



ARIGNAR ANNA GOVERNMENT ARTS COLLEGE NAMAKKAL – 637 002

(Re-Accredited with 'B' Grade by NAAC & Affiliated to Periyar University, Salem)

CRITERION I

1. CURRICULAR ASPECTS

1.3 CURRICULUM ENRICHMENT

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability in transacting the Curriculum



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1.3.1 - Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

Co-curricular and Extracurricular Activities

Our College integrates crosscutting issues relevant to professional ethics, gender, human values, environment and sustainability into the curriculum. Actually, affiliated college, the Periyar University decides the syllabus and college has to follow it. But in this limitations college do its best for above said issues.

Some of the steps taken are below:

Gender

Numbers of programs are conducted for girl students such as organization of folk dance competition, health check up camps. The committee for Woman Anti harassment and Women's club organizes programs on Woman Empowerment, Women's Day celebration. The NSS unit of our college has been very proactive in conducting different extension activities not only in college premises but also in adopted villages also. A Subject namely Women Empowerment is introduced in the BA Economics curriculum.

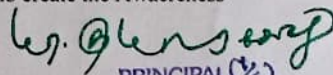
Our College Red Ribbon Club organized various programmes like Stress Management Through Human Relations, Yogam and Auto-Suggestion, Herbal medicine for Human Health, Role of Phytomedicine in Human Health, HIV/AIDS Awareness, Role of Siddha Medicine in the Prevention and Management of Diabetes.

Human Values and Professional Ethics

The college offer course on Human Rights for all first year postgraduate students and Value Education (Yoga) for all the first year under graduate students. Our College Red Ribbon Club organized a programme on Cyber Crimes and Human Rights.

Environmental Sustainability

Several departments in our college offer courses such as Plant Biochemistry, Environmental Studies, Marketing Management to maintain the issues relevant to environment and sustainability. Our college having Eco Club. Through this Eco Club create the Awaerence programme about Green Environment.



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Programme	Name of the Course	Relevant Issue			Description
		Gender	Environment and Sustainability	Human Values & Professional Ethics	
Common Paper for All UG Programmes	Value Education: Environmental Studies		Environment and Sustainability	Human Values & Professional Ethics	Focus on circumstances and treat people with humanity.
Common Paper for All UG Programmes	Value Education: Yoga		Environment	Human Values	Nurture the life force and mind, introspect and improves the moral values.
Common Paper for All PG Programmes	Human Rights			Human Values	Teaches about the moral values in human life.
Common Paper for All UG Programmes	Extension Activity		Environment and Sustainability	Human Values & Professional Ethics	Through this activity, the students are urging the public to be aware of human values and environmental sustainability.

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Programme	Name of the Course	Relevant Issue			Description
		Gender	Environment and Sustainability	Human Values & Professional Ethics	
BA (English)	Feminist Writing	Gender			Teaches gender equity and emphasizes treating people with humanity.
MA (English)	Elective-II – Women's Writing	Gender			Teaches gender equity and emphasizes treating people with humanity.
MA (English)	Journalism and Mass Communication			Human Values & Professional Ethics	Teaches how to become a journalist and emphasizes the ethics of the relevant profession.
MA (Economics)	Agricultural Economics		Environment and Sustainability		Various promotional strategies were discussed.
MA (Economics)	Environmental Economics		Environment and Sustainability		It includes environmental policy and sustainable development.
MA (Economics)	Health Economics				It enables students to understand various healthcare programs.

Dr. G. Srinivasan

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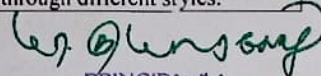


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Programme	Name of the Course	Relevant Issue			Description
		Gender	Environment and Sustainability	Human Values & Professional Ethics	
B. Com (Commerce)	Business Management			Human Values & Professional Ethics	Ethical manners in organizing business activities.
B. Com (Commerce)	Banking Theory Law & Practice			Human Values & Professional Ethics	It helps students to learn about day-to-day banking activities.
B. Com (Commerce)	Business Law			Human Values & Professional Ethics	It teaches students how business is conducted legally.
B. Com (Commerce)	Company Law			Human Values & Professional Ethics	It teaches how secretarial work can be done in a legal manner.
B. Com (Commerce)	Auditing			Human Values & Professional Ethics	It develops the ability to audit records in the organization.
BBA	Business Environment		Environment and Sustainability	Human Values & Professional Ethics	To create an environment where students perceive entrepreneurship as an attractive career option.
BBA	Entrepreneurial Development	Women Empowerment	Sustainability	Professional Ethics	Women Entrepreneurs – The Role of Entrepreneur in Economic Development
BBA	Marketing Management		Sustainability	Human Values & Professional Ethics	To help students understand sales promotion techniques, types of advertising, and various advertising media.
BBA	Human Resource Management			Human Values	Ability to acquire basic knowledge in handling human resources of an organization through different styles.


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Programme	Name of the Course	Relevant Issue			Description
		Gender	Environment and Sustainability	Human Values & Professional Ethics	
B. Sc (Physics)	Nuclear Physics		Environment and Sustainability		To motivate students to analyze the utility of nuclear energy reactors, detectors, and accelerators.
M. Sc (Physics)	Elective- III Energy Physics		Environment and Sustainability		To develop knowledge on various methods of energy generation, utilization, and conversion.
B. Sc (Chemistry)	SBEC-III Agricultural Chemistry		Environment and Sustainability		To acquire knowledge about soil properties and the treatment of plant nutrients for optimal plant growth.
M. Sc (Chemistry)	Green and Nano Chemistry		Environment and Sustainability		To learn the basics of Nano and Green chemistry for environmentally friendly practices.
B. Sc (Botany)	SBEC - II Plant Tissue culture		Environment and Sustainability		It deals with the growth of plants under laboratory conditions and contributes to environmental sustainability.
M. Sc (Botany)	Elective III Plant Biotechnology and Genetic engineering		Environment and Sustainability		This subject deals with biotechnological aspects for the benefit of the environment and its sustainability.
B. Sc (Zoology)	SBEC - V Vermitechnology		Environment and Sustainability		To utilize earthworms for the degradation of waste organic materials, promoting sanitation and facilitating agricultural re-use.

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Programme	Name of the Course	Relevant Issue			Description
		Gender	Environment and Sustainability	Human Values & Professional Ethics	
B. Sc (Geography)	Core I : Climatology		Environment and Sustainability		It deals with climate change, climate variability, and the impacts of climate on the biosphere.
B. Sc (Geography)	Core II : Oceanography		Environment and Sustainability		It deals with the world's oceans, including their dynamic interactions, fluxes, and changes, ranging from ecosystems and marine life to waves and currents, sediment movements, and seabed geology.
B. Sc (Computer Science)	Core I: Problem Solving Through C		Environment and Sustainability		It emphasizes problem-solving using programming languages and introduces standard programming techniques.
M. Sc (Computer Science)	Core Course - IX- Data Mining		Environment and Sustainability		Data mining techniques are presented to explore and analyze environmental spatial-temporal data, aiding in the design and operation of more sustainable systems.

