



MAR THOMA COLLEGE, TIRUVALLA OPEN COURSE OFFERED BY VARIOUS DEPARTMENTS

Subject	Course Code	Course Title
Mathematics	MM5OPT02	Applicable Mathematics
Physics	PH5OPT01	Our Universe
Chemistry	CH5OPT01	Chemistry in Everyday Life
Zoology	ZY5OPT01 1	Vocational Zoology
Botany	BO5OPT01	Agri-based microenterprises
Botany (Vocational)	BO5OPT01	Agri-based microenterprises
English	EN5CROPG01	Appreciating Films
Economics	EC5OPT01	Fundamentals of Economics
History	HY5OCT01	Introducing Environmental History
Political Science	PS5OPT05	Introduction to Defence and Strategic Studies
Commerce	CO5OP03	Fundamentals of Accounting
Physical Education	PE5OPT01	Physical Health and life skills education

UNDERGRADUATE PROGRAMME MATHEMATICS (UGCBCS 2017)

FIFTH SEMESTER (OPEN COURSE)

MM5GET02 : APPLICABLE MATHEMATICS

4 hours/week

4 credits

The objective is to prepare students of all streams, particularly those with arts and commerce back ground for their higher studies and to approach competitive examinations. Detailed explanation and short cut method for solving problems are to be introduced to students, so that they can acquire better understanding of concepts and problem solving skill.. All questions asked to be of arts students' standard.

Module – I

(18 hours)

Types of numbers, HCF & LCM of integers, Fractions, Simplifications (VBODMAS rule), squares and square roots, ratio and proportion, percentage, profit & loss.

Module – II

(18 hours)

Quadratic equations (Solution of quadratic equations with real roots only), Permutations and combinations – simple applications, Trigonometry- introduction, values of trigonometric ratios of 0° , 30° , 45° , 60° & 90° , Heights and distances.

Module – III

(18 hours)

Simple interest, Compound interest, Time and work, Work and wages, Time and distance, exponential series and logarithmic series.

Module – IV

(18 hours)

Elementary mensuration – Area and perimeter of polygons, Elementary Algebra, monomial , binomial, polynomial (linear, quadratic & cubic), simple factorization of quadratic and cubic polynomials.

Differential Calculus - Differentiation – Standard results (derivatives), Product rule, Quotient rule and function of function rule (with out proof) and simple probles),

References –

- 1 M. Tyra, & K. Kundan- CONCEPTS OF ARITHMETIC, BSC PUBLISHING COMPANY PVT.LTD, C – 37, GANESH NAGAR, PANDAV NAGAR COMPLEX
- 2 GRE Math review (pdf)
- 3 Joseph Edward : Differential Calculus for beginners. Nabu Press (2011)

- 4 Calculus Volume I, S. Narayanan & T.K. Manikavachagam Pillai – S. Viswanathan (Printers & Publications) Pvt.Ltd
- 5 S Narayanan, TK Manikavachagam Pillai : Calculus Volume I, S Viswanathan Printers and publications Pvt. Ltd.

QUESTON PAPER PATTERN

Module	Part A (2 marks)	Part B (5 marks)	Part C (15 marks)	Total
I	3	2	1	6
II	3	2	1	6
III	3	2	1	6
IV	3	3	1	7
Total No. of Questions	12	9	4	25
No. of questions to be answered	10	6	2	18
Total Marks	20	30	30	80

Semester-V**OPEN COURSE:****Credit-3 (72hours)****PH5OPT01: Our Universe**

Scope: *To help the students to comprehend the cosmos and its origin and to develop scientific attitude and aptitude.*

Prerequisites: *This course is intended for the students of other disciplines. So a secondary level knowledge of mathematics and physics is enough to study this course. But an inquisitive mind and curiosity are essential from the part of a student.*

Module I**Our universe****(10 hours)**

Early models of universe- Geo centric model- Ptolemy-Aristotle. Copernican model - Sun at the centre. Galileo and his observations. Planetary paths-Kepler's laws (**No need of derivation**).

Galaxies-Hubble's classification – Spiral, elliptical & irregular galaxies. Milky way galaxy (**qualitative**).

Module II**Cosmology****(14 hours)**

Origin of the universe - Big bang theory – expansion of the universe – Hubble's law, age of the universe. Doppler effect and red shift (**qualitative**).

Stellar evolution – birth - red giant- death of a star. White dwarf- Chandrasekhar limit. Super novae- neutron star- black hole.

Text Books

1. Architecture of the universe. (cha 3,4,8 and 9) Necia H. Apfel and Allen Hynek- Benjamin Cummins Publishing Company.
2. Astronomy A Beginners guide to the universe sixth edition (Ch.12)-Chaisson Mc Millan
3. Cosmic vistas-A popular history of astronomy (chap 4,5,6,7,8) Biman Basu-national book trust, India

4. Astronomy; A Self Teaching Guide (cha 5&6)-Dinah L Moche
5. The Great Universe (cha 4,5,6,7) G.K Sasidharan-S.Chand

Module III

Observational Astronomy

(24 hours)

Celestial sphere- cardinal points, celestial equator, ecliptic, equinoxes. Celestial co-ordinate systems-equatorial co-ordinate system-Right ascension & declination, Ecliptic and galactic co-ordinate systems. Diurnal motion of sun - Summer solstice and winter solstice. Time - apparent and mean solar time, International date line. Constellations-zodiacal constellations. Astronomical distance scales – AU, Parsec and light year. Stellar Parallax and distance to stars from parallax.

Optical Telescopes - Light gathering power, visual angle, angular magnification, Types of telescopes-refracting and reflecting – Newtonian and Cassegrain telescopes (**No need of derivation of magnification**). HST, Radio telescopes, GMRT (India).

Text Books:

1. Astronomy A beginner's guide to the universe sixth edition(ch-1)-Chaisson Mc Millan
2. Astrophysics stars and galaxies (chap 2,4,20)K D Abhayankar
3. Joy of Star watching (**ch- 3, 8 &10**)- Biman Basu- National Book Trust, India
4. A textbook of Optics(ch-10) N.Subrahmanyam, Brijlal and M.N Avadhanulu
5. Astronomy; A Self Teaching Guide (cha 2&3)-Dinah L Moche
6. www.gmrt.ncra.tifr.in

Module IV

Solar system

(24 hours)

The sun- solar atmosphere - Photosphere, chromospheres and corona. Sun spots. Definition of a planet- terrestrial planets & Jovian planets, Comparison of planets. Minor members of solar system- Asteroids, comets, meteors.

Universal law of gravitation. Earth's orbital motion-day to day changes-seasonal changes.

Text Books:

1. Architecture of the Universe (**ch- 2, 14, 15, 17, 18, 19, 20**)- Necla H. Apfel & Allen Hynek- The Benjamin Cummings publishing company, Inc.
2. Astronomy A beginner's guide to the universe sixth edition(ch-1)-Chaisson Mc Millan
3. Astronomy; A Self Teaching Guide (cha 4,9,10,11)-Dinah L Moche
4. The great Universe – G.K Sasidharan-S.Chand

**CH5OPT – OPEN COURSE****CH5OPT01 - CHEMISTRY IN EVERYDAY LIFE**

(Chemical structures are non-evaluative)

Credits – 3 (72 Hrs)

Unit 1: Food Additives**(12 Hrs)**

Food additives – definition. Preservatives, Food colours - permitted and non-permitted, Toxicology. Flavours - natural and synthetic. Artificial sweeteners, Emulsifying agents, Antioxidants, Leavening agents and Flavour enhancers. Importance of food additives. Soft drinks - formulation and health effects. Health drinks. Fast foods and junk foods and their health effects. Food adulteration. Food laws and standards. Food Safety and Standards Act, 2006.

