SARVAJANIK UNIVERSITY

FACULTY OF SCIENCE

SARVAJANIK UNIVERSITY

INCLUSIVE | INTEGRATED | INNOVATIVE

Faculty of Science

B. Sc. (Honors)

Environmental Science

SEM - 3

MAJOR SUBJECT

(W.E.F. 2025-26)

Name of College: Shree Ramkrishna Institute of Computer Education and Applied Sciences						
Faculty	Science		**Program**	B.Sc. ES		
Year	2		**Version**	3		
Semester	3		**Effective From**	July 2025		
Course Code	BSES31323	**Course Name**	Natural Resources (Th)			
Teaching Scheme				**Examination Scheme**		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**	**Continuous Assessments (CCE)**	**Term end examinations (SEE)**	**Total**
3	3	0	0	40	35	75

Name of College: Shree Ramkrishna Institute of Computer Education and Applied Sciences						
Faculty	Science		**Program**	B.Sc. ES		
Year	2		**Version**	3		
Semester	3		**Effective From**	July 2025		
Course Code	BSES31323	**Course Name**	Natural Resources (Pr)			
Teaching Scheme				**Examination Scheme**		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**	**Continuous Assessments (CCE)**	**Term end examinations (SEE)**	**Total**
1	0	0	1	10	15	25

Name of Faculty: Science	**Department**: Environmental Science
Program: B.Sc. (Hons)	**Type:** Major
Subject: Natural Resources and Management	**Semester:** 3
Credits: 03 + 01 = 04	

Course Description:
This course will develop student's exploring capacity in natural resources including biomes, land, air, water, energy.

Student Learning Outcomes (SLOs):
At the end of the course, students will be able to:

1. Define the basic concepts of various types of natural resources
2. Understand sources and origin of natural resources
3. Determine different issues and problems with resource utilization
4. Analyze methods of natural resource conservation
5. Evaluate strategies of exploitation of natural resources
6. Create a sustainable plan for the management of natural resources

UNIT-1: Land resources (7 Lecture)

1.1 Classification and types of land resources
1.2 Land degradation, soil erosion and desertification
1.3 Landscape impact analysis
1.4 Principle and methods of soil conservation

UNIT-2 Water resources (7 Lecture)

2.1 Use of surface and ground water
2.2 Over utilization of water resources
2.3 Water storage and problems
2.4 Principle and methods of water conservation

UNIT-3 Energy resources (7 Lecture)

3.1 Types and need of energy resources
3.2 Use and exploitation of renewable energy resources
3.3 Use and exploitation of non-renewable energy resources
3.4 Principle and methods of conservation energy resources

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Faculty	Science		**Program**	B.Sc. ES		
Year	2		**Version**	3		
Semester	3		**Effective From**	July 2025		
Course Code	BSES31322	**Course Name**	Sustainable Agriculture Practices (Th)			
Teaching Scheme				**Examination Scheme**		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**	**Continuous Assessments (CCE)**	**Term end examinations (SEE)**	**Total**
3	3	0	0	40	35	75

Name of College: Shree Ramkrishna Institute of Computer Education and Applied Sciences						
Faculty	Science		**Program**	B.Sc. ES		
Year	2		**Version**	3		
Semester	3		**Effective From**	July 2025		
Course Code	BSES31324	**Course Name**	Sustainable Agriculture Practices (Pr)			
Teaching Scheme				**Examination Scheme**		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**	**Continuous Assessments (CCE)**	**Term end examinations (SEE)**	**Total**
1	0	0	1	10	15	25

Name of Faculty: Science	**Department**: Environmental Science
Program: B.Sc. (Hons)	**Type:** Major
Subject: Sustainable Agriculture Practices	**Semester:** 3
Credits: 03 + 01 = 04	

Course Description:

This course is aimed…

1. To introduce eco-friendly and climate-resilient agricultural and livestock management systems.
2. To develop skills for improving farm productivity through sustainable inputs and practices.
3. To enhance understanding of soil, water, pest, crop, and animal health management.
4. To promote integration of crop and animal systems for efficient land use and livelihood.
5. To encourage entrepreneurship and community participation in sustainable farming.

ıdent Learning Outcomes (SLOs):

At the end of the course, students will be able to:

1. Define the principles of sustainable agriculture and animal husbandry.
2. Understand ecological techniques to maintain soil fertility and pest control.
3. Apply knowledge of livestock for milk, meat, egg, and manure production sustainably.
4. Correlate government schemes and integrated farming systems for income generation.
5. Evaluate merits and demerit of integrated approaches in agriculture.
6. Participate in field-based learning and practice resource optimization in rural environments.

Unit 1: Principles of Sustainable Agriculture (7 Hours)

1.1 Concept, scope, and need for sustainable agriculture
1.2 Comparison: traditional, industrial, and sustainable systems
1.3 Agroecology, biodiversity in farming, climate-smart agriculture
1.4 Integrated and holistic farm approaches

Unit 2: Soil, Water, and Nutrient Management (8 Hours)

2.1 Soil health, composting, vermicomposting, mulching
2.2 Rainwater harvesting, drip and sprinkler irrigation
2.3 Biofertilizers and green manures
2.4 Soil testing and fertility restoration

Unit 3: Crop Management and Organic Practices (7 Hours)

3.1 Crop rotation, intercropping, companion planting
3.2 Seed selection and preservation
3.3 Organic farming certification and marketing
3.4 Pest and disease management using botanicals and biologicals

Unit 4: Basics of Animal Husbandry (8 Hours)

4.1 Importance of livestock in rural economy
4.2 Housing, feeding, breeding, and health management
4.3 Common livestock types: cattle, goats, poultry, sheep
4.4 Ethnoveterinary practices and clean milk production

Unit 5: Integration of Crop-Livestock Systems (8 Hours)

5.1 Benefits of crop-livestock integration
5.2 Livestock waste management and use as manure/biogas
5.3 Fodder production and rotational grazing
5.4 Integrated Farming System (IFS) models in India

Unit 6: Policies, Programs, and Entrepreneurship in Sustainable Farming (7 Hours)

6.1 PM-Kisan, Rashtriya Gokul Mission, PKVY, ATMA
6.2 Farmer Producer Organizations (FPOs), SHGs and cooperatives
6.3 Rural entrepreneurship and agri-based startups
6.4 Digital tools and ICT in agriculture and livestock care

Practicals:

1. Preparation of Compost Fertilizer
2. Estimation of Soil pH, Electric Conductivity and Organic Matter.
3. Interpretation of Soil Health Card
4. Preparation of *Panchagavya*

Suggested Readings and References

1. Palaniappan, S.P., & Annadurai, K. (2014). *Organic Farming – Theory and Practice*. Scientific Publishers.
2. Reddy, T.Y., & Reddy, G.H.S. (2021). *Principles of Agronomy*. Kalyani Publishers.
3. Grewal, H.S. (2008). *Animal Husbandry and Dairying*. Kalyani Publishers.
4. Singh, C.P. (2012). *Sustainable Agriculture*. Agrotech Publishing Academy.
5. ICAR Handbooks on Integrated Farming Systems and Organic Agriculture
6. Government of India: Guidelines from MoA&FW on PKVY, RGM, NLM, and FPOs
7. FAO (2020). *Climate-Smart Agriculture Sourcebook*