, complications. Glucose Tolerance Test. Inborn errors of carbohydrate metabolism: Pentosuria, Fructosuria, Galactosemia, Glycogen storage disease.

UNIT: II

DISORDERS OF AMINO ACIDS AND PROTEIN METABOLISM

Plasma proteins in health and diseases, Characteristics of individual plasma proteins, their significance & variation in diseases (Dysproteinemias and paraproteinemias). Serum Urea and Creatinine level-interpretation. Porphyria, Proteins in normal urine and renal diseases – proteinuria. Inborn errors of amino acid metabolism: Phenylketonuria, Alkaptonuria, Tyrosinosis, Albinism, Maple – syrup syndrome and Hartnup syndrome.

UNIT: III

DISORDERS OF LIPID METABOLISM

Disorders of lipid metabolism: Intestinal lipid disorders, Lipid transport disorders, metabolic disorders: atherosclerosis, fatty liver, obesity. Inborn errors in lipid metabolism: Tay sach's disease, Niemann Pick disease and Gaucher's disease. Serum cholesterol interpretation.

UNIT: IV

DISORDERS OF NUCLEIC ACID METABOLISM

Disorders of Purine and pyrimidine metabolism – Gout – high serum levels of urate, orotic aciduria, Xanthinuria, ADA deficiency, Lesch Nyhan syndrome.

TISSUE FUNCTION TEST: Liver function test, Kidney function test, Pancreatic function test. **RENAL AND LIVER TRANSPORT DISORDER:** Renal glycosuria, cystinuria, Fanconi syndrome, Gilbert's disease and Dubin Johnson's syndrome. Quality control of laboratory test.

UNIT: V

CLINICAL ENDOCRINOLOGY: Laboratory investigations associated with thyroid, parathyroid, pituitary and adrenal medulla. **DIAGNOSTIC ENZYMOLOGY:** Use of enzymes as marker for clinical diagnosis – Alkaline phosphatase, Acid phosphatase, AST(SGOT), ALT, [SGPT], LDH. CK and amylase, acetyl choline esterase. **HAEMATOLOGY:** Haemoglobinopathies, Mechanism of blood coagulation and disturbances in blood clotting process.

TEXT BOOKS:

1. Ramakrishnan S. and Rajiswamy. Text Book of Clinical (Medical) Biochemistry and Immunology 1995. T.R.Publications, Madras.
2. M.N. Chatterjea, Rana Shinde. Text Book of Medical Biochemistry 2002, Fifth Edn., Jaypee brothers, Medical publishers, Ltd., New Delhi.

REFERENCES:

1. Harold Varelly Alan H. Gownlock and Maurine Bell. Practical Clinical Biochemistry Vol I & II, Fifth Edn., CBS publishers & Distributors, New Delhi.
2. Thomas M. Devlin. Text Book of Biochemistry with clinical correlation, 1993 Third Edn, A John Wiley & sons. Inc publication.
3. Lehninger, Nelson, Cox Principles of Biochemistry, 1993 Second Edn., CBS Publishers & Distributors.
4. Robert K. Murray, Peter A Mayes, Daryl K. Granner & Victor W, Rodwell Harper's Biochemistry, 22nd Edn., Prentice Hall International Inc.,
5. Michael L Bishop, (2005), Clinical Chemistry-Principles, Procedures, correlations, Lippincott Williams and Wilkins.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2

DEPARTMENT OF BIOCHEMISTRY

III B.Sc., SEMESTER VI

MAJOR CORE 13: PRACTICAL III

CLINICAL AND IMMUNOCHEMICAL ANALYSIS

For candidates admitted from 2015 onwards

CREDITS:5

CODE:U15BC6MCP13

HRS/WK:6

HEMATOLOGY

1. Colorimetric Estimation of Haemoglobin - Sahli's Acid Haematin Method.
2. Hemocytometry - Determination of total R.B.C Count and Total W.B.C. Count.
3. Making and staining of a Blood Film and identification of the cellular elements in it.
4. Differential Leucocyte Count.
5. Absolute Eosinophil count.
6. Determination of Coagulation time and Bleeding Time.
7. ABO Blood Grouping and Rhtyping.