Unit 2: Soaps and Detergents**(10 Hrs)**

Soaps – Introduction. Types of soaps - Toilet soaps, washing soaps. Liquid soap. TFM and grades of soaps. Bathing bars. Cleansing action of soap.

Detergents - Introduction. Types of detergents - anionic, cationic, non-ionic and amphoteric detergents. Common detergent additives. Enzymes used in commercial detergents. Comparison between soaps and detergents. Environmental aspects.

Unit 3: Cosmetics**(10 Hrs)**

Cosmetics - Introduction. General formulation of different types of cosmetics - Dental cosmetics, Shampoos, Hair dyes, Skin products (creams and lotions, lipstick, perfumes, deodorants and antiperspirants), Bath oil, Shaving cream and Talcum powder. Toxicology of cosmetics.

Unit 4: Plastics, Paper and Dyes**(12 Hrs)**

Plastics in everyday life. Plastics and Polymers. Classification of polymers. Brief idea of polymerization. Use of LDPE, HDPE, PP, PVC and PS. Environmental hazards of plastics. Biodegradable plastics. Recycling of plastics. Paper – Introduction. Paper manufacture (basic idea only). Weight and size of paper. Types of paper - News print paper, writing paper, paperboards, cardboards. Environmental impact of paper. International recycling codes, and symbols for identification of plastics. Natural and synthetic dyes with examples (elementary idea only).

Unit 5: Drugs**(9 Hrs)**

Classification of drugs - Analgesics, Antipyretics, Antihistamines, Antacids, Antibiotics and Antifertility drugs with examples. Psychotropic drugs - Tranquilizers, Antidepressants and Stimulants with examples. Drug addiction and abuse. Prevention and treatment.

**Unit 6: Chemistry and Agriculture (12 Hrs)**

Fertilizers – Introduction. Types of fertilizers - Natural, synthetic, mixed, NPK fertilizers. Excessive use of fertilizers and its impact on the environment. Bio-fertilizers. Plant growth hormones. Pesticides - Introduction. Classification - Insecticides, Fungicides, Herbicides. Excessive use of pesticides - Environmental hazards. Bio pesticides.

Unit 7: Nanomaterials (7 Hrs)

Terminology. Scales of nanosystems. Different types of nanoparticles. Applications of nanoparticles in biology and medicine – biological labels, drug and gene delivery, tissue engineering, tumour destruction. Other applications of nanoparticles – electronics, paints, food packaging. Toxicology of nanoparticles.

References:

1. B. Sreelakshmi, *Food Science*, New Age International, New Delhi, 2015.
2. Shashi Chowla; *Engineering Chemistry*, Danpat Rai Publication.
3. B.K. Sharma; *Industrial Chemistry*. Goel Publishing House, Meerut, 2003.
4. C.N.R. Rao; *Understanding Chemistry*, Universities Press.
5. M.K. Jain and S.C. Sharma; *Modern Organic Chemistry*, Vishal Pub. Co., Jalandhar, 2009.
6. A.K. De; *Environmental Chemistry*, New Age International Ltd., New Delhi, 2006.
7. S.S. Dara; *A Textbook of Environmental Chemistry and Pollution Control*, S. Chand & Company Ltd.
8. J.W. Hill; T.W. McCreary and D.K. Kolb; *Chemistry for Changing Times*, Prentice Hall, 12th edn., 2010.
9. V.R.Gowariker; N.V. Viswanathan and J. Sreedhar; *Polymer Science*, 2nd edn., New Age, New Delhi, 2015.
10. D. Sriram and P. Yogeeswari; *Medicinal Chemistry*, 2nd edn. Pearson, 2011.
11. S.L. Tisdale; W.L.Nelson and J.D.Beaton; *Soil Fertility and Fertilizers*, Macmillan Publishing Company, New York, 1990.
12. K.H.Buchel; *Chemistry of Pesticides*, John Wiley & Sons, New York, 1983.
13. P.C. Pall; K. Goel and R.K. Gupta; *Insecticides, Pesticides and Argobased Industries*.
14. T. Pradeep; *Nano- The Essentials*, McGraw Hill Publishing Co., New Delhi, 2007.
15. V.S.Muraleedharan, A. Subramania; *Nanoscience and Nanotechnology*, Ane Books, New Delhi, 2009.
16. K.J. Klabunde; *Nanoscale Materials in Chemistry*, Wiley.
17. Singh, K., *Chemistry in Daily Life*; Prentice Hall of India, New Delhi, 2008.

29. Nayar M P, 1997. Biodiversity challenges in Kerala and science of conservation biology. In: P. Pushpangadan, K S S Nair (Eds), Biodiversity of tropical forests the Kerala scenario. STEC, Kerala.
30. Odum E P, 1971. Fundamentals of Ecology. WB Saunders.
31. Oza G M, 1992. The Earth Summit. Ind. For. 5: 338.
32. Panday S N, S P Misra, 2011. Environment and Ecology. Ane Books Pvt.Ltd. New Delhi
33. Ravindranath N H, Sudha P, 2004. Joint Forest Management: Spread performance and Impact. Universities Press.
34. Richard Wright, 2009. Environmental Science towards a Sustainable Future. Pearson Education.
35. Santhra S C, 2004. Environmental Science. New Central Book Agency.
36. Sulekha, Chendel. Plant Ecology and Soil. S Chand & Co. Ltd. New Delhi.
37. Waxena H M, 2006. Environmental Studies. Rawat Publications, New Delhi.
38. Wood, Ronald, 1974. The Geography of the Flowering Plants. Longman Group Ltd., London.
39. Amartya Sen, 2009. The Idea Justice. Penguin Books, New Delhi.
40. Chatrath, K J S (ed.), 1998. Education for human rights and democracy (Shimla: Indian Institute of Advanced Studies)
41. Law Relating to Human Rights, Asia Law House, 2001.
42. Shireesh Pal Singh, Human Rights Education in 21st Century. Discovery Publishing House Pvt. Ltd. New Delhi.
43. S K Khanna, 1998, 2011. Children and the human rights. Commonwealth publishers.
44. Sudhir Kapoor, 2001. Human Rights in 21st Century. Mangal Deep Publications, Jaipur.
45. United Nations Development Programme, Human Development Report 2004. Cultural liberty in today's diverse world. Oxford University Press, New Delhi.

OPEN COURSES

Open course 1 Code: BO5OPT01
AGRI-BASED MICROENTERPRISES
(Theory 72 hrs; Credits 3)

Objectives:

- Provide basic information about the business opportunities in plant sciences.
- Inform the student about sustainable agriculture and organic farming.
- Inculcate an enthusiasm and awareness about ornamental gardening, nursery management and mushroom cultivation.

