



SACRED HEART COLLEGE (AUTONOMOUS)

Tirupattur – 635 601, Tamil Nadu, S.India

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Ready for
Every Good Work

A Don Bosco Institution of Higher Education, Founded in 1951 * Affiliated to Thiruvalluvar University, Vellore * Autonomous since 1987

Accredited by NAAC (4th Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Sacred Heart College (Autonomous), Tirupattur District

1.2.1 List of New Courses

Department: B.Sc. Biochemistry

B.Sc. BIOCHEMISTRY

Sem	Sub Code	Title of the Subject	Cont act Hrs	Credit	E- Hrs	CA	SE	Total
	LT 112	Tamil	5	3	-	-	-	-
	LE 114T	General English		3				
			5		-	-	-	-
	CE 102	Communicative English		1*				
I								
SE	BC 104	Cell Biology	3	3	3	30	70	100
ME	BC 105	Biomolecules	4	4	3	30	70	100
ST								
ER	PBC 101	Main practical I	3	3	3	40	60	100
	ACH 109B	Allied Chemistry I	6	4	-	-	-	-

	SK 103	Personal Skills	2	1	-	-	-	-
	VE104A/B	Ethics	2	1	-	-	-	-
	TOTAL		30	22+1*	-	-	-	-
	LT 212	Tamil	5	3	3	30	70	100
	LE 214AT	General English		3				
			5		3	30	70	100
	CE 202	Communicative English		1*				
II								
SE	BC 204	Plant Physiology	3	3	3	30	70	100
ME	BC 205	Human physiology	4	4	3	30	70	100
ST								
ER	PBC 204	Main practical II	3	3	3	40	60	100
	ACH 209B	Allied Chemistry II	6	4	-	-	-	-
	SK 203	Social skills	2	1	-	-	-	-
	VE204A/B	Ethics	2	1	-	-	-	-
	TOTAL		30	22+1*	-	-	-	-

ER								
	SK 403	Employability Skills I	2	1	-	-	-	-
	VE 405	EVS	2	1	3	30	70	100
		DEEDS	-	2	-	-	-	-
		SHELTERS	-	2	-	-	-	-
		Summer Lab Training		2*	-	-	-	-
		TOTAL	30	26+2*				
V	BC 516	Enzymology	4	4	3	30	70	100
	BC 517	Intermediary metabolism	5	5	3	30	70	100
	BC 518	Endocrinology	4	4	3	30	70	100
	BC 519	Genetics	4	4	3	30	70	100
	PBC 501	Main practical V	5	4	6	40	60	100
	BC 520	Biomedical Instrumentation Medical laboratory technique Pharmacology (one out of three)						
	A							
V	BC 520B		6	4	3	30	70	100
SE								
ME	BC 520C							
ST	SSP	Health Management	-	1*	-	-	-	-
ER	NBC 503	NME –Energy Builders	2	1	3	30	70	100
	TOTAL		30	26 + 1*	-	-	-	-

	BC 613	Molecular Biology	5	5	3	30	70	100
	BC 614	Immunology	4	4	3	30	70	100
	BC 615	Medical Biochemistry	4	4	3	30	70	100
VI	PBC 605	Main practical VI	5	4	6	40	60	100
SE								
ME	BC 616	Biotechnology	5	5	3	30	70	100
ST								
	BC 617	Bioethics	5	5	3	30	70	100
ER								
	SSP	Nutritional Biochemistry	-	1*	-	-	-	-
	NBC 603	NME – Health care and Disease management	2	1	3	30	70	100
	TOTAL		30	28 + 1*	-	-	-	-

Sacred Heart College (Autonomous), Tirupattur District

1.2.1 List of New Courses

Department: B.Sc. Biochemistry

S.No	Course Code	Course Name
1.	BC519	Genetics
2.	PBC501	Main practical V
3.	BC521X	Health Management
4.	PBC605	Main practical VI
5.	BC617	Bioethics

GENETICS BC519

4Hrs

4 Credits

Objective:

To understand basic aspects of genetics and associated laws.

Course outcome

On satisfying the requirements of this course, students will have the knowledge and skills to explain the key concepts in population, evolutionary and quantitative genetics including the basis of genetic variation, heritability and mutation. A student can understand the range of molecular laboratory techniques used routinely in human forensic analysis and population genetic analysis including sex typing, DNA profiling, Single Nucleotide Polymorphism (SNP) detection and DNA sequencing.

UNIT-I: Genetics - Introduction; Premendelian concepts – Preformation, Epigenesis, Inheritance of acquired characters and Germplasm theory; Mendelian Inheritance and Mendelian laws; Genotype and Phenotype; Heredity; Gene, Genome, Trait, Genetic material and Genetic maps. UNIT-II: Principles of Inheritance; Chromosome theory of inheritance; Laws of Probability; Pedigree analysis; Incomplete and Co-dominance; Multiple alleles; Lethal alleles; Epistasis; Pleiotropy; Sex linked inheritance.

UNIT-III: Linkage and Crossing over; Morgan's Law; Back and Test cross; Cytological basis of crossing over; Recombination frequency as a measure of linkage intensity - two factor and three factor crosses; Interference and Coincidence.

UNIT-IV: Chromosomal Mutations: Deletion, Duplication, Inversion and Translocation; Ploidy – Euploidy, Aneuploidy and Polyploidy.

UNIT-V: Population Genetics, Hardy Weinberg Law – Gene Frequency, Factors Affecting Gene Frequency, Eugenics, Euphenics and Euthenics, Bioethics.

Text Books:

A.V.S.S Sambamurthy, (2007), Molecular Genetics, Narosa, Chennai.

P.J. Russell (2009). Genetics- A Molecular Approach. III Edition. Benjamin Cummings.

References:

E.J. Gardner, M.J. Simmons and D.P. Snustad (2008). VIII ed. Principles of Genetics. Wiley India.

D.P. Snustad M.J. Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons Inc.

W.S. Klug, M.R. Cummings, C.A, Spencer, C.A. (2009). Concepts of Genetics. XI Edition. Benjamin Cummings.

B.R. Glick, J.J Pasternak (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

Gurbachan S Miglani (2006), Developmental Genetics, IK. International, New Delhi.

Main Practical – V
PBC501

5 Hrs

Credits

Colorimetric Estimation

Estimation of Creatinine by Jaffe's Method.

Estimation of Urea by Diacetyl Monoxime Method.

Estimation of DNA by Di Phenyl Amine method.

Estimation of RNA by Orcinol method.

Estimation of glucose by Anthrone or O-Toluidine methods

Estimation of Cholesterol by Zak's method.

Urinary Analysis

Qualitative analysis of Normal and pathological (abnormal) urine.

SSP: HEALTH MANAGEMENT

BC521X

Credit

Objective

To gain knowledge about first aid, basic health issues and handling emergencies.

Course outcome

This course will provide the basic information about safe guards to health, first aid for accidents, handling emergencies of general and specific disease. This course will also give awareness about symptoms and giving first aid during common health issues before meeting the physician.

Unit-I: Safe guards to health: Physical fitness and normal weight, normal diet, merits and demerits of taking foods

Unit-II: First Aid for Accidents - Wounds, Burns, Bites, Hiccups, Shock, Poisoning, Vomiting and Drowning

Unit-III: Handling Emergencies: Heart attack, blood pressure, Diabetic conditions unconsciousness, asthma and sprain

Unit- IV: General Disease –Causes, symptoms and preventions of headache, fever, common cold, cough, constipation, diarrhea, itching, and Obesity.

Unit- V : Specific Disease -Cataract, dandruff, hair fall, dental caries, cancer, AIDS, ulcer and appendicitis

Text Books:

DevendraVora. (1995), Health in Your Hands. Navneet Pub., Mumbai.

Harrison's principles of internal medicine – Vol-I &II., (2015), McGraw Hill Education; 19 edition.

References

H.K Bakhru.(1990), Herbs that Heal : Natural Remedies for Good Health, Orient, Delhi.

K.V. Krishna Das, (2008), Text book of medicine, 5th edition.,

S.S. Purohit, H.N. Kakrani and A.K. Saluja (2003) Pharmaceutical Biotechnology, Student edition publications, Jodhapur.

M.J. Mycek, A.R.Harve and P.C.Champe (1997), Lipincott's Illustrated Reviews: Pharmacology, 2nd

R.S. Satoskar, S.D.Bhandarkar and S.S. Annapure (1999), Pharmacology and Pharmocotherapeutics., Popular Prakashan, Mumbai.

ShashiGoyal (2012), Food,Nutrition and Health. S. Chand Publishing, New Delhi.

Main Practical – VI PBC605

Experiments on Enzymes by Colorimetry

Effect of pH, temperature and substrate concentration on salivary amylase

Effect of pH, temperature and substrate concentration for urease

Assay of Serum Transaminases (SGOT) & (SGPT)

Preparation of alginate beads for Enzyme Immobilization (Demo)

Isolation of LDH from Goat Liver (Demo)

Haematology

Collection of Blood and Blood grouping,

Determination of BP

Enumeration of Total RBC count

Enumeration of Total WBC Count

Estimation of Haemoglobin content

Determination of ESR

Differential Counting

SS 2 BIOETHICS

BC617

5 Hrs

Credit

Objectives

To understand the ethical aspects in Biology and Bio Containment.

Course outcome

This self study paper makes the student to acquire sound knowledge about different types of nutrients and its composition. Based on the symptoms of the disease in the early stage one can cure the disease through diet therapy. This student can chart out a recommended diet for particular disease. By strictly following the diet one can get rid of the discomfort.

Unit-I

Bioethics-Definition, Legal and socio-economic impacts. General Laboratory Practices. Bioethics committees. Handling and disposal of biomedical waste.

Unit-II

Ethical concerns of Biotechnology research and innovation, Biosafety levels-Genetically modified organisms and its release - Genetically modified foods, Biosafety guidelines in India–International guidelines.

Unit-III

Genetics and Genomics Research-Defining risks and benefits -principles governing research in human genetics– informed consent in genetic research, ethical issues in genetic testing.

Unit-IV

Rules and regulations in every country where ethical concerns were raised regarding human Genetics- International Laws on Stem Cell Research and Therapy. Unit-V

Composition of (Human) institutional Ethical Committee (IEC). Ethics in animal experimentation. CPCSEA guidelines for Animal care in research.

Books

The Cambridge Textbook of Bioethics by Singer, Peter, A. and Viens A.M. Cambridge University Press, 2008.

Biotechnology by U. Sathyanarayana. Books and Allied (p) Ltd., 2009.

Biotechnology by Singh, B.D. kalyani publishers, 2009.

References

Shaleesha A. Stanley, Bioethics, Wisdom educational service, 2008, Wisdom Educational Service.

Indian Council of Medical Research. Ethical guidelines for bio-medical research on human participants; Chapter VII. New Delhi (2006).

Designing Clinical Research: Stephen Hulley 4th Edition (2013)