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Ability Enhancement Compulsory Courses (AECC – Environmental Studies)

Unit 1: Introduction to environmental studies

- Multidisciplinary nature of environmental studies; components of environment – atmosphere, hydrosphere, lithosphere and biosphere.
- Scope and importance; Concept of sustainability and sustainable development.
(2 Lectures)

Unit 2: Ecosystems

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems:
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)(6 Lectures)

Unit 3: Natural Resources: Renewable and Non-renewable Resources

- Land Resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- Heating of earth and circulation of air; air mass formation and precipitation.
- Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.
(8 Lectures)

Unit 4: Biodiversity and Conservation


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- Levels of biological diversity :genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

(8 Lectures)

Unit 5: Environmental Pollution

- Environmental pollution : types, causes, effects and controls; Air, water, soil, chemical and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste..
- Pollution case studies.

(8 Lectures)

Unit 6: Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.
- Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act; International agreements; Montreal and Kyoto protocols and conservation on Biological Diversity (CBD). The Chemical Weapons Convention (CWC).
- Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context

(7 Lectures)

Unit 7: Human Communities and the Environment

- Human population and growth: Impacts on environment, human health and welfares.
- Carbon foot-print.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management: floods, earthquakes, cyclones and landslides.
- Environmental movements: Chipko, Silent valley, Bishnios of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

(6 Lectures)

Unit 8: Field work

- Visit to an area to document environmental assets; river/forest/flora/fauna, etc.
- Visit to a local polluted site – Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems-pond, river, Delhi Ridge, etc.

(Equal to 5 Lectures)

Suggested Readings:

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R.1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
4. Gleick, P.H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36-37.
7. McCully, P.1996. *Rivers no more: the environmental effects of dams*(pp. 29-64). Zed Books.
8. McNeil, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.


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9. Odum, E.P., Odum, h.T. & Andrews, J.1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M.L. 2001. *Environmental law and policy in India*. Tripathi 1992.
14. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.
15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
18. Warren, C.E. 1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E.O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on environment and Development. 1987. *Our Common Future*. Oxford University Press.
21. www.nacwc.nic.in
22. www.opcw.org

மனவளக்கலையோசனை

Value Education

Total: 30 Hours

Objectives:

Providing the Value Education to improve the Students' Good character - understanding physical health - maintaining youthfulness - Moderation in five aspects of life - Personality Development - Learning of Introspection - Understanding Cultural Values - Learning Exercises and Yogaasanas.

நோக்கம் :

மாணவர்கள் குணநல மேம்பாட்டிற்கான மதிப்புக் கல்வி அளித்தல் - உடல்நலம் பற்றித் தெளிதல் - இளமை காத்தல் - ஐந்தில் அளவுமுறை கைகொள்ளல் - நற்குணங்களை வளர்த்தல் - அகத்தாய்வுப் பயிற்சிகளைக் கற்றுக் கொள்ளுதல் - பண்பாடு மதிப்புணர்தல் - உடற்பயிற்சி, யோகாசனங்கள் கற்றுக் கொள்ளல்.

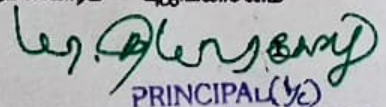
Unit : 1 Yoga and Physical Health

Health - Meaning and Definition - Physical Structure - Three bodies - Five limitations - Simplified Physical Exercises - Hand, Leg, Breathing, Eye exercises - Kapalabathi, Makarasana 1,2 , Massage, Acu pressure, Relaxation exercises - Yogasanas - Pranamasana - Hastha Uttanasana - Pada Hasthasana - Aswa Sanjalana Asana - Thuvipatha asva Sanjalana asana - Astanga Namaskara - Bhujangasana - Atha Muktha Savasana - Aswa Sanjalana Asana - Pada Hasthasana - Hastha Uttanasana - Pranamasana -

Padmasana - Vajrasana - Ardha katti Chakrasana - Viruchasana - Yogamudra - Patchimothasana - Ustrasana - Vakkarasana - Salabasana

அலகு 1 : யோகமும் உடல்நலமும்

வாழ்க்கை நலம் - உடலமைப்பு - மூன்று உடல்கள் - ஐந்தில் அளவுமுறை - எளியமுறை உடற்பயிற்சி - கை, கால், முச்சு, கண் பயிற்சிகள் - கபாலபதி, மகராசனம், உடல் வருடுதல், அக்கு பிரிர், உடல் தளர்த்தல் பயிற்சி முறை - ஆசனம் - பிராணாமாசனம் - ஹஸ்த உட்டானாசனம் - பாத ஹஸ்தாசனம் - அஸ்வ சஞ்சலான ஆசனம் - துவி பாத அஸ்வ சஞ்சலான ஆசனம் - அஸ்டாங்க நமஸ்காரம் - பஜங்காசனம்



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- அத முக்த சாவாசனம் - அஸ்வ சஞ்சலான ஆசனம் - பாத ஊஸ்தாசனம் - ஓஸ்த உட்டானாசனம் - பிராணாமாசனம் - பத்மாசனம் - வஜ்ராசனம் - அர்த்த கட்டி சக்கராசனம் - விருச்சாசனம் (ஏகபாதாசனம்) - யோகமுத்தரா - பச்சி மோத்தாசனம் - உஸ்ட்ராசனம் - வக்கராசனம் - சலபாசனம்

Unit - 2 : Greatness of Life Force and Mind

Maintaining youthfulness - Postponing the ageing process - Sex and spirituality - Significance of sexual vital fluid - Married life - Chastity - Development of mind in stages - Mental Frequencies - Methods for Concentration - Meditation and its Benefits

அலகு 2 : உயிர்வளமும் மனவளமும்

இளமை காத்தல் - முதுமையைத் தள்ளிப் போடுதல் - பால் உணர்வும் ஆன்மிகமும் - வித்தின் மகிமை - இல்லறவாழ்வு - கற்புநெறி - மனம் அறிவாக இயங்கும் பத்துப் படி நிலைகள் - மன அலைச்சுழல் - தவ நிலைகள் - தவத்தின் பயன்கள்

Unit - 3 : Personality Development - Sublimation

Purpose and Philosophy of Life - Introspection - Analysis of Thought - Practice of Analysis of Thoughts - Moralization of Desire - Practice for Moralization of Desires - Neutralization of Anger - Practice - Strengthening of will-power.