CLINICAL BIOCHEMISTRY

8. Estimation of Blood glucose
9. Estimation of Blood Urea
10. Estimation of serum Creatinine
11. Estimation of serum Uric acid
12. Estimation of Phosphorous and Calcium in Serum.
13. Estimation of serum Cholesterol.
14. Estimation of serum Proteins & A: G ratio
15. Estimation of serum alkaline phosphatase.
16. Estimation of serum AST & ALT
17. Constituents of Normal Urine,
18. Test for Common abnormalities in Urine – Test for proteins, blood, bile, reducing sugars and ketone bodies.
19. Electrophoresis of serum proteins
20. Immuno diffusion
21. Immunoelectrophoresis.
22. Vidal test, CRP and pregnancy test

Text Book

1. Kanai L. Mukherjee (1993) Medical laboratory Technology, Vol. I, II, III Tata Graw-Hill Publishing Co. Ltd., New Delhi.

Book of Reference

1. Harold Varelly Alan H. Gownlock and Maurine Bell. Practical Clinical
2. Biochemistry Vol I & II, Fifth Edn., CBS publishers & Distributors, New Delhi.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
SEMESTER VI
MAIN ELECTIVE 3: PLANT BIOCHEMISTRY

CREDITS:5
HRS/WK: 5

CODE:U15BC6MET01

Unit I

Overview of plant structure, major tissues in plant, structure and components of a plant cell, plant cell membrane and constituents, transport systems across cell membrane, genome organization in plant (nucleus, plastids and mitochondrial). Solute transport and photo assimilate translocation: Uptake, transport and translocation of water, ions, solutes and macromolecules from soil, through cells, across membranes, through xylem and phloem.

Unit II

Transpiration, mechanisms of loading and unloading of photo assimilation. Respiration: Plant Glycolysis-cytosolic and Plastidic process; plant mitochondrial electron transport and regulation. Photosynthetic apparatus in plants, photosystems I and II, light harvesting antenna complex. Electron flow and phosphorylation; cyclic and noncyclic, oxygen evolution, Calvin cycle, C₃, C₄, and CAM cycle; Photorespiration, regulation of photosynthesis, RUBISCO

Unit III

Plant hormones: Biosynthesis, storage, breakdown and transport. Physiological effects and Mechanisms of action of auxins, gibberlins, cytokinins, ethylene, abscisic acid. Plant defense and secondary metabolites - Terpenes, phenols, flavonoids and nitrogenous compounds and their roles in plant physiology. Methods in phytochemicals: extraction, fractionation and characterization.

Unit IV:

Nitrogen metabolism- Importance of nitrogen in biological systems, nitrogen cycle. Nitrogen fixation; symbiotic and non-symbiotic, nitrogenase complex, energetics and regulation. Formation of root nodules in legumes. Assimilation of nitrate and ammonium ion. Sulfur assimilation. Stress physiology: Responses of plants to biotic (pathogen and insects) and abiotic (water, temperature and salt) stresses; mechanisms of resistance to biotic stress and tolerance to abiotic stress.

Unit V:

Host parasite interaction: Recognition and entry processes of different pathogens like bacteria, Viruses, alteration of host cell behavior by pathogens, virus-induced cell transformation, pathogen induced diseases in plants, cell-cell fusion in both normal and abnormal cells.

REFERENCES

1. Principles of Biochemistry; David L. Nelson and Michael M. Cox, 6th Edition, W. H. Freeman(2013).
2. W. H. Freeman(2013).
3. Biochemistry; Donald Voet, Judith G. Voet, 4th Edition, John Wiley and sons (2010). PM, Plant Biochemistry, Harborne JB (1997) Academic Press.
4. Introduction to Plant Biochemistry, Goodwin TW, Mercer EI(1983)
5. Plant Physiology; Taiz and Zeiger, 3rd Edition
6. Plant Biochemistry; Hans Walter Heidt, 3rd Edition, Elsevier Publishers
7. Biochemistry & Molecular biology of Plants: Buchanan BB, Gruissem W, Jones RL (2000) American Society of Plant Physiologists Rockville
8. Singhal G (1999) Concepts in Photobiology: photosynthesis and photomorphogenesis: Springer Science & Business Media.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
SEMESTER- VI
MAIN ELECTIVE 3: BASICS OF BIOINFORMATICS
For candidates admitted from 2015 onwards

CREDITS:5
HRS/WK:5

CODE:U15BC6MET02

General and instructional objectives:

The student learns about the different databases and its applications.