Module 1: Organic farming and composting techniques (9 hrs)

Advantages of organic manures and fertilizers. Composition of fertilizers – NPK content of various fertilizers. Common organic manures – bone meal, cow dung, poultry waste, oil cakes, organic mixtures and compost. Preparation of compost - aerobic and anaerobic - advantages of both; vermicompost - preparation, vermiwash. Biofertilizers: definition, types – *Trichoderma*, *Rhizobium*, PGPR. Biopesticides – Tobacco and Neem decoction. Biological control.

Module 2: Horticulture and Nursery management (18 hrs)

Soil components. Preparation of potting mixture. Common Garden tools and implements. Methods of plant propagation - by seeds - advantages and disadvantages. Vegetative propagation - advantages and disadvantages. Natural methods of vegetative propagation. Artificial methods - cutting, grafting,

budding and layering. Use of growth regulators for rooting. Gardening - types of garden - ornamental, indoor garden, kitchen garden, vegetable garden for marketing.

Module 3: Food spoilage and preservation techniques (9 hrs)

Causes of spoilage. Preservation techniques - asepsis, removal of microorganisms, anaerobic conditions and special methods – by drying, by heat treatment, by low temperature storage and by chemicals (Food Additives). Preparation of wine, vinegar and dairy products.

Module 4: Mushroom cultivation and Spawn production (9 hrs)

Types of mushrooms - button mushroom, oyster mushroom and milky mushroom, poisonous mushroom – methods of identification. Spawn – isolation and preparation. Cultivation milky mushrooms – using paddy straw and saw dust by polybag. Value added products from mushroom – pickles, candies, dried mushrooms.

Module 5: Plant tissue culture and micropropagation (9 hrs)

Concept of totipotency. Micropropagation: different methods – shoot tip, axillary bud and meristem culture; organogenesis, somatic embryogenesis. Infra structure of a tissue culture laboratory. Solid and liquid media - composition and preparation. Sterilization techniques. Explant - inoculation and incubation techniques. Stages of micropropagation – hardening and transplantation. Packaging and transportation of tissue culture regenerated plantlets.

ON HAND TRAINING (18 hrs)

1. Prepare a chart showing the NPK composition of minimum 6 manures and fertilizers.
2. Identification and familiarization of the following organic manures: cow dung (dry), Coconut cake, Vermicompost, neem cake, organic mixture, bone meal.
3. Preparation of potting mixture.
4. Make a vermicompost pit /pot in the campus/ house of the student.
5. Familiarization of common garden tools and implements.
6. Estimation of germination percentage of seeds
7. Demonstrate the effect of a rooting hormone on stem cutting.
8. Demonstration of T budding and air layering on live plants.
9. Familiarization of garden components from photographs.
10. Preparation of vinegar/dairy product (any two) in class or home.
11. Familiarization of different mushrooms and preparation of a polybag of *Pleurotus* using straw/sawdust.
12. Visit to a well established tissue culture lab, nursery and mushroom cultivation unit.

REFERENCES

1. Purohit S S, 2005. Plant Tissue Culture. Student Edition.
2. Rema L P, 2006. Applied Biotechnology. MJP Publishers.
3. Adams M R, M O Moss, 1995. Food Microbiology. Panima Publishing.
4. Casida L E (Jr.), 2005. Industrial Microbiology. New Age International.
5. Chandha.K L, 2003. Handbook of Horticulture. ICAR. New Delhi.
6. Frazier, Westhoff, 1988. Food Microbiology. Tata McGraw Hill.
7. George Acquichah, 2004. Horticulture: Principles and Practices (II Edn). Prentice Hall. India.
8. George J Banwant, 2004. Basic Food Microbiology. CBS Publishers and Distributors.
9. Gopal Chandha De, 2002. Fundamentals of Agronomy. Oxford and IBH Publishing House.
10. Hudson T, Hartmann, Dale E Kester, 2001. Plant Propagation, Principles and Practices (VI Edn). Prentice Hall, India.
11. James M Jay, 2005. Modern Food Microbiology. CBS Publishers and Distributors.
12. Kalyan Kumar De, 1996. Plant Tissue Culture. New Central Book Agency (P) Ltd.

13. Kaul T N, 2002. Biology and Conservation of Mushroom. Oxford and IBH Publishing Co.
14. Kunte, Kawthalkar, Yawalker, 1997. Principles of Horticulture and Fruit Growing. Agri – Horticulture Co.
15. Neshamani S, 2003. Pazhanganal, Pazhavibhavanganal (Malayalam). Kerala Bhasha Institute.
16. Pandey R K, S K Ghosh, 1996. A Hand Book on Mushroom Cultivation. Emkey Publications.
17. Prem Singh Arya, 2004). Vegetable Seed Production Principles. Kalyani Publishers.
18. Prince Alex, Rajani A Nair, 2003. Ayurveda Avshodha Nirmanam – Sidhanthavum Prayogavum (Malayalam). Kerala Bhasha Institute.
19. Razdan M K, 1995. Introduction to Plant Tissue Culture (II Edn). Oxford and IBH Publishing Co.
20. Sharma R R, 2005. Propagation of Horticultural Crops. Kalyani Publishers.
21. Singh B D, 1996. Biotechnology. Kalyani Publishers.

Open course 2 **Code: BO5OPT02**
HORTICULTURE AND NURSERY MANAGEMENT
(Theory 72 hrs; Credits 3)

Objectives:

- Understand the importance of horticulture in human welfare.
- Understand the propagation and cultural practices of useful vegetable, fruit and garden plants.
- Understand the impact of modern technologies in biology on horticultural plants.
- Understand the basic concepts of landscaping and garden designing.
- Inculcate interest in landscaping, gardening and flower and fruit culture.

HORTICULTURE (48 hrs)

Module 1: Introduction (10 hrs)

Introduction to horticulture: definition, history; classification of horticultural plants, disciplines of horticulture. Soil: formation, composition, types, texture, pH and conductivity. Garden tools and implements.

Preparation of nursery bed; manures and fertilizers - farm yard manure, compost, vermicompost, biofertilizers; chemical fertilizers - NPK; time and application of manures and fertilizers, foliar spray. Irrigation methods - surface, sub, drip and spray irrigations - advantages and disadvantages - periodicity of irrigation.

Module 2: Propagation of plants (10 hrs)

Propagation of horticultural plants - by seeds; seed development and viability, seed dormancy, seed health, seed testing and certification. Growing seedlings in indoor containers and field nurseries, seed bed preparation, seedling transplanting; advantages and disadvantages of seed propagation.

Vegetative propagation - organs used in propagation - natural and artificial vegetative propagation; methods - cutting, layering, grafting and budding; advantages and disadvantages of vegetative propagation; micropropagation.

Module 3: Gardening (10 hrs)

Gardening - ornamental gardens, indoor gardens, kitchen gardens- terrestrial and aquatic gardens - garden adornments; garden designing; garden components - lawns, shrubs and trees, borders, hedges, edges, drives, walks, topiary, trophy, rockery; famous gardens of India. Landscape architecture - home landscape design, urban planning, parks, landscaping and public buildings, industrial and

29. Nayar M P, 1997. Biodiversity challenges in Kerala and science of conservation biology. In: P. Pushpangadan, K S S Nair (Eds), Biodiversity of tropical forests the Kerala scenario. STEC, Kerala.
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Objectives:

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- Inform the student about sustainable agriculture and organic farming.
- Inculcate an enthusiasm and awareness about ornamental gardening, nursery management and mushroom cultivation.

