

Course Code	Value Added Courses (VAC)						Marks			Pre-requisite
	Course Name	Level	L	T	P	C	CIE	SEE	Total	
241AE006	Agricultural Informatics	FC	2	0	1	3	50	50	100	-
241AE010	Environmental Studies and Disaster Management	FC	2	0	1	3	50	50	100	-
	Total		4	0	2	6				

Agricultural Informatics

Semester: I	L	T	P	C
Course Code: 241AE006	2	0	1	3

Course Outcomes: At the end of the Course, Student will be able to:

- CO1:** Utilize MS office in agriculture.
- CO2:** Apply DBMS in agriculture.
- CO3:** Comprehend programming languages.
- CO4:** Retrieve and generate information using geospatial technology.
- CO5:** Compute, create, operate and translate data using operating systems and IT tools.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	1	2			3						1
CO2	2	3			3						1
CO3	1	2			3						1
CO4	2	1	2	2	2						2
CO5	1	2		2	3						2

Mapping of Course Outcomes with Program Specific Outcomes:

CO/PSO	PSO1	PSO2	PSO3
CO1	1	2	1
CO2	2	2	2
CO3	2	2	2
CO4	1	1	2
CO5	2	2	2

UNIT – I

Introduction to computer

Introduction to Computers, Anatomy of Computers, Memory Concepts, Units of Memory, Operating System: Definition and types. Applications of MS-Office for document creation and Editing. Data presentation, interpretation and graph creation.

Practice:

1. Use of MS-WORD and MS Power-point for creating, editing and presenting a scientific document.
2. MS-EXCEL: Creating a spreadsheet; use of statistical tools; writing expressions; creating graphs and analysis of scientific data.

UNIT – II

DBMS in Agriculture

Statistical analysis, mathematical expressions, database, concepts and types. Uses of DBMS in Agriculture.

Practice:

1. MS-ACCESS: Creating database; preparing queries and reports.
2. Demonstration of Agri-information systems.

UNIT – III**Computer Languages**

World Wide Web (WWW): Concepts and components.

Introduction to computer programming languages: General concepts, Introduction to Visual Basic, Java, Fortran, C/ C++, etc. concepts and standard input/output operations

Practice:

1. Basic concept of HTML for creating a Web page.
2. Introduction to Programming Language : C

UNIT – IV**Concepts and applications of e-agriculture and use of ICT in Agriculture**

Concepts and applications of e-agriculture and use of ICT in Agriculture. Computer Models for understanding plant processes. IT application for computation of water and nutrient requirement of crops, Computer-controlled devices (automated systems) for agri-input management, smartphone Apps in Agriculture for farm advises market price and postharvest management.

Practice:

1. Hands on Decision Support System and Crop Simulation Model: DSSAT (Decision Support System for Agrotechnology Transfer)
2. Smartphone mobile apps in agriculture.

UNIT – V**Geospatial technology**

Geospatial technology for generating valuable agri-information. Decision support systems, concepts, components and applications in agriculture. Agriculture Expert System, Soil Information Systems for supporting farm decisions. Preparation of contingent crop-planning using IT tools.

Practice:

1. Introduction of geospatial technology for generating valuable information for agriculture.

Text Books:

1. Mamta Rana D. Prasad. Agro-informatics. Bioscientific Publisher, India. ISBN: 9789383284146.
2. Vanitha, G and Kalpana, M. Agro-informatics. New India Publishing Agency, India. ISBN: 978-8196089368.

Reference Books:

1. Raju, K. V.,V. R. Hegde and Satish A. Hegde. 2018. Geospatial Technologies for Agriculture: Case Studies from India. Springer International Publishing, Switzerland. ISBN: 9783319966458.
2. Chandan Kumar Panda, Anil Paswan and Siya Ram Singh. 2018. Advances in ICT in Agriculture. New Delhi Publisher, India. ISBN: 978-9386453341.