UNIT: I

Bioinformatics - an overview, definition and history. Bioinformatics Glossary. Evolution of Bioinformatics - Scope - Potentials of Bioinformatics Human Genome Project - Bioinformatics in India - Future of Bioinformatics.

UNIT: II

Protein information resources: Primary data base – PIR, MIPS and Swissprot, TrEMBL. Composite protein Sequence data bases – NRDB, OWL, MIPSX, Swissprot and TrEMBL. Secondary data bases – Prosite, PRINTS, BLOCKS, Profiles, Pfam, IDENTIFY. Composite pattern databases – SCOP – CATH.

UNIT: III

Genome information resources: EMBL, DDBJ, Genbank and its flat file dissection - Specialized genome databases – dbEST – Unigene – GSDB.

UNIT: IV

Structural databases – Introduction – PDB – MMDB – Structure file formats – Structural viewers and Structure similarity searching.

UNIT: V

Sequence Alignment – Pairwise alignment – Multiple sequence alignment – Softwares used in sequence alignment.

REFERENCE BOOKS:-

1. Introduction to Bioinformatics - Attwood T.K. and Parry Smith D.J Published by Pearson Education Ltd., NewDelhi(2004)
2. Arthur M. Lesk Introduction to Bioinformatics, Oxford University Press, New Delhi(2003).
3. A.Baxevanis and B.F. Ouellette, Wiley Bioinformatics - A practical guide to the analysis of genes and proteins. (ed) - Interscience, NewYork,2001.
4. D.Higgins and W.Taylor (Eds), Bioinformatics- Sequence, Structure and databanks, Oxford University Press, NewDelhi(2000).
5. S.R.Swindell, R.RMiller and G.S.A.Myers (Eds) Internet for the Molecular Biologist, Horizon Scientific Press,Wymondham,UK,(1996).
6. Andrea Cabibbo, Richard Grant and Manuela Helmer-Citterich (Eds), The Internet for Cell and Molecular Biologists (2nd Ed) Horizon scientific Press, NorwichUK(2004)

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI-2
DEPARTMENT OF BIOCHEMISTRY
III B.Sc., SEMESTER VI
MAJOR ELECTIVE 3: PHARMACEUTICAL CHEMISTRY &
PHARMACOGNOSY
For candidates admitted from 2015 onwards

CREDITS:5
HRS/WK:5

CODE:U15BC6MET03

General Instructional Objectives:

The student

- learns about the absorption, fate, excretion and metabolism of drugs.
- understands the mode of action of various chemotherapeutic agents and means of development of drug resistance.
- Learns methods of general extraction, classification, properties and importance of major phytoconstituents. It also deals with the source, character, properties and therapeutic significance of drugs containing carbohydrates, glycosides, lipids, alkaloids, tannin etc.

UNIT:I **15Hrs**
CLASSIFICATION OF DRUGS

Classification of drugs based on sources; traditional and homeopathy. Mode of administration, site of action, absorption of drugs. Drug distribution and elimination, role of kidney in elimination.
Drug receptors and barriers, Bio availability.

UNIT:II **15Hrs**
DRUG METABOLISM

Drug metabolism – chemical pathways of drug metabolism – phase I and Phase II reactions, role of cytochrome P450 Non microsomal reactions of drug metabolism, drug metabolizing enzymes.

UNIT:III **15Hrs**
ANTIBIOTICS

Chemotherapy: Biochemical mode of action of antibiotics – penicillin and chloramphenicol, action of alkaloids, antiviral and antimalarial substances, biochemical mechanism of drug resistance.

UNIT: IV **15Hrs**
PHYTOCHEMICAL PHARMACOGNOSY

Basic concepts of Pharmacognosy, extraction protocols for biologically important organic compounds, classification of drugs of natural origin – morphological, pharmacological and chemical classification. Phytoconstituents of therapeutic significance - carbohydrates, glycosides, tannins and phenolic compounds, lipids, proteins, volatile oils, resins and resin combinations, alkaloids and terpenes.