Module 1: Organic farming and composting techniques (9 hrs)

Advantages of organic manures and fertilizers. Composition of fertilizers – NPK content of various fertilizers. Common organic manures – bone meal, cow dung, poultry waste, oil cakes, organic mixtures and compost. Preparation of compost - aerobic and anaerobic - advantages of both; vermicompost - preparation, vermiwash. Biofertilizers: definition, types – *Trichoderma*, *Rhizobium*, PGPR. Biopesticides – Tobacco and Neem decoction. Biological control.

Module 2: Horticulture and Nursery management (18 hrs)

Soil components. Preparation of potting mixture. Common Garden tools and implements. Methods of plant propagation - by seeds - advantages and disadvantages. Vegetative propagation - advantages and disadvantages. Natural methods of vegetative propagation. Artificial methods - cutting, grafting,

budding and layering. Use of growth regulators for rooting. Gardening - types of garden - ornamental, indoor garden, kitchen garden, vegetable garden for marketing.

Module 3: Food spoilage and preservation techniques (9 hrs)

Causes of spoilage. Preservation techniques - asepsis, removal of microorganisms, anaerobic conditions and special methods – by drying, by heat treatment, by low temperature storage and by chemicals (Food Additives). Preparation of wine, vinegar and dairy products.

Module 4: Mushroom cultivation and Spawn production (9 hrs)

Types of mushrooms - button mushroom, oyster mushroom and milky mushroom, poisonous mushroom – methods of identification. Spawn – isolation and preparation. Cultivation milky mushrooms – using paddy straw and saw dust by polybag. Value added products from mushroom – pickles, candies, dried mushrooms.

Module 5: Plant tissue culture and micropropagation (9 hrs)

Concept of totipotency. Micropropagation: different methods – shoot tip, axillary bud and meristem culture; organogenesis, somatic embryogenesis. Infra structure of a tissue culture laboratory. Solid and liquid media - composition and preparation. Sterilization techniques. Explant - inoculation and incubation techniques. Stages of micropropagation – hardening and transplantation. Packaging and transportation of tissue culture regenerated plantlets.

ON HAND TRAINING (18 hrs)

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3. Preparation of potting mixture.
4. Make a vermicompost pit /pot in the campus/ house of the student.
5. Familiarization of common garden tools and implements.
6. Estimation of germination percentage of seeds
7. Demonstrate the effect of a rooting hormone on stem cutting.
8. Demonstration of T budding and air layering on live plants.
9. Familiarization of garden components from photographs.
10. Preparation of vinegar/dairy product (any two) in class or home.
11. Familiarization of different mushrooms and preparation of a polybag of *Pleurotus* using straw/sawdust.
12. Visit to a well established tissue culture lab, nursery and mushroom cultivation unit.

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Open course 2 **Code: BO5OPT02**
HORTICULTURE AND NURSERY MANAGEMENT
(Theory 72 hrs; Credits 3)

Objectives:

- Understand the importance of horticulture in human welfare.
- Understand the propagation and cultural practices of useful vegetable, fruit and garden plants.
- Understand the impact of modern technologies in biology on horticultural plants.
- Understand the basic concepts of landscaping and garden designing.
- Inculcate interest in landscaping, gardening and flower and fruit culture.

HORTICULTURE (48 hrs)

Module 1: Introduction (10 hrs)

Introduction to horticulture: definition, history; classification of horticultural plants, disciplines of horticulture. Soil: formation, composition, types, texture, pH and conductivity. Garden tools and implements.

Preparation of nursery bed; manures and fertilizers - farm yard manure, compost, vermicompost, biofertilizers; chemical fertilizers - NPK; time and application of manures and fertilizers, foliar spray. Irrigation methods - surface, sub, drip and spray irrigations - advantages and disadvantages - periodicity of irrigation.

Module 2: Propagation of plants (10 hrs)

Propagation of horticultural plants - by seeds; seed development and viability, seed dormancy, seed health, seed testing and certification. Growing seedlings in indoor containers and field nurseries, seed bed preparation, seedling transplanting; advantages and disadvantages of seed propagation.

Vegetative propagation - organs used in propagation - natural and artificial vegetative propagation; methods - cutting, layering, grafting and budding; advantages and disadvantages of vegetative propagation; micropropagation.

Module 3: Gardening (10 hrs)

Gardening - ornamental gardens, indoor gardens, kitchen gardens- terrestrial and aquatic gardens - garden adornments; garden designing; garden components - lawns, shrubs and trees, borders, hedges, edges, drives, walks, topiary, trophy, rockery; famous gardens of India. Landscape architecture - home landscape design, urban planning, parks, landscaping and public buildings, industrial and

4. Identification and study of fish parasites and diseases (five numbers each) using slides/pictures
5. Bee keeping equipments, Beehive, Smoker, honey extractor, Queen Cage,
6. Bees wax, Honey, Vermicompost (Identification-Uses)
7. Formulation of artificial feed for aquarium fishes – demonstration
8. Tests for determining the adulteration in honey.
9. Mounting of pollen basket
10. Mounting of mouth parts of honey bee
11. Separation of cocoon from worm castings.

SEMESTER V. OPEN COURSES (FOR OTHER STREAMS)

1. VOCATIONAL ZOOLOGY

72 Hrs

4hrs/Week, Credits 3

Objectives

- To develop critical thinking skill and research aptitude among students, by introducing the frontier areas of the biological science.
- To emphasize the central role that biological sciences plays in the life of all organisms.
- To introduce the student to some of the present and future applications of bio-sciences
- To acquire basic knowledge and skills in aquarium management, Quail farming, vermicomposting and apiculture for self-employment
- To learn the different resources available and to develop an attitude towards sustainability
- Give awareness to society about need for waste management and organic farming

Module 1 Aquarium management

12 Hrs

General introduction to Aquarium, Aims and types of aquarium (material, size and shape), Requirements of an aquarium - filtration of waste, physical, chemical and biological; Setting an aquarium (self-sustainable with biological filters), Major indigenous aquarium fishes of Kerala.

Activity: Setting up of a freshwater aquarium and rearing of aquarium fishes

Module 2 Ornamental Fish Culture

20 Hrs

Introduction to ornamental fishes: Present status of ornamental fish culture in India with special reference to Kerala, Breeding of Gold fish, Fighter, Gourami (*Osphronemus*), and Guppy (live bearer). Nutrition and types feed for aquarium fishes, Use of live fish feed organisms in Ornamental fish culture. Methods and techniques involved in the formulation of fish feed. Fish Transportation: Live fish packing and transport, Common diseases of aquarium fishes and their management. Establishment of commercial ornamental fish culture unit,

Activity: field visit to an ornamental fish breeding Centre to understand breeding practices of various aquarium fishes.

Module 3 Quail farming (*Coturnix coturnix*)

10 Hrs

Introduction, care of quail chicks, care of adult quails, care of breeding quails, ration for quail, care of hatching eggs, health care, use of quail egg and meat, Sources of quality chicks.

