

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI - 600 086
General Elective Course Offered by the Department of Zoology to Students of
B A. / B.Sc. / B.Com/B.SW/ B.V.A Degree Programmes
SYLLABUS

(Effective from the academic year 2015 - 2016)

CONCEPTS IN ANIMAL WELFARE

CODE: 15ZL/GE/AW22

CREDITS: 2

L TP : 2 0 0

TOTAL TEACHING HOURS: 26

OBJECTIVES OF THE COURSE

- To inculcate a humane and caring attitude towards animals
- To create an awareness about the use of non-animal alternatives in Testing and Research

Unit 1

Animal Welfare – Introduction and Behavioural Indicators (8hrs.)

- 1.1 Science, Ethics, Law and Welfare Assessment
- 1.2 Mental, Physical and Natural Assessment -Five Freedoms
- 1.3 Factors That Contribute to Animal Behaviour and Welfare
- 1.4 Recognition of Normal Behaviour -Possible Causes of Abnormal Behaviour of Animals in Wild, Zoo , Domestic and Pets
- 1.5 Contribution of Animals to Human Society - Cultural and Historical Influences
- 1.6 Wildlife – Companion Animals – Pet Animals – Farm or Food Animals
- 1.7 Relationship Between Animal Abuse and Human Violence

Unit 2

Ethical Concerns (10 hrs.)

- 2.1 Exploitation of Animals - Wildlife Trade: Turtle Trade, Fur, Mink, Bear Farms, Whaling, Leather and Snake Skins - Exotic Pet Trade
- 2.2 Animals in Sport / Entertainment – Jallikattu, Hunting, Angling, Horse Races, Circuses, Horse and Elephant Polo – Cock Fight – Insect Fight – Spider Fight
- 2.3 Animal Testing - Animals Used for Education and Research – Regulatory Tests Using Animals – Drug Testing – Toxicology Testing – LD₅₀ – Cosmetic Product Testing – Eye Irritation – Skin Irritation – Skin Corrosion – Cruelty Free Products – Animal Care Careers – Case Studies
- 2.4 Animal Suffering -Behavioural Assessment of Animal Pain – Dairy Cows and Veal Calves – Egg – Laying Hens and Broiler for Meat – Transport towards Death – Slaughter and Death

Unit 3

Animal Welfare – National and International Legislations. (8hrs.)

- 3.1 Introduction – CITES (Convention on International Trade in Endangered Species), AATA and IATA
- 3.2 Animal Protection Laws – Animal Welfare Act – The Prevention of Cruelty to Animals Act
- 3.3 Wildlife Act – The Wild Life (Protection) Amendment Act
- 3.4 Animal Welfare Organizations – Blue Cross – SPCA – WSPA – PETA – ANIMAL WELFARE BOARD OF INDIA – PFA – The International Fund for Animal Welfare (IFAW) -CPCSEA

3.5 Humane Approach to Animals - Alternatives to Animal Testing – 3Rs (Reduction, Refinement, Replacement) – Use of Alternative Methods - First Aid for Animals – ABC Drill

BOOKS FOR REFERENCE

Council of Europe, European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes, pp.51. 1986.

Russel, W.M.S. and R.L. Burch, R.L. *The Principle of Humane Experimental Technique*, London. 1959.

Smyth, D. *Alternatives to Animal Experiments*, London: Scholar Press, 1978.

WSPA– World Society for the protection of the Animals, *Concepts in Animal Welfare Contents, Introduction, Explanatory notes and further resources*, University of Bristol. 2010.