Web Links:

1. <https://www.fao.org/agroinformatics/training-and-resources/agroinformatics-tutorials/en>
2. <https://github.com/ag-informatics/ag-informatics-course>

Environmental Studies and Disaster Management

Semester: II	L	T	P	C
Course Code: 241AE010	2	0	1	3

Course Outcomes: At the end of the Course, Student will be able to:

- CO1:** Outline the natural resources and their importance for the sustenance of the life
- CO2:** Explain about the biodiversity of India, threats and its conservation methods
- CO3:** Illustrate various attributes of the pollution, impacts and measures to control the pollution along with waste management practices
- CO4:** Describe social issues of both rural and urban environment to combat the challenges and the legislation's of India in environmental protection
- CO5:** Explain the causes, effects, and mitigation strategies for various natural disasters

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
CO1	1					1	2				
CO2	1						3				
CO3						2	3				1
CO4						1	3	1			1
CO5							3				

Mapping of Course Outcomes with Program Specific Outcomes:

CO/PSO	PSO1	PSO2	PSO3
CO1	-	-	1
CO2	-	-	1
CO3	-	-	2
CO4	-	-	2
CO5	-	-	1

UNIT – I

Introduction to Environment

Introduction to Environment - Environmental studies - Definition, scope and importance - Multidisciplinary nature of environmental studies - Segments of Environment - Spheres of Earth - Lithosphere - Hydrosphere - Atmosphere - Different layers of atmosphere.

Practice:

1. Visit to a local area to document environmental assets river/forest/grassland/hill/mountain.

UNIT – II

Natural Resources

Natural Resources: Classification - Forest resources. Water resources. Mineral resources Food resources. Energy resources. Land resources. Soil resources. Ecosystems - Concept of an ecosystem - Structure and function of an ecosystem - Energy flow in the ecosystem. Types of ecosystem. Biodiversity and its conservation: Introduction, definition, types. Bio geographical classification of India. Importance and Value of biodiversity. Biodiversity hot spots. Threats and Conservation of biodiversity

Practice:

1. Visit to wind mill / hydro power / solar power generation units.
2. Biodiversity assessment in farming system.
3. Floral and faunal diversity assessment in polluted and un polluted system.
4. Study of simple ecosystem – Visit to pond/river/hills.

UNIT – III**Pollution and its Classification**

Environmental Pollution: Definition, cause, effects and control measures of: a. Air pollution. b. Water pollution. c. Soil pollution. d. Marine pollution. e. Noise pollution. f. Thermal pollution h. light pollution. Solid Waste Management: Classification of solid wastes and management methods, Composting, Incineration, Pyrolysis, Biogas production, Causes, effects and control measures of urban and industrial wastes.

Practice:

1. Energy: Biogas production from organic wastes.
2. Water quality analysis: pH, EC and TDS.
3. Estimation of Acidity, Alkalinity. Estimation of water hardness.
4. Assessment of Suspended Particulate Matter (SPM)

UNIT – IV**Social Issues in Rural and Urban Environment**

Social Issues and the Environment: Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Human Population and the Environment: Environment and human health: Human Rights, Value Education. Women and Child Welfare. Role of Information Technology in Environment and human health.

Practice:

1. Visit to local polluted site - Urban/Rural/Industrial/Agricultural to study of common plants, insects and birds.
- 2.Environmental sampling and preservation.
- 3.Estimation of DO, COD and BOD in water samples.

UNIT – V**Disaster Management**

Disaster management - Disaster definition - Types - Natural Disasters - Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves. Man Made Disasters - Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, road accidents, rail accidents, air accidents, sea accidents. International and National strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community-based

organizations and media in disaster management. Central, state, district and local administration in disaster control; Armed forces in disaster response; Police and other organizations in disaster management.

Practice:

1. Enumeration of E. coli in water sample.
2. Visit to areas affected by natural disaster

Text Books:

1. De. A.K.. Environmental chemistry. Published by New Age International Publishers, New Delhi. 384 pp. ISBN:978- 81224 26175.
2. DharChakrabarti. P.G. Disaster management - India's risk management policy frameworks and key challenges. Published by Centre for Social Markets (India), Bangalore. 36 pp.

Reference Books:

1. Parthiban, K.T. Vennila, S. Prasanthrajan, M. UmeshKanna, S. 2023. Forest, Environment, Biodiversity and Sustainable development. Narendra Publishing House, New Delhi.
2. Prasanthrajan M, P.P. Mahendran., A text book on Ecology and Environmental Science. ISBN 81-8321-104-6. Agrotech Publishing Academy, Udaipur.

Web Links:

1. www.nptel.ac.in/courses/122102006/
2. www.nptel.ac.in/courses/120108002/
3. www.nptelvideos.in/2012/12/fundamentals-of-environmental-pollution.html
4. www.nptel.ac.in/courses/120108004/