Activity: Visit to a quail farm or viewing a quail documentary to familiarize the quail farming practices

Module 5 Vermiculture and composting

12 Hrs

Introduction, ecological classification of earth worms, Life history, Species of earth worms used for vermiculture, Preparation of vermibed; Preparation of vermicompost, Preparation of vermish, Maintenance and management of vermicomposting unit, Role of vermiculture in solid waste management.

Activity: - Preparation of a vermiculture unit or visit to a vermicomposting unit.

Module 6 Apiculture

18 Hrs

Definition, Uses of bees, species of bees cultured, organization of honey bee colony, bee keeping methods (modern method only) and equipments, management and maintenance of an apiary-growth period, dividing the colony, uniting two colonies, replacing old queen with new queen, honey flow period, Bee pasturage, Death period, Enemies of bees, Bee diseases, uses of honey and wax, Apitherapy, Propolis, Royal jelly, Agencies supporting apiculture.

Activity: Identify different types of honey bees and rearing equipments

Field visit and report Submission

Field visit and report writing on any two items are taken for internal evaluation, instead of assignment and seminar. Conduct a workshop on various cultural practices and the preparation of byproducts.

References:

- Applied Zoology, Study Material Zoological Society of Kerala, CMS College Campus, Kottayam.
- Addison Webb (1947), Bee Keeping- for profit and pleasure, Museum Press, agro bios India Ltd.
- Alka Prakash (2011), Laboratory Manual of Entomology, New age International, New Delhi.
- Arumugan N. (2008) Aquaculture, Saras publication.
- Biju Kumar A and Harishanker J Alappat (1995) A Complete Guide To Aquarium Keeping. Published by Books For All, New Delhi.
- Chauhan, H.V.S. and S. Roy, (2008). Fungal Diseases. In: Poultry Diseases, Diagnosis and Treatment, Chauhan, H.V.S. and S. Roy (Eds.). 3rd Ed., New Age International (P) Ltd., New Delhi
- Cowey C. B. Mackie, A.M. and Bell, J. G (1985) Nutrition and feeding in fishes. Academy press.
- David Alderton (2008). Encyclopedia of Aquarium and Pond fish. Published by Dorling Kindersley, DK Books.
- Dey, V.K. (1997). A Hand Book on Aquafarming- Ornamental fishes. Manual. MPEDA Cochin.
- George Cust and & Peter Bird. (1978). Tropical Fresh water Aquaria, Published by Hamlyn London. illustrated by George Thompson.
- Harisankar J. Alappat and Bijukumar. A. (2011) Aquarium Fishes. B. R. Publ. Corporation, Delhi.
- Herbert R. and Leonard P. Schultz Axelrod (1955) Handbook of Tropical Aquarium Fishes, McGraw-Hill, 1955.
- Joy P.J., George Abraham K., Aloysius M. Sebastian and Susan Panicker (Eds) (1998) Animal Diversity, Zoological Society of Kerala, Kottayam
- Michael B. New; Alber G.J. Tacon (1994) Farm made aquafeeds FAO fisheries technical paper No.343, Rome, FAO. 1994
- Nalina Sundari, M.S and Santhi, R (2006) Entomology. MJP Publishers
- NPCS Board of Consultants & Engineers, Chennai.(2015) The complete book on Bee keeping and honey processing, 2nd Edition, NIIR Project consultancy services, 106- E kamala Nagar Delhi – 110007.
- Ronald j. Roberts (1978) Fish pathology , Cassel Ltd London .

Vijayakumaran Nair, K, Manju, K.G. and Minimol, K. C.(2015) Applied Zoology,
Academia press, Thiruvananthapuram

OPEN COURSE (FOR OTHER STREAMS)

2. PUBLIC HEALTH AND NUTRITION

72 Hrs

4hrs/Week

Credits 3

Objectives:

- To inculcate a general awareness among the students regarding the real sense of health.
- To understand the role of balanced diet in maintaining health.
- To motivate them to practice yoga and meditation in day-to-day life.

PART I HEALTH, EXERCISE & NUTRITION

Module 1 Definition and Meaning of Health 10 Hrs

Dimensions and Determination of Health

Physical Activity and Health benefits

Effect of exercise on body systems – Circulatory, Respiratory, Endocrine,
Skeletal and Muscular

Programmes on Community health promotion (Individual, Family and Society)

Dangers of alcoholic and drug abuse, medico-legal implications

Module 2 Nutrition and Health 10 Hrs

Concept of Food and Nutrition, Balanced diet

Vitamins, Malnutrition, Deficiency Disease

Determining Caloric intake and expenditure

Obesity, causes and preventing measures

Role of Diet and Exercise, BMI

Module 3 Safety Education in Health promotion 8 Hrs

Principles of Accident prevention

Health and Safety in daily life.

Open Courses

MAHATMA GANDHI UNIVERSITY

SYLLABUS FOR OPEN COURSES-UG PROGRAMMES

2017 ADMISSIONS ONWARDS

COURSE 1 – Appreciating Films

Course Code	EN5CROP01
Title of the course	Appreciating Films
Semester in which the course is to be taught	5
No. of credits	3
No. of contact hours	72

AIM OF THE COURSE

The course seeks to introduce the student to the major elements that constitute cinema. Also the attempt will be to equip the student to academically discuss cinema in terms of critiques and close analyses.

OBJECTIVES OF THE COURSE

On completion of the course, the student should be able to discern the following:

1. The broad contours of the history and aesthetics of films.
2. The overarching film genres and the basic terminology of film studies.
3. The distinction between mere appreciation of films and sustained ideological film analysis.
4. The questions raised by Cultural Studies and Feminism(s) in their encounter with films.
5. The issues raised by cinematic adaptations of literature.

COURSE OUTLINE

Module 1 (Broad Film Genres)

(18 hours)

Lumiere vs. Melies [*Arrival of a Train* vs. *An Impossible Voyage*]

Narrative Cinema vs. Documentary Cinema

Hollywood Style as Norm- Roland Emmerich's *Independence Day* (1996)

German Expressionism- F.W. Murnau's *Nosferatu* (1922)

Neo-realism - Vittorio De Sica's *Bicycle Thieves* (1948)

Module2(FilmLanguages)**(18hours)**

Montage Theory: [Clippings from Eisenstein's *BattleshipPotemkin* and Chaplin's *ModernTimes*]

Mise-en-scene: [The opening sequence from Werner Herzog's *Aguirre,WrathofGod*(1972) and the infamous '_horsehead' scene from Francis Ford Coppola's *TheGodfather* (1972)] Deep Focus, the Long Take and psychological representation: [Select scenes from Orson Welles' *TheMagnificentAmbersons* (1942)]

JumpCut (anti-seamless-dissolve) [Examples from Godard's *Breathless*(1960)]

Module3(ReadingFilms)**(18hours)**

Cinema and Ideology/IdentityPolitics

[Kamal Haasan's *HeyRam*(2000) and Shaji Kailas's] *AaramThampuram* (1997)]

Cinema and Feminism

[RajkumarHirani's *PK* (2014) and K. G. George's *AadaminteVariyellu* (1983))

Module4(FilmAdaptations)**(18hours)**

Shakespeare/Hamlet: Vishal Bhardwaj's *Haider*(2014)

Basheer/Mathilukal: AdoorGopalakrishnan's *Mathilukal* (1990)

FilmsRecommendedforBackgroundViewing

GeorgeMelies:

*AnImpossibleVoyage*Lumiere brothers:

ArrivalofaTrain SergeiEisenstein:

BattleshipPotemkin Charlie Chaplin:

*ModernTimes*Werner Herzog:

Aguirre,WrathofGod Francis Ford

Coppola: *TheGodfather*

Orson Welles:

*TheMagnificentAmbersons*Jean Luc-

Godard: *Breathless*

V. K. Prakash: *Karmayogi* [Malayalam]

CoreText:AppreciatingFilms

Semester 5				
Open Course No	Course Code	Course Title	No. of Credit	No. of Teaching Hours
02	EC5OPT02	Economics Of Population	4	72

Module 1: Introduction to the study of Demography

Definition, scope and historical background of formal demography - Recent population trends - World - More Developed Regions - Less developed Regions and Least Developed Regions of the world - components of population growth - population composition- age composition in more developed and less developed regions of the world - population growth in India. Basic demographic methodology - rates in demography- birth (fertility) - mortality - marriage (Nuptiality) - infant mortality rate- computation of infant mortality rate -population projection- sources of population data - sources of demographic data in India. (20 hrs)

Module II : Theories of population

Thomas Robert Malthus - Micheal Thomas Sadler - an overview of sociological theories - optimum theory of population- demographic transition theory- demographic dividend - population and economic growth - economic characteristics of population- economically active population- work participation and unemployment - working population and work participation rate in India. (12hrs)

Module III Composition of Population

Pattern of sex and age structure in developed and developing countries- determinants of age and sex structure- demographic effects of age - sex- structural transition- ageing and younging of population- feminization. Determinants of population ageing - ageing index- median age - dependency ratio - potential support ratio and parental support ratio - Madrid plan - concepts of active ageing - healthy ageing - successful ageing and productive ageing- age structure transition and population ageing in India and Kerala. (20hrs)

Module IV Fertility - Mortality - Nuptiality

Trends and differentials in fertility transition in India and Kerala - causes of demographic changes in South India- trends and differentials in mortality in India and Kerala- Foetal and

infant mortality - life expectancy - still birth, abortion and prenatal mortality - laws relating to abortion in India- epidemiological transition- morbidity in Kerala. (12hrs)

Module V - Migration

Concepts - types - laws- Theories of migration - Todaro- Fei-Rani's models - cause and effect of migration (8hrs)

References

1. D.J.Bogue - Principles of Demography, Wiley 1971
2. Spiegelmon M- Introduction to Demography
3. H.S.Shryok - The Methods and Materials of Demography
4. A.A.Bhande - Principles of population studies, Himalaya and T. Kanitkar
5. Debraj Ray - Development Economics OXFORD, INDIA
6. RobVos, Jose Antonio Ocampo and Ana Luiza Cortez - Ageing Development, Orient and Black swan
7. John C Cladwe P.H.Reddy - Causes of Demography change - Pat Cald Well Experimental Research in SouthIndia, The University of Wisconsin press.
8. S. Iruday Rajan, US Misra & P.Sankara Sarma - India's Elderly -Burden or Challenge sage publications, New Delhi
9. S.Irudaya Rajan - Social Security for the elderly- experiments from South Asia, Routledge
10. Roland Pressat - Demographic analysis projections on Natalivity, Fertility and Replacement, Aldine Transaction- A division of Transaction Publishers.
11. D.Jayraj and S.Subramanian - Poverty inequality and population - OXFORD
12. P.K.Majumdar - India's Demography: Changing Demographic Senario in India, Rawat publications

- | | | | |
|-----|--|---|---|
| 13. | Giridhar Kumar, Sathyanarayana,
James, Alam | - | Population Ageing in India, Cambridge |
| 14. | Asis Kumar Chattopadhyay
Anuj Kumar Saha | - | Demography: Techniques and Analysis, Viva Books Private Limited. |
| 15. | Rajendra K Sharma | - | Demography and population problems
Atlantic Publishers and Distributors. |
| 16. | N.Jayapalan | - | Social Demography, Book Enclave publishers |
| 17. | D.Radhadevi | - | Economics of Ageing, Serials publicaiton |
| 18. | Kerala state planning Board | - | Growing old in Kerala |
| 20. | K.C Zachariah, S.Irudaya Rajan | - | Kerala's Demographic transition,
Determinants and consequences, Sage
publications |
| 21. | A.K.Shiva kumar
Pradeep panda
Rajani R.Ved | - | Hand Book of Population and
Development |
| 22. | UN(2002) | - | Political Declaration and Madrid plan of
Action on Ageing, Second world Assembly on
Ageing. |
| 23. | U.N | - | World population prospects (for various years)
world population Ageing 2013 www.un.org/esa/population/publication . |
| 24. | US census bureau | - | An ageing world www.census.gov/prod . |
| 25. | Office of the Registrar General | - | Compendium of India's fertility-
and Census Commission of India
Mortality indicators. |

Stock exchanges in India - role and functions- membership - Trading and settlement – Speculators- Bulls, bears, stags and lame duck - Dematerialized securities - On-line trading - Depositories - Stock Market indices –
(20 Hours)

MODULE-3

Derivatives- Features of Derivatives -Types of Derivatives– Forwards – Futures- Options-Swaps – (Brief study only)
(12 Hours)

MODULE-4

Investment Management – Process- Investment, Speculations and Investment, Gambling and Investment, Investment Objectives- Investment process- Meaning of portfolio
(15 Hours)

MODULE-5

Investment Avenues: Corporate Securities - Government bonds - Post office saving certificate and deposits - Public Provident Fund scheme, Mutual Fund schemes, Bank deposits - Insurance - Real Estate- Other Investment Avenues.
(10 hours)

Suggested Readings

1. Khan, M.Y., Indian Financial System, Tata McGraw Hill, New Delhi.
2. Singh, Preethi, Dynamics of Indian Financial System, Ane Books, New Delhi
3. Guruswami, S., Capital Markets, Tata McGraw Hill, New Delhi
4. Avadhani, V. A., Investment and Securities Market in India, *Himalaya Publishing House*.

Journals

SEBI and Corporate Laws - Taxmann, New Delhi
SEBI Monthly Bulletins

FUNDAMENTALS OF ACCOUNTING

Instructional Hours-72

Credit-3

OBJECTIVE- *To familiarise the students with the basic accounting principles and practices in business.*

MODULE-1 Accounting – Introduction- meaning- Book keeping and Accounting –Objectives of Accounting - Accounting Principles- Concepts and Conventions- Double Entry System- Books of Accounts- Accounting Equation- Golden Rule of Accounting
(15 Hours)

MODULE-2 Journal- Meaning – Journalising- Journal Entry- Simple and Compound Entries- opening Entry .
(15 Hours)

MODULE-3 Ledger - Form of an Account -Posting - Balancing of Accounts-Subdivision of Journals- Purchase book- Sales Book - Cash book (simple, triple column)-Petty Cash book.
(22 Hours)

MODULE-4 Trial Balance - Meaning - Objects-Preparation-
(8 Hours)

MODULE-5 Final Accounts-Trading and Profit and Loss Account- Balance Sheet

(without adjustments)

(12 Hours)

Suggested Readings

1. *R L Gupta and M Radhaswamy - Advanced Accountancy-.Sultan Chand Publishers*
2. *P C Tulsian. Advanced Accountancy- S Chand Publications-*
3. *S Kr. Paul- Fundamentals of Accounting - New Central Agency*
4. *M.C.Shukla and T.S.Grewal- Advanced Accounting, S Chand Publication*
5. *Jain and Narang- Fundamentals of Accounting, Kalyani Publishers*
6. *B S Raman – Financial Accounting- United Publishers*

Guidelines for Practical Examinations , Project and Viva and Industrial Visit/Study Tour

Practical Examination

Practical examinations will be conducted only at the end of even semesters.

Project Report

All students are to do a **project in the area of core course.**

This project can be done individually or in groups (not more than five students) which may be carried out in or outside the campus.

The report of the project in duplicate is to be submitted in English with not less than 30 pages (Printed in A4 size paper) to the Department at the sixth semester and are to be produced before the examiners appointed by the University.

External Project Evaluation and Viva / Presentation are compulsory and will be conducted at the end of the Programme.

Structure of the Report

- Title Page
- Declaration by the student
- Certificate from the guide
- Acknowledgements
- Contents
- Chapter I: Introduction (Research problem, Objectives of the study, methodology etc)
- Chapter II: Review of Literature/Conceptual Framework
- Chapter III: Data Analysis
- Chapter IV: Summary /findings/ Recommendations
- Appendix (Questionnaire, Specimen copies of forms, other exhibits etc).
- Bibliography

Suggested Readings

1. Khan, M.Y., Indian Financial System, *Tata McGraw Hill, New Delhi.*
2. Singh, Preethi, Dynamics of Indian Financial System, *Ane Books, New Delhi*
3. Guruswami, S., Capital Markets, *Tata McGraw Hill, New Delhi*
4. Avadhani, V. A., Investment and Securities Market in India, *Himalaya Publishing House.*

Journals

SEBI and Corporate Laws - Taxmann, New Delhi
SEBI Monthly Bulletins

. FUNDAMENTALS OF ACCOUNTING

Instructional Hours-72

Credit-3

OBJECTIVE- *To familiarise the students with the basic accounting principles and practices in business.*

Module-I Accounting – Introduction- meaning- Book keeping and Accounting –Objectives of Accounting - Accounting Principles- Concepts and Conventions- Double Entry System- Books of Accounts- Accounting Equation- Golden Rule of Accounting **(15 hours)**

Module-II Journal- Meaning – Journalising- Journal Entry- Simple and Compound Entries- opening Entry . **(15 Hours)**

Module-III Ledger - Form of an Account -Posting - Balancing of Accounts-Subdivision of Journals- Purchase book- Sales Book - Cash book (simple, triple column)-Petty Cash book. **(22 hours)**

Module-IV Trial Balance - Meaning - Objects-Preparation- **(8 Hours)**

Module-V Final Accounts-Trading and Profit and Loss Account- Balance Sheet (without adjustments) **(12 Hours)**

Suggested Readings

1. *R L Gupta and M Radhaswamy - Advanced Accountancy-.Sultan Chand Publishers*
2. *P C Tulsian. Advanced Accountancy- S Chand Publications-*
3. *S Kr. Paul- Fundamentals of Accounting - New Central Agency*
4. *M.C.Shukla and T.S.Grewal- Advanced Accounting, S Chand Publication*
5. *Jain and Narang- Fundamentals of Accounting, Kalyani Publishers*
6. *B S Raman – Financial Accounting- United Publishers*

SYLLABUS FOR OPEN COURSE IN
PHYSICAL, HEALTH AND LIFE SKILLS EDUCATION

Course:

No. of Credits: 4

No. of Contact hours: 72

Aim of the Course

The course is intended to familiarize the students towards the concepts of health and physical education and the relative contribution of physical education and sports for life skill development.

Objectives of the Course

1. To provide students a general concept of physical education and fitness.
2. To provide knowledge and understanding regarding health and nutrition.
3. To familiarize the students regarding safety education and health promotive measures for day to day life.
4. To promote an understanding of the value of sports for life skill development.

Course Outline

Module I: Physical Education and Physical Fitness

Concept of Physical Education

Meaning, Definition, Aims and Objectives of Physical Education

Need and importance of Physical Education

Physical Education & its Relevance in Inter Disciplinary Context

Physical Fitness Components

Types of Fitness –

- Health Related Physical Fitness

- Performance Related Physical Fitness

Activities for developing Physical Fitness Components

Module – II: Health Concepts of Physical Education

Definition and Meaning of Health

Dimensions and Determinants of Health

Physical Activity and Health Benefits

Effect of Exercise on Body systems

- Circulatory, Respiratory, Endocrine, Skeletal and Muscular

Role of Physical Education Programme on Community Health Promotion (Individual, Family & Society)

Module – III: Nutrition and Health

Concept of Food and Nutrition

Balanced Diet

Vitamins – Malnutrition – Deficiency Diseases

Determining Caloric Intake and Expenditure

Obesity, Causes and Preventing Measures – Role of Diet and Exercise

Module – IV: Safety Education and Health Promotion

Principles of Accident Prevention

Health and Safety in Daily Life

Health and Safety at Work

First Aid and Emergency Care

Common Injuries and their Management

Modern Life Style and Hypo-kinetic Disease - Prevention and Management

Module – V: Sports and Life Skills Education

Sports and Socialization

Physical Activity and Sports - Emotional Adjustment and Wellbeing

Substance Abuse among Youth – Preventive Measures and Remediation

Yoga, Meditation and Relaxation

Sports and Character Building

Values in Sports

Sports for World Peace and International Understanding

Note on Course Work

The course work should give emphasis on general awareness of physical education and health education in the context of promoting health and life skills. The course should also provide practical training on aspects like first aid and emergency care, injury management, etc.

The course work should incorporate discussions, seminars, assignments and records on related topics.

WORK LOAD/TEACHING COMPONENTS/CREDIT

Teaching Component

Work Load Credits

1. Theory 54 hours

2. Practical 18 hours

Total 72 hours 4 credits

COURSE V. INTRODUCTION TO DEFENCE AND STRATEGIC STUDIES

Course Rationale: This paper is designed to help students to develop a strong and analytical understanding of defence and strategic issues and also to examine a number of these issues in depth. This syllabus is designed to help the students for their higher studies option in the area of Defence and strategic studies.

Module 1

Genesis and Development:

- i. Conceptual Development -Defence and strategic Studies:
- ii. Defence and Strategic Studies-Meaning, Nature and Scope, Assumptions and Approaches Military Studies, War Studies, Peace Studies, Conflict Studies.
- iii. Defence and strategic studies in India.