அலகு 3 : குணநலப்பேறு

வாழ்வின் நோக்கமும், வாழ்க்கைத் தத்துவமும் - அகத்தாய்வு - எண்ணம் ஆராய்தல் - எண்ணம் ஆராய்தல் பயிற்சி முறை - ஆசை சீரமைத்தல் - ஆசை சீரமைத்தல் பயிற்சி முறை - சினம் தவிர்ந்தல் - சினத்தை வெல்ல பயிற்சி முறை.

Unit - 4 : Human Resources Development

Eradication of Worries - Analysis and Eradication practice - Benefits of Blessings - Effect of good vibrations - Greatness of Friendship - Guidance for good Friendship - Individual Peace and world peace - Good cultural behavioral patterns

அலகு 4 : மனிதவள மேம்பாடு

கவலை ஒழித்தல் - கவலை ஒழித்தல் பயிற்சி முறை - வாழ்த்தும் பயனும் - அலை இயக்கம் - நட்பு நலம் - நல்ல நட்பு - தனிமனித அமைதி - உலக அமைதி - நல்லொழுக்க பண்பாட்டு முறைகள்.

Unit - 5 : Law of Nature

Unified force - Cause and effect system - Unity of thought deed and Genetic Centre -
Love and Compassion - Gratitude - Cultural Education - Fivefold culture.

அலகு 5 : இயற்கை நியதி

ஒருங்கிணைப்பு ஆற்றல் - செயல்விளைவுத் தத்துவம் - கருமையத்தாய்மைக்கும்
வளத்துக்கும் ஏற்ற செயல்கள் - அன்பும் கருணையும் - நன்றியுணர்வு - பண்பாட்டுக்கல்வி
- ஐந்தொழுக்கப் பண்பாடு

Note: Practical orientation be introduced to the learners

Text Books:

Manavalakalai Yoga

World Community Service centre
Vethathiri Pathippagam - Erode

Reference Books:

1. Vethathiri Maharishi, 2011, Journey of Consciousness, Erode, Vethathiri Publications.
2. Vethathiri Maharishi, 2014, Simplified Physical Exercises, Erode, Vethathiri Publications,
3. Vethathiri Maharishi, 2004, Unified force, Erode, Vethathiri Publications
4. Yoga for modern age - Thathuvagnani Vethathiri Maharishi
5. Sound Health through yoga - Dr. K. Chandrasekaran, November 1999 Prem Kalyan Publications, Madurai
6. Light on yoga - BKS. Iyenger
7. எளிய உடற்பயிற்சி - உடற்பயிற்சி - வேதாத்திரி மகரிஷி, முதல் பதிப்பு 1984, 91ஆம் பதிப்பு 2016, ஈரோடு வேதாத்திரி பதிப்பகம்.
8. Thathuvagnani Vethathiri Maharishi - Kayakalpa yoga - First Edition 2009 - Vethathiri Publications, Erode.
9. Environmental Studies - Bharathidasan University Publication Division
10. மனவளக்கலை தொகுப்பு - 1, 2 - தத்துவஞானி வேதாத்திரி மகரிஷி
11. Religion, Science and Culture - Dr. S. Radhakrishnan
12. ஜீவகாந்தம் - தத்துவஞானி வேதாத்திரி மகரிஷி
13. Social Yoga System - Dr. K. Satyamurty, Vedadri Centre for Brahmajnana, Guntur, AP
14. இல்லந்தோறும் இயற்கை உணவுகள் (Nature Dietes) - Dr. மதுரம் சேகர்.
15. Genetic centre - Thathuvagnani Vethathiri maharishi


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HUMAN RIGHTS

Objective

To impart the basic ideas about Human Rights at post graduations level. This paper provides different aspects of human rights which includes children and women. Students can learn not only their basic rights bus also can understand the duties to be carried out in the days to come.

Unit I: Introduction to Human Rights

Human Rights: Meaning Definitions – Origin and Growth of Human Rights in World – Need and types of Human Rights – Constitutional Provision for Protection of Human Rights – UNHRC (United Nations Human Rights Commission).

Unit II: Classification of Human Rights

Right to Liberty – Right to life – Right to Equality – Rights to Dignity – Right against Exploitation – Right to work – Right to Personal Freedom – Right to Freedom of Expression – Right to Education – Right to information – Right to Clean Environment.

Unit III: Rights of Women and Children

Rights of Women – Gender Equity – Female Feticide and Infanticide and Sex Selective Abortion – Physical Assault and Sexual Harassment – Domestic Violence – Violence at Work Place – Right for Equal Pay – Remedial Measures.

Rights to Children – Protection of Rights – Survival Rights – Participation Rights – Development Rights – Role of UN Convention on Rights of Children.

Unit: IV: Multi – Dimensional aspects of Human Rights

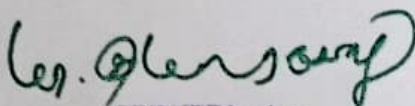
Labour Rights – Bonded Labour – Chid Labour – Contract Labour – Migrant Labour – Domestic Women Labour – Rights of Ethnic Refugees – Problems and Remedies – Role of Trade Union in protecting the Rights of Labourers.

Unit V: Grievance and Redressal Mechanism

Redressal Mechanisms at National and International Levels - Structure and Functions of National and State level Human Rights Commission - Rights to Information Act, 2005 - Formation of UNO, Universal Declaration of Human Rights, 1948 - Human Rights Act, 1993 - Constitutional Remedies and Directives Principles of State Policy.

References:

1. Baradat Sergio and Swaronjali Ghosh, Teaching of Human Rights : Dominant Publishers and distributors, New Delhi, 2009.
2. Roy A.N. Human Rights Achievements and challenges : Vista international Publishing house, Delhi, 2005.
3. Asish Kumar das and Prasant Kumar Mohanty, Human Rights in India: Sarup and Sons. New Delhi. 2007.
4. Bani Borgohain, Human Rights Social Justice and Political Challenge. Kaniska Publishers and distributors New Delhi, 2007
5. Velan, G. Human Rights and Development Issues: The associated publishers, Ambala cantt. 2008.
6. Meena, P.K. Human Rights theory and practice: Murali Lal and Sons, New Delhi, 2008.
7. Bhavani Prasad Panda, Human Rights Development and environmental law: Academic excellence, Delhi, 2007.
8. Visiwanathan, V.N. Human Rights - Twenty First Century Challenges: Kalpaz Publications, New Delhi, 2008.
9. Ansari, M.K. Protecting Human Rights: Max Ford Books, New Delhi, 2006.
10. Rao, M.S.A. Social Movements in India - Social Movements and Social Transformation in India Vol.1 & 2: Manohar publications, New Delhi. 1978.


