



Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	AGRON 513	Title of the Course	Principles and Practices of Organic Farming	L	T	P	C
Year	II	Semester	III	2	0	2	3
Course Objectives	<ul style="list-style-type: none"> To gain basic knowledge on organic farming for sustainable agriculture. To practice organic farming for healthy ecosystem and way of living. For development of entrepreneurship on organic inputs. 						

Course Outcomes	
CO1	The students have learned about the concept of organic farming and sustainable agriculture
CO2	Student will be able to impart knowledge about different practices involved in organic farming and its effect on soil health
CO3	Students can know the understand the concept of farming system and cropping system
CO4	Student will have the knowledge of organic methods to control weeds, insect pest and diseases under organic farming
CO5	Students can gain the knowledge about the organic certification, marketing and export of organic products.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Unit-I	Organic farming - concept and definition, its relevance to India and global agriculture and future prospects; principles of organic agriculture; organics and farming standards; organic farming and sustainable agriculture; selection and conversion of land, soil and water management - land use, conservation tillage; shelter zones, hedges, pasture management, agro-forestry.	8	CO1
2	Unit-II	Organic farming and water use efficiency; soil fertility, nutrient recycling, organic residues, organic manures, composting, soil biota and decomposition of organic residues, earthworms and vermicompost, green manures, bio-fertilizers and biogas technology.	8	CO2
3	Unit-III	Farming systems, selection of crops and crop rotations, multiple and relay cropping systems, intercropping in relation to maintenance of soil productivity.	7	CO3
4	Unit-IV	Control of weeds, diseases and insect pest management, biological agents and pheromones, bio-pesticides.	5	CO4
5	Unit-V	Socio-economic impacts; marketing and export potential: inspection, certification, labeling and accreditation procedures; organic farming and national economy.	4	CO5

Practicals:

Method of making compost by aerobic method • Method of making compost by anaerobic method • Method of making vermicompost • Identification and nursery raising of important agro-forestry trees and shrubs for shelter belts • Efficient use of biofertilizers, technique of treating legume seeds with Rhizobium cultures, use of <i>Azotobacter</i> , <i>Azospirillum</i> , and PSB cultures in field • Visit to a biogas plant • Visit to an organic farm • Quality standards, inspection, certification and labeling and accreditation procedures for farm produce from organic farms	15	CO1, CO2, CO3, CO4, CO5
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Reference Books:

- Ananthakrishnan TN. (Ed.). 1992. Emerging Trends in Biological Control of Phytophagous Insects. Oxford & IBH.
- Joshi M. 2016. New Vistas of Organic Farming. Scientific Publishers • Lampin N. 1990. Organic Farming. Press Books, Ipswich, UK.
- Palaniappan SP and Anandurai K. 1999. Organic Farming – Theory and Practice. Scientific Publ.
- Rao BV Venkata. 1995. Small Farmer Focused Integrated Rural Development: Socio-economic Environment and Legal Perspective: Publ.3, ParisaraprajnaParishtana, Bangalore.
- Sharma A. 2002. Hand Book of Organic Farming. Agrobios
- Singh SP. (Ed.). 1994. Technology for Production of Natural Enemies. PDBC, Bangalore
- Subba Rao NS. 2002. Soil Microbiology. Oxford & IBH
- Reddy MV. (Ed.). 1995. Soil Organisms and Litter Decomposition in the Tropics. Oxford & IBH
- WHO. 1990 Public Health Impact of Pesticides Used in Agriculture. WHO
- Veeresh GK, Shivashankar K and Suiglachar MA. 1997. Organic Farming and Sustainable Agriculture. Association for Promotion of Organic Farming, Bangalore

e-Learning Source:

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
	CO1	3	3	2	2	3	3	3	3	3	2	2	3	3	3	3		
CO2	2	3	2	2	2	2	3	1	2	1	3	2	3	2	2			
CO3	3	3	3	3	3	3	2	2	3	2	2	3	3	3	2			
CO4	3	3	2	2	2	2	1	3	2	1	3	3	3	2	3			
CO5	2	2	3	3	2	2	2	3	3	2	2	2	2	3	3			

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation



Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	SOIL 508	Title of the Course	Soil, Water and Air Pollution	L	T	P	C
Year	II	Semester	IV	2	0	2	3
Course Objectives	<ul style="list-style-type: none"> To make the student identify the cause of soil, water and air pollution To identify the problems associated with use of chemicals for crop production Management of soil, water and air pollution 						