(15 hours)

Module II

Concept of War and Peace:

- i. Theories and Causes of War, Principles of War, Conventional Warfare and Contemporary Warfare.
- ii. Typology of War: Nuclear War, Limited War, Revolutionary Warfare, Guerilla Warfare, Insurgency and Counter-Insurgency.
- iii. Arms Control and Disarmaments, Deterrence, Military Alliances, Pacts, Treaties, Defence Cooperation, Strategic Partnership and Security Dialogue.
- iv. Concept of Peace- Meaning and Definition, Typology of Peace.
- v. Peace Movements: Anti-Nuclear Movements.

(25 hours)

Module III

Concepts of Security:

- i. National Security, Regional Security, Comprehensive Security, Core Values, National Interests, Challenges to Security.
- ii. Non-Alignment, Balance of Power, Balance of Terror, UN and Collective Security-Relevance.

(20 hours)

Module IV

Higher Defence Organizations and National Security of India:

- i. National Security Organizations in India: Power of the President of India in relation to Defence, Role and function of Ministry of Defence, Composition and function of Cabinet Committee on Security, NSC, NSAB, NCA.
- ii. Meaning and Definition of Threat, Threat Perception, Types of threats and Threats to India's National Security.
- iii. India's Strategic environment – Immediate Neighbors, Adjacent Regions, Indian Ocean and Global structure.
- iv. India's Military Preparedness – Defence Budget, Force Structure and Organization.

(30 hours)

References:

- A. L. Venkateswaran (1967): *Defence Organisation in India*, New Delhi: Government of India, *Annual Reports of the Ministry of Defence, Ministry of Home and Ministry of External Affairs.*
- Baron Antoine-Henri De Jomini (2008): *The Art of War*, London: Wild Pub.
- Barry Buzan., *People, State and Fear: The National Security Problems in International Relations*, Sussex; Wheatsheaf Books, 1983.
- Bimal Prasad (ed) *India's Foreign Policy: Studies in Continuity and Change* (New Delhi: Vikas, 1979).
- D. G. Chandler, *The Atlas of Military Strategy: the art, theory and practice of war* (London, 1980)
- D.K Palit, *Essentials of Military Knowledge*, (New Delhi: 1989)
- David Zeigler, *War, Peace and International Politics* (Boston: Little Brown & Co., 1981)
- Dennis Kux, *Estranged Democracies: India and the United States 1941 - 1991*, New Delhi: Sage
- Field Marshal Viscount Montgomery, *A History of Warfare*, (London: Collins, 1968).
- Government of India, *The Army of India and its Evolution*, Calcutta, 1924.
- C. H. Liddle Hart (1991): *Strategy*, London: Plume.
- Harm j. Di Blij, *Systematic Political Geography* (New York: John Wiley and Sons, 1973)
- J. N Dixit *Across Borders: Fifty Years of India's Foreign Policy*, New Delhi: Picus Books, 1998).
- J.F.C., Fuller *The Foundation of the Science of War* (London, 1925)
- Jasjit Singh and Manpreet Sethi, *Nuclear Deterrence and Diplomacy* (New Delhi: Knowledge World, 2004)
- Johan Galtung, *The Struggle for Peace*, (Ahamedabad: Gujarat Vidyapeeth, 1986).
- John Baylis et al., (2016): *Strategy in the Contemporary World*, Oxford: Oxford University Press.
- Kanti Bajpai and Amitabh Mattoo (ed) *Securing India: Strategic Thought and Practice* (New Delhi: Manohar, 1996)
- Karsten Frey, *Indias Nuclear Policy*, New Delhi, Oscar publications, 2004
- Mahendra Kumar, *Theoretical Aspects of International Relations* (Agra: Shivalal Agarwala & Co, 1984)
- Michael Howard, (ed), *The Theory and Practice of War*, 1965.
- Nagendra Singh, *Defence Mechanism of Modern State*, (New Delhi: 1967).
- P S Jayaramu., *India's National Security and Foreign Policy*, New Delhi: ABC Publishers, 1978.
- Peter Paret (ed) *Makers of Modern Strategy: From Machiavelli to Nuclear Age* (Oxford, 1986)
- Pradeep Barua, "Military Develoments in India, 1750- 1850," *Journal of Military History*, vol. 58, 1994
- R. D. Dikshit *Political Geography: The Discipline and its Dimensions* (New Delhi: Tata Macgraw Hill, 1994)

Samuel B. Griffith (1971): *Sun Tzu; The Art of War*, Oxford: oxford Uni. Press.

Subramanyan swamy, (2008) *Terrorism in India: A strategy of deterrence for India's National Security*, New Delhi, Macmillan.

T.N. Kaul, *India and the New World Order*, Vol. 1, New Delhi: Gyan, 2000.

T.R Philip, (ed), *Roots of Strategy*, 1943.

V.P Malik, (2006): *Defence Planning: problems and prospective*, New Delhi: Macmillan

Williams Mare (ed) *International Relations in the Twentieth Century: A Reader* (London: Macmillan, 1989).

SYLLABUS FOR OPEN COURSE IN
PHYSICAL, HEALTH AND LIFE SKILLS EDUCATION

Course:

No. of Credits: 4

No. of Contact hours: 72

Aim of the Course

The course is intended to familiarize the students towards the concepts of health and physical education and the relative contribution of physical education and sports for life skill development.

Objectives of the Course

1. To provide students a general concept of physical education and fitness.
2. To provide knowledge and understanding regarding health and nutrition.
3. To familiarize the students regarding safety education and health promotive measures for day to day life.
4. To promote an understanding of the value of sports for life skill development.

Course Outline

Module I: Physical Education and Physical Fitness

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Meaning, Definition, Aims and Objectives of Physical Education

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Physical Education & its Relevance in Inter Disciplinary Context

Physical Fitness Components

Types of Fitness –

- Health Related Physical Fitness

- Performance Related Physical Fitness

Activities for developing Physical Fitness Components

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Definition and Meaning of Health

Dimensions and Determinants of Health

Physical Activity and Health Benefits

Effect of Exercise on Body systems

- Circulatory, Respiratory, Endocrine, Skeletal and Muscular

Role of Physical Education Programme on Community Health Promotion (Individual, Family & Society)

Module – III: Nutrition and Health

Concept of Food and Nutrition

Balanced Diet

Vitamins – Malnutrition – Deficiency Diseases

Determining Caloric Intake and Expenditure

Obesity, Causes and Preventing Measures – Role of Diet and Exercise

Module – IV: Safety Education and Health Promotion

Principles of Accident Prevention

Health and Safety in Daily Life

Health and Safety at Work

First Aid and Emergency Care

Common Injuries and their Management

Modern Life Style and Hypo-kinetic Disease - Prevention and Management

Module – V: Sports and Life Skills Education

Sports and Socialization

Physical Activity and Sports - Emotional Adjustment and Wellbeing

Substance Abuse among Youth – Preventive Measures and Remediation

Yoga, Meditation and Relaxation

Sports and Character Building

Values in Sports

Sports for World Peace and International Understanding

Note on Course Work

The course work should give emphasis on general awareness of physical education and health education in the context of promoting health and life skills. The course should also provide practical training on aspects like first aid and emergency care, injury management, etc.

The course work should incorporate discussions, seminars, assignments and records on related topics.

WORK LOAD/TEACHING COMPONENTS/CREDIT

Teaching Component

Work Load Credits

1. Theory 54 hours

2. Practical 18 hours

Total 72 hours 4 credits