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B A ENGLISH

SEMESTER - V

CORE - IX-FEMINIST WRITING

OBJECTIVES:

- To introduce feminist writers and their works towards equality
- To examine, question, and change against gender roles
- To alter inequalities between genders across societal and political arenas

OUTCOME:

- Study supports the feminist goals of defining, establishing and defending equal civil, economic and social rights for women
- It teaches how the concepts of gender, influence social and interpersonal behaviour
- Learners acquire the impact of gender identity on human relations historically and cross-culturally

UNIT - I POETRY

1. Judith Wright- Woman to Man
2. Maya Angelou – Phenomenal Woman
3. Kishwar Naheed – I am not that Woman
4. Carol Ann Duffy- Originally
5. Prathiba Nandakumar - Poem

UNIT - II PROSE

1. Jean Rhys – The Day they Burned the Books
2. Mahadevi Varma – The Art of living

UNIT - III DRAMA

Susan Glaspell-Trifles

UNIT - IV FICTION

Anita Nair – Ladies Coupe

UNIT - V SHORT STORY

1. Katherine Mansfield – An Ideal Family
2. Alice Munro – The Photographer

Recommended Book:

Women's Writing: An Anthology, edited by S. Annapoorani, mainspring publishers

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M.A. ENGLISH SYLLABUS 21-22 PERIYAR UNIVERSITY

M.A. ENGLISH -SEMESTER IV

CORE-XIV

JOURNALISM AND MASS COMMUNICATION

Unit – I

1. What is News – Concept and Definition – News Values
2. Duties and Responsibilities of a Journalist
3. Various types of News-follow-up, Curtain Raiser, Human Interest Story etc.
4. News Story Structure Headlines-exercise in writing Headlines-Lead-Significance and its Types
5. Page makeup – its importance and types

Unit –II Reporting – Editing

1. News gathering-sources of news-Hard and Week sources of News – Beats
2. Reporting (translation)
3. Editing – Translation& its role

Unit III

1. Definition of Mass Communication – Nature and Scope – role of Communicator – Communication process
2. Types of Communication – Downward, Upward, Horizontal, Lateral, Extra-organisational.
3. Communication Barriers – how to remove them.

Unit IV

1. Functions of Mass Media
2. Mass Media-role of Press-role of Radio-role of T.V

Unit V

1. Importance of film Communication-different types of films-division-Censor Board-film Awards
2. Precis in News writing
3. Communication in the coming decade-Computer and Mass Communication – Internet

REFERENCE

1. Keval J.Kumar – Mass Communication in India (Third Edition) Jaico Publishing House, Mumbai
2. N.Vembusamy – ABC of Mass Media, Blackie Books
3. Rangaswami Parthasarathy – Basic Journalism, Macmillan
4. G.K Puri – A Complete Guide to Journalism for All MS Publications
5. K.M Shrivastava – News Reporting and Editing. Sterling Publishers Private Limited
6. PLV.Narasimha Rao- Style in Journalism, Orient Longman


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CORE VII-HUMAN RESOURCE MANAGEMENT

Course Objective:

- To provide knowledge about Human resource management and its managerial, operative functions.

Course Outcome:

On successful completion of this course, the students will

- Analyze the process of Job analysis and its importance as a foundation of human resource management practice.
- Understand the practical knowledge on e-HRM, e-compensation, e-learning

Unit I:

Human Resource Management – Definition, Nature, objectives and functions of HRM - Role of Human Resource Manager. Human Resource Planning – Objectives, importance and Human Resource Planning process.

Unit II:

Job Analysis – Meaning and Process of Job Analysis - Job Description – Job specification. Recruitment – Meaning, factors affecting recruitment and sources of recruitment. Selection – Meaning and selection process - Placement and Induction.

Unit III

Training – meaning – need for training – Training Methods. Executive Development – meaning – objectives – Executive development methods. Difference between Training and Development.

Unit- IV

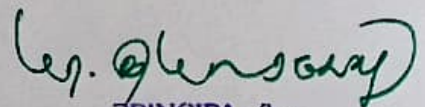
Performance Appraisal – Meaning, objectives of Performance Appraisal - Methods of Performance Appraisal. Job Evaluation – definition – methods of job evaluation - Difference between Performance appraisal and Job Evaluation.

UNIT – V

e-HR - Nature of e-HRM, e-learning, e-compensation -Recent Techniques in HRM: HRM audit, Knowledge management, ethics in HRM.

TEXT BOOK

- S.S. Khanka, Human Resource Management, Sulthan Chand& Sons, New Delhi.



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CORE : XIII INTERNATIONAL BUSINESS ENVIRONMENT

OBJECTIVES

1. Enabling learners understand the concepts, trade theories and importance of international business environment.
2. Helping the students acquire the required skills to be an effective management professional in an internationalized business environment.
3. Facilitating the learners understand, analyze and take decisions for a given international business environment.
4. Imparting the knowledge about international cultural, political, legal, technological, economic, demographic and natural environment.
5. Inculcating about the changing international business marketing environment.

OUTCOMES

1. Learners understand the concepts, trade theories and importance of international business environment.
2. Students acquire the required skills to be an effective management professional in an internationalized business environment.
3. Learners understand, analyze and take decisions for a given business environmental situation.
4. Students acquire the knowledge about the functional of international organizations associated with international business.
5. Students by understanding the changing international business environment will opt for higher studies, research, employment and entrepreneurship.

UNIT - I

International Business: Introduction, Difference between international and national business, stages of internationalization, international orientations.

Globalization: Concept, driving and restraining forces of globalization.

UNIT - II

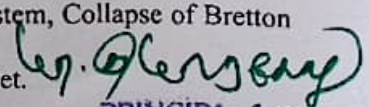
International Trade theories: Introduction, Why do nations trade, Theories of International trade: Mercantilism, Absolute advantage, Comparative advantage, Heckscher- Ohlin, Product life cycle theory and Porter's diamond model.

UNIT - III

International Business Environment: Introduction, Economic, Demographic and Socio-cultural environment. Political, Legal, Natural and Technological environment.

UNIT - IV

International Monetary System: The pre-Bretton woods period, The Bretton woods system, Collapse of Bretton woods system (Including meaning of exchange rate, types of exchange rate system).
International banking, Bank for international settlements (BIS) and Euro currency market.


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UNIT - V

General Agreement on Tariff and Trade (GATT), World trade organization (WTO).
International Monetary Fund (IMF), Asian Development Bank, UNCTAD.

TEXT BOOK:

1. Francis Cherunilam. 2009. International Business: Text and Cases. [Fifth Edition]. PHI Publishing House, New Delhi.

REFERENCE BOOKS:

1. Arvind V. Phatak., Rabi S. Bhagatand and Roger J. Kashlak. 2010. International Management: Managing in a diverse and dynamic global environment. [Second Edition] Tata McGraw Hill, New Delhi.
2. Charles W L Hill and Arun K Jain. 2014. International Business: Competing in the Global Market Place. [Tenth Edition]. Tata McGraw Hill, New Delhi.
3. Bhalla, V.K. and Shiva Ramu, S. 2010. International Business: Environment and Management. [Thirteenth Edition]. Anmol Publications Pvt. Ltd., New Delhi.
4. John D. Daniels., Lee H. Radebaugh and Daniel P. Sullivan. 2012. International Business: Environment and Operations. [Fourteenth Edition]. Pearson Education, New Delhi.

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CORE PHYSICS IX - NUCLEAR PHYSICS

SEMESTER : VI

HOURS/WEEK : 5

COURSE CODE : 21UPH09

CREDITS 5

OBJECTIVES

- To understand the fundamentals of the formation of a nucleus, composition of a nucleus with their energy.
- To enable the students to acquire knowledge of nuclear energy, fission and fusion with a particle accelerator.

LEARNING OUTCOMES

- Acquire knowledge and apply it.
- Acquire knowledge of the structure of the nucleus.
- understand the formation of the nucleus and its binding energy
- students can analyse the energy released by the nucleus during the fission and fusion process.

UNIT I NUCLEAR STRUCTURE

General properties of the nucleus (Size, Mass, Density, Charge, Spin, Angular momentum, Magnetic dipole moment) – Experimental measurement of nuclear radius – mirror nuclei method- Binding energy – BE/A and stability of nucleus – Packing fraction – Nuclear forces (Definition, Properties, Meson theory) – Models of nuclear structure – Liquid drop model – Semi-empirical mass formula – Shell model – Collective model.

UNIT II DETECTOR AND PARTICLE ACCELERATORS

Interaction between the energetic particles and matter – Heavy charged particles – Electrons – Gamma ray-Ionization chamber – Solid State detector – GM counter – Wilson Cloud chamber – Bubble Chamber - Nuclear emulsion – Linear accelerators – Synchrotron – Synchrocyclotron - Proton Synchrotron – Betatron.

UNIT III RADIOACTIVITY

Natural Radioactivity - Velocity and range of alpha particles – Alpha, Beta and Gamma rays – Properties – Determination of Charge of Alpha particle – Fermi's theory of Beta decay – Origin of gamma rays - Determination of Wavelength of Gamma rays - Laws of radioactivity – Soddy-Fajan's displacement law – Law of radioactive disintegration – Half-life period – Mean life period – Decay constant - Artificial radioactivity – Preparation of radioelements – Application of radioisotopes.

UNIT IV NUCLEAR FISSION AND FUSION REACTIONS

Nuclear fission – energy released in fission – Bohr and Wheeler's theory of nuclear fission – Chain reaction – Multiplication factor – Critical size and critical mass – Energy balance and Q value – Natural Uranium and chain reactions – Atom Bomb – Nuclear reactor – Nuclear fusion – Source of Stellar energy – Carbon Nitrogen cycle – Proton-Proton cycle – The hydrogen bomb – Controlled thermonuclear reactions – Transuranic elements.

UNIT V COSMIC RAYS AND ELEMENTARY PARTICLES

Cosmic rays – Origin of cosmic rays – Latitude effect – Azimuth effect – Altitude effect – Seasonal, Diagonal changes – Primary and Secondary Cosmic rays cascade theory of shower – Pair production and Annihilation – Elementary particles – Classification of elementary particles – particles and antiparticles – Antimatter – Fundamental interactions – Quark model.

BOOKS FOR STUDY

1. R. Murugesan and Kiruthiga Sivaprasath, Modern Physics, S. Chand & Co., New Delhi (2016)
2. N. Subramaniam, Brij Lal and JivanSeshan, Atomic and Nuclear Physics, S. Chand & Co., New Delhi,(2013)
3. M.L. Pandya and R.P.S. Yadav, Elements of Nuclear Physics, KNRN Publication,(2015)
4. D.C.Tayal, Nuclear Physics, Himalaya Publishing House (2011)
5. B.N. Srivatsava, Basic Nuclear Physics and Cosmic rays, PragtiPrakashan publishers, Meerut (2011)

BOOKS FOR REFERENCE

1. T.A. Littlefield, N. Thorley, Atomic and Nuclear Physics, Medtec, New Delhi (2013)
2. Max Born, Atomic physics, Dover Publications Inc, 8 edition, (1990)
3. Samuel Glasstone, A Sourcebook on Atomic energy, Krieger Publishing Company; 3rd Revised edition(2014)
3. Henry Semat, John R. Albright, Introduction to Atomic and Nuclear Physics, Fletcher & Son Ltd, Norwich; (1972)
4. Hugh D. Young and Roger A. Freedman, Sears & Zemansky's University Physics with Modern Physics, 14th Edition (2015).
5. Bernard L. Cohen, Concepts of Nuclear Physics, McGraw-Hill Inc., US (1971)



LIST OF EXTRA DISCIPLINARY COURSES (EDC)

EDC PAPER I - ENERGY PHYSICS (21PHEDC)

UNIT I: INTRODUCTION TO ENERGY SOURCES

Energy sources and their availability - Types of energy sources - World energy futures - Prospects of renewable energy sources - Measurement and estimation of solar radiation. Use of nanostructures and nanomaterials in fuel cell technology - Outline of solar cell developments - Physical sources of sunlight - Types of solar energy converter - Solar energy measuring instruments.

UNIT II: SOLAR CELLS

Solar cells for direct conversion of solar energy to electric powers - Solar cell parameter - Solar cell electrical characteristics - Efficiency - Single crystal silicon solar cells - Polycrystalline silicon solar cells - Concepts of quantum dot solar cells - Dye sensitized solar cell - Organic solar cells - hybrid solar cell - Cadmium sulphide solar cells - other types of advanced solar materials and solar cell devices.

UNIT - III: SOLAR ENERGY - APPLICATIONS

SOLAR HEATERS: Types of solar water heater - Solar heating system - Collectors and storage tanks - Solar ponds - Solar cooling systems. Solar distillation - Solar pumping - Solar furnace - Solar cooking - Solar green house.

UNIT - IV: WIND ENERGY

Wind energy - basic principle and components of wind energy conversion system - types of wind machines - scheme of electric generation-applications of wind energy-Hydrogen energy - hydrogen production - storage-utilization of hydrogen gas-hydrogen as an alternative fuel for motor vehicles - safety and management.

UNIT - V: BIOMASS ENERGY

Biomass conversion Technologies - wet and dry process - Photosynthesis.

Biogas Generation: Introduction - basic process and energetic - methods for maintaining biogas production - advantage of anaerobic digestion.

Classification of Biogas plants: continuous and batch type - the dome and drum types of Biogas plants - biogas from waste fuel - properties of biogas - utilization of biogas.

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**BOOKS FOR STUDY & REFERENCE:**

1. Energy - An Introduction to Physics - R.H.Romer, W.H.Freeman. (1976)
2. Principles of Solar Engineering - Kreith and Kreider, McGraw Hill Pub, 1978.
3. Applied Solar Energy, A.B.Meinel&A.P.Meinel, Addison Wesley Publishing Co.(1976).
4. Solar Energy, M.P.Agarwal, S. Chand and Co., New Delhi (1983).
5. Non-Conventional Energy Sources, G.D.Rai, Khanna Publications, Delhi (2009).
6. Renewable Energy Resources-John Twidell & Tony Weir, Taylor & Francis Group, 2006.
7. The Physics of Solar Cells by Jenny Nelson (Published by Imperial college press)
8. Solar Energy utilization - G.D. Rai - Khanna Publishers - Delhi 1987.
9. Solar Energy, G.N.Tiwari, Narosa Publishing House, New Delhi (2008)

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M.Sc. CHEMISTRY SEMESTER - I
ELECTIVE I
Paper II - NANO AND GREEN CHEMISTRY
(75 Hours)

OBJECTIVES

1. To learn about the synthesis, properties and applications of Nanomaterials.
2. To learn the tools for Characterisation of Nanomaterials.
3. To understand the green concept of organic reactions.

UNIT I Introduction and Synthesis of Nano materials (15 Hours)

Definition - Classification - Historical perspective - synthetic approaches - physical methods - electric arc method - laser ablation - physical vapour deposition - sputtering - chemical methods - reduction of metal ions - solvo thermal synthesis - photo chemical synthesis - electro chemical methods (anodic and cathodic process) - thermolysis - sono chemical routes - synthesis of semiconductor nano materials - sol - gel methods and biological methods of synthesis.

Unit II Properties and applications of Nanomaterials (15 Hours)

Nanoclusters- Catalytic, electrical and optical and magnetic properties of nanomaterials. Applications- Nano catalyst- Nano sensors- Nano medicines- Bioimaging with quantum dots, Cancer Therapy- nano particles in environmental remedy- Removal of toxins- water treatment.

UNIT III Tools for Characterisation of Nano Materials (15 Hours)

Electron microscope - SEM - TEM - STM - AFM - X-ray Diffraction.

Spectroscopy: UV-visible spectroscopy- FTIR - Raman spectroscopy- x-ray photo electron spectroscopy- Luminescence- Photoluminescence

Tools for nano structures: Nanolithography- Electron beam- Ion beam- Nano sphere- self- assembled monolayers - Coreshell- Nanoshells

Unit IV Introduction to Green chemistry (15 Hours)

Choice of starting materials, Choice of reagents, Choice of catalysts- biocatalyst, polymer supported catalysts, Choice of solvents. Synthesis involving basic principles of green chemistry, examples- Synthesis of Adipic acid, Methyl methacrylate, Paracetamol. Ultrasound assisted reactions- Esterification, Reductions, Coupling reactions, Strecker synthesis and Reformatsky reactions.

Unit V Solvent free organic synthesis (15 Hours)

Reactions on solid supports, Phase transfer catalysis, Solvent free esters saponification, Reactions without support or catalyst- examples, Microwave assisted reactions in water- Oxidation of toluene to benzoic acid, Microwave assisted reactions in organic solvent- Diel's - Alder reaction, Coupling reactions (Stille, Suzuki, Heck, Sonogashira), Solvent free microwave assisted organic synthesis, Microwave activation and heating. Advantages of microwave exposure and specific effects of microwaves, Organic synthesis under microwaves- benefits and limitations.

REFERENCE BOOK

1. T. Pradcep, NANO: The Essentials, Tata McGraw Hill Education Private Limited, 2012
2. B. S. Murty, P. Shankar et al, Textbook of Nanoscience and Nanotechnology, Universities Press (INDIA) Private Limited ,2012
3. Sulabha K. Kulkarni, Nanotechnology: Principles and Practices, Springer, 2015
4. RashmiSanghi, M.M.Srivastava, Green chemistry, Environment friendly Alternatives, Narosa Publishing house, 2007.
5. V.Kumar, An Introduction to Green chemistry, Vishal Publishing Co. Jalandhar, 2007.


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HEALTH ECONOMICS

Course Objectives

1. The main aim of the paper is to enable a student to teach basic economic issues and aspects of health economics and to know about health cost, efficiency and healthcare system.
2. The emphasis will be on key economic concepts that health economists use to analyze health and healthcare policies of India.

UNIT I : INTRODUCTION TO HEALTH ECONOMICS

Definition and Dimensions of Health – Morbidity – Mortality and Life Expectancy; Occupational Health Hazards; Determinants of Health –Malnutrition Demand for Health Services, Health Indicators and their Correlation with the Level of Economic Development. Infant Mortality Rate, MMR, BMI, CMR, TFR.

UNIT II : ECONOMIC EVALUATION OF HEALTH

Need for Economic Evaluation – Theoretical bases of Economic Evaluation. Practical steps in Economic Evaluation: Cost Analysis (CA) – Cost Benefit Analysis (CBA) – Cost Effective Analysis (CEA) and Cost Utility Analysis (CUA); Issues in the Measurement of Costs– Hospital cost inflation; Measuring Benefits in Economic Evaluation – Valuing of Health Outputs.

UNIT III : HEALTH CARE MARKETS

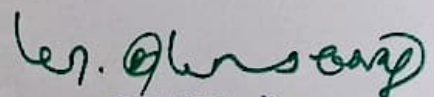
Contracting – Transaction Cost – Health Sector contracting. Laissez-faire approach to healthcare industry, Market Structures – Imperfect Competition – Provider Competition in Health Care – Monopoly – Oligopoly and Contestability; Hospital and Health provider Behaviour and Motivation – Profit Maximization; Economics of Regulation – Regulation in Health Sector.

UNIT IV: INDIA'S HEALTH CARE SYSTEM

Health Care System – Public and Private Health Systems; Health Care Delivery in India – Health Care Financing – Trends in Public Expenditure; Social Security schemes. Health Sector Reforms – Private – Public Mix– User Fees, NFHS; Indian National Health Policy, NRHM.

UNIT V : HEALTH SECTOR IN INDIA

National health policies of India - Regional disparities in health sector - Variations in health sector - Across different social groups, age groups, religious groups and gender groups - Health statistics at aggregate and regional level- Health Infrastructure and Delivery Systems in India



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Course outcome

- a. Use economic theory of health to understand and evaluate policy proposals.
- b. Understand how to use empirical evidence to evaluate an economic argument.
- c. Understand and use the concepts of health care market
- d. Appraise the health care system and policies in India.

Books for study

1. Briggs, A., Sculpher, M. and Claxton, K. (2006) Decision Modelling for Health Economic Evaluation. Oxford: Oxford University Press.
2. Morris, S., Devlin N., Parkin. D., Spencer, A. (2012). Economic Analysis in Health Care, 2nd Edition. London, Wiley
3. World Health Organisation, 2000. The World Health Report 2000; Health Systems: Improving Performance. World Health Organisation, Geneva.

Books for Reference

1. Culyer AJ. The dictionary of health economics, 2nd edition. Cheltenham, UK: Edward Elgar Publishers; 2010.
2. Donaldson C, Gerard K, Jan S, Mitton C, Wiseman V. Economics of health care financing: the visible hand, 2nd edition. Palgrave; 2004.
3. Santerre RE, Neun SP. Health economics: theories, insights, and industry studies, 5th edition. Mason, OH: Thomson/South-Western; 2010.
4. Dr.I.Sundar (2012) Health Economics and Health Care Management, Serials Publications – New Delhi – 110 002.
5. Dr.C.Dhandapani (2013) Prevention of Diseases in India, Global Research Publications, New Delhi.
6. Dr.C.Dhandapani (2012) Health Issues and Challenges, Global Research Publications, New Delhi.
7. Lindsay, C.M., 1980. National Health Issues: The British Experience. Roche Laboratories, Nutley, UK

Web sources

www.nlm.nih.gov/nichsr/edu/healthecon
<https://health-medical-economics.imedpub.com/>
<https://www.healtheconomics.com/>


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AGRICULTURAL ECONOMICS

Course Objectives

1. To make the students to comprehend the core aspects of agricultural economics and its scope and importance.
2. To analyze the various theories on agricultural development and their using in research context.
3. To make awareness on agricultural produce and channels of marketing.
4. To elevate the students to grasp the different sources of agricultural finance and its operations.
5. To provide the students information on various agricultural polices pertaining to agricultural commodities.

UNIT I: INTRODUCTION

Agricultural Economics - Scope and significance of agriculture- role of agriculture in India's development- inter-sectoral linkages - an overview.

UNIT II: AGRICULTURE PRODUCTION AND DEVELOPMENT

Schultz's Transformation model – Jorgensen's model of development of dual economy - Fei and Ranis model of economic growth – Mellor's model of agricultural development – Boserup model of agricultural development-- production function: Cobb Douglas, Spillman and Cobweb theorem.

UNIT III: AGRICULTURAL LABOUR

Agricultural labour: types – supply of labour – problems - rural unemployment: types, consequences and remedial measures- minimum wages for agricultural workers - an evaluation poverty eradication programmes – recent wage and self-employment programmes.

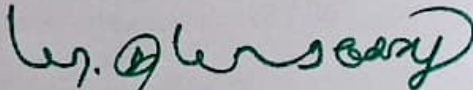
UNIT IV: AGRICULTURAL MARKETING FINANCE

Agricultural finance: meaning, nature, types, sources and problems of agricultural finance- cooperatives in rural finance- role of commercial banks and NABARD in rural finance- farm capital - meaning, types, and marginal efficiency of farm - capital and capital formation in agriculture.

UNIT V: AGRICULTURAL PRICE POLICY

Objectives and need of agricultural price policy – stability and trends in agricultural prices – evaluation of agricultural price policy in India – agricultural exports - current issues in Indian agriculture.

Course Outcomes


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- Students will be in a position to understand the overview of agricultural economics and basic knowledge of production function.
- Students acquire knowledge on knowing various models on agriculture and its development.
- Students will be able to understand the agricultural marketing and its operations.
- Students will be able to understand different sources of agricultural finance.
- Students will be able to understand the government pricing policies and issues.

Books for Study

- Lekhi R.K. and Joginder Singh, 2015, Agricultural Economics: An Indian Perspective, Kalyani Publishers, Ludhiana.

Books for Reference

- Mridula Mishra, 2010, Agriculture and Food Economics, Serials Publication, New Delhi.
- Shovan Raj, 2009, Handbook of Agriculture, Oxford University Press, New Delhi.
- John B. Penson, Oral Capps, Parr Rossan and Richard T. Woodward, 2019, Introduction to Agricultural Economics, Pearson Publication, New Delhi.
- Nirmala Ravi Kumar K, 2016, Agricultural Production Economics, Astral International Pvt. Ltd, New Delhi.
- David. L. Derbertin, 1986, Agricultural Production Economics, Macmillan Publishing Company, New York.
- Bilgrami S.A.R, 2000, An Introduction to Agricultural Economics, Himalaya Publishing House, Mumbai.
- Sadhu An, Singh Amarjit and Singh Jasbir, 2014, Fundamentals of Agricultural Economics, Himalaya Publishing House, Delhi
- Acharya SS & Agarwal NL 2004, Agricultural Marketing in India – Oxford & IBH.
- JanardhanaRao. N, 2005, Indian Agriculture: Issues and Perspectives, ICFAI University Press, Hyderabad.

Web Resources

www.uky.edu/~deberti/agprod5.pdf

www.freebookcentre.net › Biology Books › Agriculture Books

<https://www.scribd.com/document/118417639/Agricultural-Economics-Notes>

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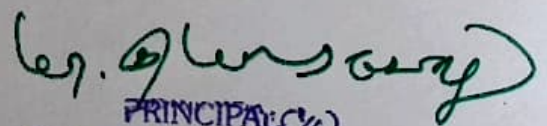
Semester - II
Core Theory - II
OCEANOGRAPHY

Paper Code: 21UGG02

- Unit I: Oceanography:** Scope, Content, Significance, Distribution of Land and Sea – Continental Shelf, Continental Slope, Deep Sea Plain, Oceanic Deeps and Submarine Canyons.
- Unit II: Relief Features of the Major Oceans:** Atlantic, Pacific and Indian Ocean – Horizontal and Vertical Distribution of Seawater Temperature, Salinity: Factors Affecting Salinity and Distribution.
- Unit III: Ocean Water Circulation:** Factors Influencing Ocean Circulation – General Circulation of Ocean Currents, Currents of the Atlantic, Pacific and Indian Ocean, Waves and Tides: Definition and Types, Tsunamis: Origin and Effects.
- Unit IV: Marine Sediments:** Types of Marine Sediments: Classification and Distribution – Coral Reefs types.
- Unit V: Marine Resources:** Types of Marine Resources – Distribution and Uses – Tidal Energy.

Reference Books:

1. Anikouchine, W.A. and Sternberg, R.W. (1973). *The World Oceans - An Introduction to Oceanography*. Prentice-Hall, Englewood Cliffs, New Jersey.
2. Garrison, T. (1998). *Oceanography: An Invitation to Marine Science (3rd Edition)*, Wadsworth Publishing Company, Belmont, California.
3. Gerald, S. (1980). *General Oceanography: An Introduction*. John Wiley & Sons, New York.
4. King, C.A.M. (1972). *Beaches and Coasts*. Edward Arnold, London.
5. King, C.A.M. (1975). *Oceanography for Geographers*. Edward Arnold, London.
6. Ramasamy, G. (1970). *Oceanography (Tamil Edition)*. Tamil Nadu Text Book Society, Chennai.
7. Sharma, R.C. and Vatal, M. (1970). *Oceanography for Geographers*. Chaitanya Publishing House, Allahabad.


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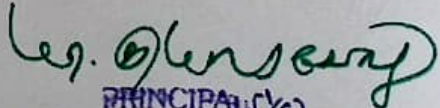
Semester - I
Core Theory - I
CLIMATOLOGY

Paper Code: 21UGG01

- Unit I: Definition of Climatology:** Rotation and Revolution of the Earth, Solstice, Equinox and Seasons, Elements of Weather and Climate, Composition and Structure of the Atmosphere, Insolation: factors affecting Insolation, Global energy budget, Horizontal and Vertical Distribution Inversion of Temperature and affecting factors.
- Unit II: Atmospheric Pressure:** Diurnal and Seasonal Variations - Vertical and Horizontal distribution and factors affecting - Pressure Gradient - Coriolis force and Deflection. Winds: Causes and Types - Jet stream, planetary winds, Monsoon and Local winds.
- Unit III: Atmospheric Moisture and Precipitation:** Humidity types - Condensation - Cloud types - Precipitation and Rainfall: Types.
- Unit IV: Air Masses and Fronts:** types, classification and properties - Atmospheric Disturbances: Tropical, Temperate Cyclones, Thunderstorms and Tornadoes - Origin, Development and associated weather conditions.
- Unit V: Climatic Classification:** Need and Basis of Climatic Classification - Koppen's Climatic Classification - Weather forecasting.

Reference Books:

1. Critchfield, H. (1975). *General Climatology*. Prentice-Hall, New York.
2. Das, P.K. (1968). *The Monsoons*. National Book Trust, New Delhi.
3. Mather, J.R. (1974). *Climatology: Fundamentals and Applications*. McGraw-Hill, New York.
4. Patterson, S. (1969). *Introduction of Meteorology*. McGraw-Hill Book Co., London.
5. Stringer, E.T. (1982). *Foundation of Climatology*. Surjeet Publications, New Delhi.
6. Trewartha, G.T. (1968). *An Introduction to Climate (4th Edition)*. McGraw-Hill Book Kogakushu Ltd., New York.


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PERIYAR UNIVERSITY, SALEM – 636011

B.Sc., BOTANY

PU- B.Sc., Botany (College), 2021-22/2 Credit /2hrs/Week/30hrs/IV SEM

SEMESTER -IV

SKILLED BASED ELECTIVE COURSE -III SUBJECT CODE: 21UBOS03

PLANT TISSUE CULTURE

UNIT I

6hrs

Introduction to Plant Tissue culture- Historical background.

Principle – Polarity, Symmetry and Totipotency, Morphogenetic Centres of origin and organization-differentiation–dedifferentiation and re-differentiation; vascular differentiations.

Laboratory organization, Tools and techniques, methods of sterilization. Laboratory contaminants- it's control and measures.

UNIT II

6hrs

Media and Culture Preparation: Role of Micro and Macro nutrients, Vitamins and carbon source in tissue culture, Media preparation- pH, Temperature, Solidifying agents. Maintenance of cultures. Environmental Conditions. Explants selection.

UNIT III

6hrs

Types of culture - Cell, tissue and organ culture – Callus induction, subculture and maintenance. Isolation of single cells, selection and types of cells. Cell suspension cultures -Batch, continuous. Synchronization of suspension culture.

UNIT IV

6hrs

Somatic hybridization and cybridization. Organogenesis -anther culture and production of haploids- somatic embryogenesis –synthetic seed production-cryopreservation – Gene conservation Bank.

UNIT V

6hrs

Application of tissues and Cell culture: Micro propagation, Clonal propagation. Production of genetically variable plants – Resistance to herbicides, insecticides, virus and other diseases.

Production of secondary metabolites – Alkaloids.

Text Books

Dubey, R.C., (2001). A text book of biotechnology. S. Chand & Co., New Delhi.

Gupta, P.K. (1994). Elements of Biotechnology. Rastogi Publications, Meerut.

Ignacimuthu, S.J.(2003). Plant Biotechnology. Oxford & IBH Publishing, New Delhi.

John Jothi Prakash, E. (2005). Outlines of Plant Biotechnology. EmkayPb., New Delhi.

Kalyankumar De,(2008). Plant tissue culture.New Central Book Agency, Calcutta.

Sathanarayana BN and Vergheese DB (2007). Plant tissue culture- Practices and new experimental protocols, ILK Publ. New Delhi.

References

Bhojwani, S.S. &Razdan, M.K. (2004). Plant Tissue Culture, Read Elsevier India Pvt. Ltd.


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PERIYAR UNIVERSITY, SALEM – 636011

B.Sc., ZOOLOGY

SBEC-I

VERMICULTURE AND VERMICOMPOSTING

Course Objectives:

- To recall and recognize earthworm diversity.
- To get knowledge on organic farming and waste management using vermitechnology.
- To understand the vermiculture techniques.
- To apply knowledge on vermicompost preparation.
- To aware the significance of sustainable agriculture and organic farming.
- To inoculate basic knowledge on recycling of biodegradable waste of different kinds.
- To understand the value of Vermitechnology and its significance.

Unit I

Vermiculture: Vermiculture process – Site selection - Selection and collection of species mono and poly culture - Essential parameters for vermi-bedding. Methods of harvesting - general manual methods, self-harvesting method, mechanical method.

Unit II

Vermi-technology: Scope of vermiculture and vermicomposting – difference between vermiculture and vermicomposting, Vermi-tech practices in India.

Unit III

Earthworm diversity: Ecological groups of earthworms, biology of composting earthworms – *Eoisena foetida*, *Eudriluslugeniae*.

Unit IV

Soil and Organic waste sources: Soil – Physical, chemical and biological features, Organic waste sources – problems in traditionalcomposting, Types, small and large scale pit method, heap method.

Unit V

Vermicompost: Nutritive value of vermicompost, storing and packing of compost - Applications of vermicompost in agricultural and horticultural practices - Economic importance of vermiculture, Nationalized bank support (NABARD) for vermiculture.

Course Outcomes:

- Get knowledge about the characteristics and role of earthworm in sustainable agriculture.
- Get knowledge on the significance of earthworms.
- Understand the importance of waste degradation by eco-friendly method.
- Apply the significance of Vermicomposting methods.
- Apply knowledge on commercialization of Vermiproducts.
- Expertise in Vermiculture Techniques
- Creating Opportunities for self employment

Reference Books:

- Earthworm ecology by LEE
- Biology of earthworm by Steven son
- Vermicomposting tech – soil health to human health by Ranganathan L.S.
- Tripathi G, Vermisource Technology, Discovery Publishing House, 2003
- Ranganathan, L.S., Vermicomposting Technology – From Soil Health to Human Health, 2006.