UNIT:V**15Hrs****PLANTS WITH MEDICINAL USES**

Sources, characteristics and medicinal uses of drugs containing carbohydrates – Acacia gum, honey. Drugs containing glycosides – Digitalis, Aloes. Drugs containing tannins – Tannic acid, Drugs containing lipids – castor oil, neem oil. Drugs containing volatile oils – Turpentine oil. Drugs containing alkaloids – cinchona, ergot. Plants with antimicrobial, antidiabetic, hepato-protective activity with few exampleseach.

TEXT BOOKS:

1. Satoskar R.S. & Bhandarkar S.D., (1998) Pharmacology and pharmacotherapeutics Volume I & Volume II

BOOK OF REFERENCE:

1. Mohammed Ali,(1994). Text book of Pharmacognosy, CBSPublishers and Distributors, NewDelhi.
2. Trease, G.E. and Evans, W.C (1997)- Pharmacognosy, 14th and15th Edition, W.B. Saunders Company
3. Anil Kumar De (1996) Environment chemistry New AgeInternational (p) Ltd., Publisher, New Delhi.
4. Kokate, C.K.; Purohit, A.P & Gokhale, S.B.(1997).Pharmacognosy, Nirali Prakasan,Pune.
5. Peter B. Kaufmann, *et al.* (1999): Natural Products from Plants,C.R.C. Press.

HOLY CROSS COLLEGE (AUTONOMOUS) TIRUCHIRAPALLI -2
DEPARTMENT OF BIOCHEMISTRY
SEMESTER VI
NME 2: NON MAJOR ELECTIVE PAPER - II
NUTRITION AND DIETETICS

CREDITS: 4
HRS/WK: 4

CODE:U15BC6NMT01

General and instructional objectives:

The student learns about the constituents of food and the ideal diet for various stages of life and diet therapy.

UNIT:I

NUTRITIONAL STATUS

Introduction to Nutrition – Food as a source of nutrient – Function of food, definition of nutrition. Interrelationship between nutrition and health – visible symptoms of good health.

CONSTITUENTS OF FOODS

Carbohydrates – Functions, sources and deficiency. Proteins – Functions, sources, essential aminoacids and deficiency.

UNIT:II

Fats – Functions, sources, essential fattyacids and deficiency. Fibres – Definition, sources, role of fibre in human nutrition, Minerals – Macronutrients – Calcium, Phosphorous, Sodium and Pottasium.

Micronutrients – Iron and Iodine – their sources, function requirements and deficiency.

UNIT:III

VITAMINS

Definition and classification, fat soluble Vitamin C and B (Thiamine, Niacin, Riboflavin, Pyridoxine, Cyanacobalamin) – sources, functions, deficiency and requirement.

Hypervitaminosis - A & D.

UNIT: IV

NUTRITION IN HEALTH

Factors to be considered in formulating diets for different income groups. Nutritional and food requirements to meet the needs of Infant and pre-school children Pregnant and Lactating women.

UNIT: V

Concepts of diet therapy, growth and scope of dietetics. Therapeutic diets: Diet in Diabetes Mellitus.

Diseases of Liver – Hepatitis and Cirrhosis. Diseases of the renal system– Uremia & renal stones Diseases of Gastrointestinal Tract-PepticUlcer.

Diseases of the heart & Circulatory system- Atherosclerosis

TEXT BOOKS:

1. Swaminathan, M., (1985) Hand Book of Food and Nutrition. The Bangalore Printing and publishing Co., Ltd., 2nd Edn.,

REFERENCE:

1. Swaminathan, M., (1985) Advanced Text Book on Food and Nutrition. The Bangalore Printing and Publishing Co., Ltd., 2nd Edn.,
2. Shunbhangini, A. Joshi, (1992) Nutrition and Dietetics, Tata McGraw Hill Publishing Co., Ltd., New Delhi.
3. Sue Rodwell Williams, (1985) Nutrition and Diet Therapy, The C.V. Mosby.

HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPALLI -2
DEPARTMENT OF BIOCHEMISTRY
SEMESTER VI
NME 2: NON MAJOR ELECTIVE PAPER - II
HOME MANAGEMENT
For candidates admitted from 2015 onwards

CREDITS:2
HRS/WK: 2

CODE:U15BC6NMT02

General Instructional Objectives:

- The student learns about basic food groups, composition and nutritive values of different food groups; types of spoilage and methods of preventing them; different cooking methods.
- The student's gains knowledge about a comfortable and convenient house and the application and principles of art in home and importance of time and energy management.

UNIT: I

FOOD SCIENCES:

ICMR recommended basic five food groups. General composition and nutritive value of cereals; pulses and nuts; milk and meat products; vegetables and fruits.

UNIT: II

FOOD PRESERVATION

Food spoilage – Definition, causes, types of spoilage and preventing methods; Preservation of fruits -sugar concentrates; jam and jelly. Pickling - Principle, types and spoilages encountered in pickles.

UNIT: III

COOKING AND COOKING METHODS

Cooking – preliminary preparations and objectives of cooking; methods of cooking; advantages and disadvantages of different cooking and cooking methods

HEALTH AND NUTRITION EDUCATION

Introduction, nutrition and prevention of infection, safe drinking water, Environmental sanitation. Immunization schedule.

UNIT: IV

HOUSING AND INTERIOR DECORATION

Features to be considered in house construction - orientation grouping, roominess, lighting, ventilation, storage facilities, flexibility and safety.

Flower arrangement - types of arrangement, selection of vases, flowers and accessories.

Home furnishing – Selection, arrangement and care of furniture in different rooms, furnishing material, draperies and curtains, floor coverings and accessories.

UNIT: V

FAMILY RESOURCE MANAGEMENT:

Resources - Classification of family resources.

Management process - Planning, controlling and evaluation.

Time and energy management – Importance of time and energy. Guidelines in planning time schedule. Fatigue – types and ways of overcoming fatigue.

TEXT BOOK:

1. Srilakshmi, B. (2001). Food Science, New Age International (P) limited publishers, New Delhi.

REFERENCES:

1. Srilakshmi, B. (2001). Food Science, New Age International (P) limited Publishers, New Delhi.

2. Shanthi Ghosh, (1997). Nutrition and Child Care - A Practical Guide. Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.

3. Chinthapalli Vidya, (1996). A Text Book of Nutrition. Discovery Publishing House, New Delhi.

4. Deshpande, R.S. (1985). Build your own home. Poona United Book Corporation.

5. Man Home Management for Indian families, Kalyani Publishers, New Delhi.

**HOLY CROSS COLLEGE (AUTONOMOUS), TRICHIRAPPALLI-2 DEPARTMENT OF
BIOCHEMISTRY
SEMESTER VI**

Skill Based Elective 5

For candidates admitted from 2015 onwards TOOLS FOR BIOINFORMATICS

CREDIT: 2

CODE: U15BC6SBP05

HOURS/WEEK: 2

1. Nucleotide Sequencedatabase

- Genbank
- DDBJ
- EMBL

2. Protein Sequencedatabase

- Swissprot

3. Protein StructureDatabase

- PDB

4. LiteratureDatabase

- Pubmed,OMIM

5. Visualization Tools

- Rasmol

6. Metabolic PathwayDatabase

- KEGG

7. MapViewer

(For candidates admitted from 2015 onwards)
HOLY CROSS COLLEGE (AUTONOMOUS), TIRUCHIRAPPALLI-2
SEMESTER VI
RESEARCH METHODOLOGY

Hrs – 2/Week

CODE: U15DS6SBT06
CREDITS -2

General Objective:

Students get introduced to concept of research and to carryout research projects.

Unit I Introduction to research:

Definition - Types – Nature and Scope of Research – Research Design – Plagiarism

Unit II – Data Collection

Types – Primary and Secondary data collection – Data processing –Hypothesis Testing

Unit III – Plan and Execution

Methodology – Work Plan and Execution – Analysis –Interpretation - Documentation

Unit IV - Format and Presentation of Project Report

Art of writing and Structure of Project report – Viva Voce

Unit – V Project –

Project Work (Applying Real Expertise in the Project Work)

The students will be evaluated internally by a test for 50 marks. The Project will be evaluated by an external evaluator and a viva-voce will be conducted for 50marks.The students can carry out their projects individually or in groups.

REFERENCES:

Blaxter,L., Hughes,C. and Tight(1999) How to research?Viva Book private Limited

Kothari,C.R.(2004)research Methodology-Methods and Technioques, New Age International Publishers, India

Lal,B.(2002) Research Methodology, ABD Publishers. India