Course Outcomes	
CO1	The students will have learned about the cause of soil, water and air pollution
CO2	Student will have the knowledge of different sources of soil, water and air pollutants
CO3	Student will be able to impart knowledge about the harmful effects of different agrochemicals used on field on soil and human health
CO4	Students can know the various sources of water pollution and sewage and industrial effluents and greenhouse gases
CO5	By the end of course students will have the idea about the remediation and amelioration of contaminated soil, water and air

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Unit-I	Soil, water and air pollution problems associated with agriculture, nature and extent.	4	CO1
2	Unit-II	Nature and sources of pollutants – agricultural, industrial, urban wastes, fertilizers and pesticides, acid rains, oil spills etc.; air, water and soil pollutants- their CPC standards and effect on plants, animals and human beings.	8	CO1, CO2, CO3
3	Unit-III	Sewage and industrial effluents–their composition and effect on soil properties/ health, and plant growth and human beings; soil as sink for waste disposal.	4	CO3, CO4
4	Unit-IV	Pesticides–their classification, behaviour in soil and effect on soil microorganisms.	3	CO3
5	Unit-V	Toxic elements–their sources, behaviour in soils, effect on nutrients availability, effect on plant and human health	4	CO3, CO4
6	Unit-VI	Pollution of water resources due to leaching of nutrients and pesticides from soil; emission of greenhouse gases–carbon dioxide, methane and nitrous oxide	5	CO4, CO5
7	Unit-VII	Risk assessment of polluted soil, Remediation/ amelioration of contaminated soil and water; remote sensing applications in monitoring and management of soil and water pollution.	4	CO5

Practicals:

Sampling of sewage waters, sewage sludge, solid/ liquid industrial wastes, polluted soils and plants and their processing, Estimation of dissolved and suspended solids, chemical oxygen demand (COD), biological demand (BOD), measurement of coliform (MPN), nitrate and ammoniacal nitrogen and phosphorus, heavy metal content in effluents, Heavy metals in contaminated soils and plants, Management of contaminants in soil and plants to safe guard food safety, Air sampling and determination of particulate matter and oxides of sulphur, NO ₂ and O ₂ conc. Visit to various industrial sites to study the impact of pollutants on soil and plants.	16	CO1, CO2, CO3, CO4, CO5
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Reference Books:

- Lal R, Kimble J, Levine E and Stewart BA. 1995. Soil Management and Greenhouse Effect. CRC Press.
- Middlebrooks EJ. 1979. Industrial Pollution Control. Vol. I. Agro-Industries. John Wiley Interscience.
- Ross SM. Toxic Metals in Soil Plant Systems. John Wiley & Sons.
- Vesilund PA and Pierce 1983. Environmental Pollution and Control. Ann Arbor Science Publ..

e-Learning Source:

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
	CO1	3	2	2	2	1	1	1	2	2	3	2	3	3	3		
CO2	3	1	3	2	1	1	1	2	2	3	1	3	3	3			
CO3	3	1	3	3	1	1	1	2	2	2	2	3	3	3			
CO4	3	1	3	2	1	1	1	1	2	2	1	3	2	2			
CO5	3	2	3	3	1	1	1	2	2	3	2	3	2	2			

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation



Integral University, Lucknow

Effective from Session: 2023-24							
Course Code	SOIL 511	Title of the Course	Management of Problem Soils and Water	L	T	P	C
Year	II	Semester	IV	2	0	2	3
Course Objectives	<ul style="list-style-type: none"> To educate students about basic concepts of problem soils and brackish water. For studying the management of problem soils and brackish water. For safe use of brackish water in regard to crop production 						