JOURNAL

Animal Welfare

Journal of Applied Animal Welfare Science

Open Journal of Animal Sciences

WEB RESOURCES

ALTWEB: *Alternatives to animal testing*, The Johns Hopkins Center for Alternatives to Animal Testing (CAAT)

Animal Suffering in the Broiler Industry: A COK Report, Compassion in World Farming Trust.

www.peta.org

worldanimal.net

PATTERN OF EVALUATION

No End Semester Examination

CONTINUOUS ASSESSMENT

Continuous Assessment Test – 25 marks

Question Paper Pattern

Section A – 3 x 2 = 6 Marks (All questions to be answered)

Section B – 3 x 3 = 9 Marks (3 out of 5 to be answered)

Section C – 2 x 5 = 10 Marks (2 out of 3 to be answered)

Third Component- 25 marks

List of Evaluation Modes:

Scrap Book

Presentation

Assignment

Case study

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Degree Programmes

SYLLABUS
(Effective from the academic year 2015 -2016)

DISEASES AND MANAGEMENT

CODE: 15ZL/GE/DM22

CREDITS : 2

L T P : 2 0 0

TOTAL TEACHING HOURS: 26

OBJECTIVES OF THE COURSE

- To study the causation, symptoms and diagnosis of important communicable and non-communicable diseases
- To learn the prevention and management of important communicable and lifestyle diseases

Unit 1
Diseases (8 hrs.)

- 1.1 Introduction - Classification
- 1.2 Principles of Epidemiology - Disease Cycle – Disease Progression
- 1.3 Normal Microbiota of The Human Body
- 1.4 Vaccines: Types – Immunization Schedule

Unit 2
Communicable Diseases and Management (10 hrs.)

- 2.1 Nosocomial and Fomite-Borne Infections
- 2.2 Air Borne Diseases: Tuberculosis, Swine Flu and Measles
- 2.3 Food and Water Borne Diseases: Hepatitis A, Typhoid and Cholera
- 2.4 Sexually Transmitted Diseases: Syphilis, Gonorrhoea and AIDS
- 2.5 Zoonotic: Leptospirosis, Dengue Fever and Chikangunya

Unit 3
Non-Communicable Diseases and Management (8 hrs.)

- 3.1 Breast Cancer – Cervical Cancer
- 3.2 Thyroid Disorders
- 3.3 Myocardial Infarction (MI) – Chronic Obstructive Pulmonary Disorder (COPD)
- 3.4 Diabetes - Gastrointestinal Ulcers (Peptic and Duodenal)
- 3.5 Parkinson's Disease

BOOKS FOR REFERENCE

- Goel, S.L. *Education of Communicable and Non-Communicable Diseases*. Mayur, 2009.
- Merrill Ray. *Introduction to Epidemiology*. Jones and Bartlett, 2010.
- Park, J.E. *Textbook of Preventive and Social Medicine*. Banarsidas Bhanot, 1991.
- Shier David, Butler Jackie and Lewis, Ricki. *Hole's Essentials of Human Anatomy and Physiology*. McGraw Hill, 2011.

Tortora, G.J, Funke B.R. and Case, C.L. *Microbiology: An Introduction*. Pearson Education, 2014.

JOURNALS

The Journal of Infectious Diseases

The Journal of Communicable Diseases

Population Health Management

WEB RESOURCES

<http://ismocd.org/>

http://www.photius.com/countries/india/society/india_society_communicable_and_non~76.html

<http://www.healthissuesindia.com/noncommunicable-diseases/>

PATTERN OF EVALUATION

No End Semester Examination

CONTINUOUS ASSESSMENT

Continuous Assessment Test – 25 marks

Question Paper Pattern

Section A – 3 x 2 = 6 Marks (All questions to be answered)

Section B – 3 x 3 = 9 Marks (3 out of 5 to be answered)

Section C – 2 x 5 = 10 Marks (2 out of 3 to be answered)

Third Component- 25 marks

List of Evaluation Modes:

Scrap Book

Presentation

Assignment

Case study

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**SYLLABUS
(Effective from the academic year 2015 -2016)**

APPLIED ZOOLOGY

CODE: 15ZL/GE/AZ23

CREDITS : 3

**L T P : 3
0 0**

TOTAL TEACHING HOURS: 39

OBJECTIVES OF THE COURSE

- To understand the applied aspects of Zoology
- To encourage entrepreneurship among students to take up small scale industries as a career

Unit 1		(10 hrs.)
1.1	Apiculture: Different Species - Social Organisation – Equipment and Tools Required for Setting up Apiary- Bee Products: Honey, Beeswax and Bee Venom – Testing of Purity of Honey	
1.2	Sericulture: Different Types of Silk - Life-History of <i>Bombyx mori</i> – Rearing and Post Cocoon Treatment - Economic Importance	
1.3	Lac Culture: Processing of Lac - Economic Importance	
Unit 2		(9 hrs.)
2.1	Economic Importance of Crab, Prawn, Lobster, Edible and Pearl Oyster	
2.2	Fish Culture: Management of Fish Farm	
2.3	Ornamental Fish - Setting up and Maintenance of Aquarium / Fish Tank	
Unit 3		(7 hrs.)
3.1	Medicinal Significance of Animal and Animal Products: Sponges, Corals, Leech Therapy, Scorpion Venom, Bee Venom, Shells, Fish Liver Oil and Snake Venom	
3.2	Leather – Economic Importance	
Unit 4		(7 hrs.)
4.1	Poultry Farming: Different Breeds of Fowls in India - Housing and Rearing - Economic Importance	
4.2	Dairy Farming: Milk and Milk Products - Testing of Milk – Biogas (Gobar Gas)	
4.3	Visit to Poultry Farm/Dairy Farm/Fish Farm	
Unit 5		(6 hrs.)
5.1	Vermitechnology: Vermiculture – Vermicomposting and Vermiwash – Applications in Organic Farming	
5.2	Setting up of a Vermipit - Workshop	

BOOKS FOR REFERENCE

- Ahsan, J. and S.P. Sinha. *Handbook of Economic Zoology*. New Delhi: S. Chand, 2008.
- Ayyar, T.V. R. *Handbook of Economic Entomology*. Madras: For South India, 1963.
- Banerjee, G.C. *Poultry*. New Delhi: Oxford and IBH Publishing, 1992.
- Daugherty, Lewis Sylvester. *Principles of Economic Zoology*. General Books, 2012.

- Ismail, S.A., *The Earthworm Book*. Goa: India Press, 2005.
- Jhingran, V.G. *Fish and Fisheries of India*. New Delhi: Hindustan, 1982.
- Kurien, C.V. and V.C. Sebastian. *Prawn Fisheries of India*. New Delhi: Hindustan, 1986.
- Mishra R.C. *Perspectives in Indian Apiculture*. Jodhpur: Agrobios, 2002.
- Nayar, K.K., T.N. Anantha Krishnan, and B.V. David. *General and Applied Entomology*. New Delhi: Tata McGraw Hill, 1990.
- Rao, Mohan Madan. *Comprehensive Sericulture Manual*. Hyderabad, 1999.
- Shukla, G.S. and V.B. Upadhyay. *Economic Zoology*. Meerut: Rastogi, 2010.
- Vasantharaj, B. David. *Pest Management and Pesticides*. Madras: Namrutha, 1992.
- Vasanthraj, B. and T.N. Ananthakrishnan. *General and Applied Entomology*. Tata McGraw Hill, 2004.

JOURNALS

The Journal of Basic and Applied Zoology
Zootecnia Tropical
Fishery Technology
International Journal of Zoological Research

WEB RESOURCES

<http://www.beeculture.com/>
<https://www.karnataka.gov.in/sericulture/>
<http://www.enaca.org/>

PATTERN OF EVALUATION

No End Semester Examination

Continuous Assessment

Total Marks : 50

Duration: 90 mins.

Question Paper Pattern

Section A – 10 x 2 = 20 Marks (All questions to be answered)

Section B – 3 x 5 = 15 Marks (3 out of 5 to be answered)

Section C – 1 x 15 = 15 Marks (1 out of 2 to be answered)

Third Component:

List of evaluation modes:

Quiz

Scrap Book / Assignment / Poster Presentation

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**SYLLABUS
(Effective from the academic year 2015 -2016)**

GENES, DISEASES AND SOCIETY

CODE: 15ZL/GE/GD23

CREDITS : 3

L T P : 3 0 0

TOTAL TEACHING HOURS: 39

OBJECTIVES OF THE COURSE

- To understand the basic principles of Human Heredity
- To familiarise students with the recent advances in the field of Genetics and their ethical and social implications

Unit hrs.)	1	(7
	1.1 Introduction - Human Gametes and their Role in Heredity – DNA the Genetic Material - Human Chromosomes – Sex Determination in Human	
	1.2 Mendelian Inheritance: Monohybrid and Dihybrid Cross Experiments - Laws of Inheritance – Identification of Mendelian Traits in Human - Pedigree Analysis and its Applications	
Unit	2	(9 Hrs.)
	2.1 Incomplete Dominance (Hair, Straight / Curled) – Codominance (Sickle Cell Anemia)	
	2.2 Lethal Genes, Types and Inheritance	
	2.3 Multiple Allelic Inheritance (ABO and Rh Blood Types in Human) – ABO Blood Grouping and Rh Typing Practical – Case Study/Problem Solving	
	2.4 Polygenic Inheritance (Skin Colour in Man)	
Unit	3	(8 hrs.)
	3.1 Autosomal Recessive Inheritance (Albinism) - Autosomal Dominant Inheritance (Familial Hypercholesterolemia)	
	3.2 X-Linked Dominant Inheritance (Hypophosphatemia) – X-Linked Recessive Inheritance (Haemophilia) – Y-Linked Inheritance (Hypertrichosis) – Mitochondrial Inheritance (Kearns Sayre Syndrome)	
	3.3 Sex Influenced and Sex Limited Genes and their Inheritance	
Unit hrs.)	4	(8
	4.1 Disorders with Genetic Predisposition: Diabetes, Breast Cancer, Autism and Alzheimer's Disease	
	4.2 Chromosomal Disorders: Down's Syndrome, Turner's Syndrome, Klinefelter's Syndrome - Observation of Karyotypes	
	4.3 Metabolic Disorders: Phenylketonuria, Huntington Disease and Lactose Intolerance	
	4.4 Genetic Counselling – Eugenics – Consanguineous Marriage and its Impact in the Society	
Unit	5	(7 hrs.)
	5.1 A Fundamental Understanding of Recent Advances in the Field of Genetics – Application of Genetic Engineering - Genetically Modified Organisms, Gene Therapy and Gene Cloning	
	5.2 Predictive Genetic Testing: DNA Finger Printing (Case Study)	
	5.3 The Human Genome Project: Objectives and Applications	
	5.4 Ethical, Legal and Societal Issues (ELSI) Related to Techniques in Genetics	

BOOKS FOR REFERENCE

- Benjamin A. Pierce. *Genetics – A conceptual approach*. New York: W. H. Freeman, 2008.
- Cummings, Michael R. *Human Heredity – Principles and issues*. Thomson Brooks/Cole, 2003.
- Klug, William, S, Michael R. Cummings and Charlotte Spencer. *Concepts of Genetics*. Pearson Education, 2012.
- Russel, Peter. J. *Genetics – A molecular approach*. Benjamin Cummings, 2011.
- Snustand, Peter D. and Michael J. Simmons. *Principles of Genetics*. New York: John Wiley, 2012.

JOURNAL

Journal of Human Genetics

WEB RESOURCES

www.learn.genetics.utah.edu
www.omim.org

PATTERN OF EVALUATION

No End Semester Examination

Continuous Assessment

Total Marks: 50

Duration: 90 mins.

Question Paper pattern

Section A – 10 x 2 = 20 Marks (All questions to be answered)

Section B – 3 x 5 = 15 Marks (3 out of 5 to be answered)

Section C – 1 x 15 = 15 Marks (1 out of 2 to be answered)

Third component

Quiz

- 30 marks

Pedigree chart construction/Problem solving/Assignment

- 20 marks

Third Component:

List of evaluation modes:

Quiz

Pedigree Chart Construction

Assignment

Poster Presentation

Problem Solving

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SYLLABUS
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BIOLOGY OF HUMAN REPRODUCTION

CODE: 15ZL/GE/HR23

CREDITS : 3

L T P : 3 0 0

TOTAL TEACHING HOURS: 39

OBJECTIVES OF THE COURSE

- To understand the human reproductive system and its functions
- To study the biological aspects of sexuality from a structural and functional standpoint

Unit 1	Human Reproductive System	(8 hrs.)
	1.1 Male Reproductive System – Testis – Testicular Functions	
	1.2 Female Reproductive System – The Ovary – Ovulation – Menstrual Cycle	
	1.3 Hormonal Control of Reproduction: H-P-G Axis	
	1.4 Puberty - Menopause - Andropause	
Unit 2	The Course of Human Development	(8 hrs.)
	2.1 Procreation – Fertilization – Implantation – Placentation- Embryonic and Fetal Development	
	2.2 Prenatal Diagnosis – Sex Determination	
	2.3 Pregnancy – Care of The Pregnant Woman –The importance of Diet and Exercise	
	2.4 Parturition and Lactation- Postnatal Care of Mother and Newborn	
	2.5 Consanguinity – Fetal Loss and Birth Defects	
Unit 3	Infertility and Sexually Transmitted Diseases	(8 hrs.)
	3.1 Male and Female Infertility – Physiological Causes	
	3.2 Smoking and Infertility – Obesity and Infertility – Stress and Infertility	
	3.3 Alcoholism and Reproduction – Psychoactive Drugs and Reproduction	
	3.4 Artificial Control of Fertility – Abstinence – Contraception	
	3.5 Sexually Transmitted Diseases: AIDS, Gonorrhoea, Syphilis, Genital Herpes and Genital Warts	
Unit 4	Assisted Reproductive Technology	(8 hrs.)
	4.1 Artificial Insemination – Induced Ovulation	
	4.2 In Vitro Fertilization (IVF) and Embryo Transfer (ET) –GIFT- ZIFT – TET	
	4.3 Surrogate Motherhood	
	4.4 Cryopreservation of Gametes and Embryos	
	4.5 Stem Cell Banking – Cloning	
Unit 5	Ethical, Societal and Legal Issues	(7 hrs.)
	5.1 Ethical and Policy Issues Involving Sperm Banks and Egg Donors	
	5.2 Ethical, Societal and Policy Issues in Surrogate Parenting	
	5.3 Adoption – Organizations – Laws	
	5.4 Ethical and Policy Issues in Stem Cell Banking and Human Cloning	
	5.5 Human Embryo Research	

BOOKS FOR REFERENCE

- Bhargava, Vinita. *Adoption in India. Policies and Experiences*. Sage Publications, 2005.
- Cassan, A. *Human reproduction and Development (Inside the Human Body)*. Chelsea Clubhouse, 2005.
- Field, Martha. A. *Surrogate Motherhood*. Harvard University, 1990.
- Gardner, David K., *Textbook of Assisted Reproductive Techniques: Laboratory and Clinical Perspectives*. Martin Dunitz, 2001.
- Johnson, Martin H. *Essential Reproduction*. Wiley-Blackwell, 2007.
- Jones, Richard E. *Human Reproductive Biology*. Elsevier, 2006.
- Pinon, Ramon. *Biology of Human Reproduction*. University Science Books, 2002.

JOURNALS

Journal of Human Reproductive Science
Human Reproduction

WEB RESOURCES

www.physiologyweb.com

<http://www.visembryo.com/baby/index.html>

PATTERN OF EVALUATION

No End Semester Examination

Continuous Assessment

Total Marks: 50

Duration : 90 mins

Question Paper Pattern

Section A – 10 x 2 = 20 Marks (All questions to be answered)

Section B – 3 x 5 = 15 Marks (3 out of 5 to be answered)

Section C – 1 x 15 = 15 Marks (1 out of 2 to be answered)

Third Component:

List of evaluation modes:

Quiz

Scrap Book/ Assignment / Poster making

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SYLLABUS

(Effective from the academic year 2015 -2016)

NUTRITION AND DIET THERAPY

CODE: 15ZL/GE/ND23

CREDITS : 3

L T P : 3

0 0

TOTAL TEACHING HOURS: 39

OBJECTIVES OF THE COURSE

- To familiarise students with nutrition, health, food safety and nutritional disorders
- To understand the principles and practices involved in Diet Therapy

- Unit 1 (7 hrs.)**
- 1.2 Sources and Functions of Macro nutrients and Micro nutrients, Antioxidants and Fiber
 - 1.3 Balanced Diet-Food Groups and Food Guide
 - 1.3 Malnutrition: Protein Energy Malnutrition (PEM), Iodine Deficiency, Vitamin A Deficiency and Iron Deficiency
 - 1.4 Nutrigenomics
- Unit 2 (10 hrs.)**
- 2.1 Eating Disorder Continuum: Anorexia nervosa, Bulimia nervosa, Binge Eating Disorder and Night Eating Syndrome
 - 2.2 Overweight and Obesity, Hypertension and Osteoporosis
 - 2.3 Nutritional –Related Concerns of Adolescents
- Unit 3 (10 hrs.)**
- 3.1 Diet Therapy: Purpose and Principles - Food Acceptance in Illness - Therapeutic Diets –Tube Feeding – Parenteral Feeding
 - 3.2 Diet for-Diabetes Mellitus and Cardiovascular Diseases
 - 3.3 Diet Therapy for Addictive Behaviors - Anorexia nervosa, Bulimia nervosa and Alcoholism
- Unit 4 (7 hrs.)**
- 4.1 Food Allergies - Classification and Dietary Management
 - 4.2 Adulteration in Food (Simple Tests)
 - 4.3 Quality Control and its Importance - Food Laws and Food Administration- Code Numbers in Marketing
- Unit 5 (5 hrs.)**
- 5.1 Meal Planning – Nutritious Food (Breakfast, Lunch and Dinner) – Calculation of Calories
 - 5.2 Preparation of Low Cost Nutritious Food - Practicals
 - 5.3 Nutritious Food for Anaemic Individuals, Adolescents, Pregnant Women and Elderly Persons

BOOKS FOR REFERENCE

- Insel, Paul.R. Elaine Turner and Don Ross. *Discovering Nutrition*. Jones and Bartlett, 2007.
- Mudambi, S.R. and M.V. Rajagopal. *Fundamentals of foods. Nutrition and Diet therapy*. New Age International, 2009.
- Srilakshmi, B. *Nutrition Science*. New Age International, 2009.
- Wardlaw, Gordon M. and Jeffrey S. Hampl. *Perspectives in Nutrition*. New York: McGraw Hill, 2007.
- Brown, Judith E. *Nutrition Now*. Canada: Wadsworth Thomson Learning, 2003.

JOURNALS

Journal of Nutritional Disorders and Therapy
Journal of Food Science and Nutrition Therapy

WEB RESOURCES

<http://www.eatright.org/>

<http://www.who.int/nutrition/en/>

PATTERN OF EVALUATION

No End Semester Examination

Continuous Assessment

Total Marks: 50

Duration : 90 mins.

Question Paper pattern

Section A – 10 x 2 = 20 Marks (All questions to be answered)

Section B – 3 x 5 = 15 Marks (3 out of 5 to be answered)

Section C – 1 x 15 = 15 Marks (1 out of 2 to be answered)

Third Component:

List of Evaluation modes:

Assignment

Preparation of low cost nutritious food

Preparation of specific diet

Scrap book