Course Outcomes	
CO1	The students will have learned about the different types of problem soils and their causes.
CO2	Students can be able identify the different problem soils based on their physical and chemical properties.
CO3	Students had studied about the management of acidic, saline and sodic soils.
CO4	Student will be able to impart knowledge about the importance of quality of irrigation water and its amelioration of brackish water for irrigation use.
CO5	By the end of course students will have the idea the agronomic practices for management of problem soil and poor quality irrigation water.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Unit-I	Area and distribution of problem soils–acidic, saline, sodic and physically degraded soils; origin and basic concept of problematic soils, and factors responsible	5	CO1
2	Unit-II	Morphological features of saline, sodic and saline-sodic soils; characterization of salt-affected soils-soluble salts, ESP, pH; physical, chemical and microbiological properties	7	CO1, CO2
3	Unit-III	Management of salt-affected soils; salt tolerance of crops- mechanism and ratings; salt stress meaning and its effect on crop growth, monitoring of soils alkalinity in the field; management principles for sandy, clayey, red lateritic and dryland soils.	5	CO3, CO4
4	Unit-IV	Acid soils-nature of soil acidity, sources of soil acidity; effect on plant growth, lime requirement of acid soils; management of acid soils; biological sickness of soils and its management	5	CO3, CO4
5	Unit-V	Quality of irrigation water; management of brackish water for irrigation; salt balance under irrigation; characterization of brackish waters, area and extent; relationship in water use and quality.	5	CO4, CO5
6	Unit-VI	Agronomic practices in relation to problematic soils; cropping pattern for utilizing poor quality groundwaters.	5	CO5

Practicals:

Characterization of acid, acid sulfate, salt-affected and calcareous soils, Determination of cations (Na ⁺ , K ⁺ , Ca ⁺⁺ and Mg ⁺⁺) in groundwater and soil samples, Determination of an ions (Cl ⁻ , SO ₄ ⁻ , CO ₃ ⁻ and HCO ₃ ⁻) in ground waters and soil samples, Lime and gypsum requirements of acid and sodic soils.	16	CO1, CO2, CO3, CO4, CO5
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Reference Books:

- Bear FE. 1964. Chemistry of the Soil. Oxford & IBH
- Jurinak JJ. 1978. Salt-affected Soils. Department of Soil Science & Biometeorology. Utah State University
- USDA Handbook No. 60. 1954. Diagnosis and improvement of Saline and Alkali Soils. Oxford & IBH.

e-Learning Source:

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO5	PSO6	PSO7
	CO1	3	3	1	2			2		1	1	3	2	2	1		
CO2	3	3	1	2		3	2				3	1	3	2			
CO3	3	3	1			1	2				3	2	1	2			
CO4	3	3	2	3		2	2				3	1	2	2			
CO5	3	3	2	3		3	2	1			3	2	2	1			

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation



Integral University, Lucknow

Effective from Session: 2018-19							
Course Code	PGS501	Title of the Course	Library and Information Services	L	T	P	C
Year	II	Semester	III	0	0	2	1
Course Objectives	<ul style="list-style-type: none"> To study about the role of library in education, research and technology To obtain idea of Intricacies of abstracting and indexing services and to enlighten the students about the computerized library services To give the knowledge of e resources and search engines 						

Course Outcomes	
CO1	The students will gain the knowledge about the library importance in different sites
CO2	They gain knowledge of Intricacies of abstracting and indexing services
CO3	They know about the computerized library services
CO4	To provide knowledge of e resources
CO5	To give basic information about search engines

Practicals:		
	Contact Hrs.	Mapped CO
Introduction to library and its services; Role of libraries in education, research and technology transfer; Classification systems and organization of library; Sources of information- Primary Sources, Secondary Sources and Tertiary Sources; Intricacies of abstracting and indexing services (Science Citation Index, Biological Abstracts, Chemical Abstracts, CABI Abstracts, etc.); Tracing information from reference sources; Literature survey; Citation techniques/Preparation of bibliography; Use of CD-ROM Databases, Online Public Access Catalogue and other computerized library services; Use of Internet including search engines and its resources; e-resources access methods.	16	CO1, CO2, CO3, CO4, CO5

Reference Books:	
<ul style="list-style-type: none"> Singh G. Information Sources, Services and Systems, 2013 Edition. Prentice Hall India Learning Private Limited Library Science, 2018 Edition. Ramesh Publishing House Subhankar Biswas, Durga Sankar Rath. Cataloguing in the New Era: Gazing through the Bodleian Catalogues to RDA, 2017 Edition. Ess Ess Publications 	

e-Learning Source:	
https://www.youtube.com/watch?v=jQIGmtY3sUw (Role of libraries in education, research and technology transfer)	

Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
	CO1	3	3	1	1	1	3	3	3	2	3		2	1	1			
CO2	3	3	1	3	3	3	1	3	2	3		1	2	2				
CO3	3	2	1	3	3	2	1	3	2	1		2	1	1				
CO4	3	2	1	3	3	3	1	3	2	2		3	2	1				
CO5	3	1	1	3	3	3	1	3	2	2		2	1	1				

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation