



UNIVERSITY OF JAMMU

(NAAC ACCREDITED 'A ++' GRADE' UNIVERSITY)
Baba Sahib Ambedkar Road, Jammu-180006 (J&K)

Academic Section

Email: academicsectionju14@gmail.com

NOTIFICATION (25/Sept./Adp./66)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Academic Council, is pleased to authorize the following

- b) The existing syllabi and Courses of Studies of the subject of **Environmental Science (Skill Course)** of semester Ist, IInd and IIIrd for **Four Year Under Graduate Programme** as per **NEP-2020 as notified vide no. F.Acd./II/23/9044-9103 dated 25.08.2023** is applicable for the examinations to be held as per the details given below:

Subject	Semester	Course No	for the examination to be held in the years
Environmental Science	Semester- I	USEEST104 (SEC)	December 2023 and 2024 only
	Semester-II	USEEST204 (SEC)	May 2024 and 2025 only
	Semester-III	USEEST305 (SEC)	December 2023, 2024 and 2025 only

- b) Adoption of the revised Syllabi and Courses of Study of subject of Environmental Science (**Skill Courses**) of Semesters **Ist, IInd and IIIrd** for **Four Year Under Graduate Programme** as per **NEP-2020 (as given in the annexure)** for the examinations to be held in the years as per the details given below:

Subject	Semester	Old Course	New Course	For the examinations to be held on
Environmental Science	Semester-I	USEEST104 (SEC)	USEEST111 (SEC)	December 2025, 2026 and 2027
	Semester-II	USEEST204 (SEC)	USEEST211 (SEC)	May 2026, 2027 and 2028
	Semester-III	USEEST305 (SEC)	USEEST311 (SEC)	December 2026, 2027 and 2028

The Syllabi of the courses are also available on the University website: www.jammuuniversity.ac.in.

Sd/-
DEAN ACADEMIC AFFAIRS

No. F. Acd/II/25/ 9137-66
Dated: 29/09/2025

Copy for information and necessary action to:

1. Dean, Faculty of Life-Science
2. Convener, Board of Studies in Environmental Science
3. All members of the Board of Studies
4. Sr. P.A. to the Controller of Examinations
5. Director, Centre for IT Enabled services and Management, University of Jammu for information and for uploading on University Website.
6. C.A. to the Controller of Examinations
7. Director, Computer Centre, University of Jammu.
8. Joint Registrar/Deputy Registrar/Asst. Registrar (Conf. /Exam UG/Exam. Non Prof.)

Joint Registrar (Academic)

Shrucca
9/9/25
66/9/25
9/9/25
7/8/9/25

UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
(Under CBCS as per NEP-2020)

University of Jammu
 Syllabus of Environmental Sciences at FYUGP under CBCS as per NEP-2020
 Skill Enhancement Course

First (1st) Semester

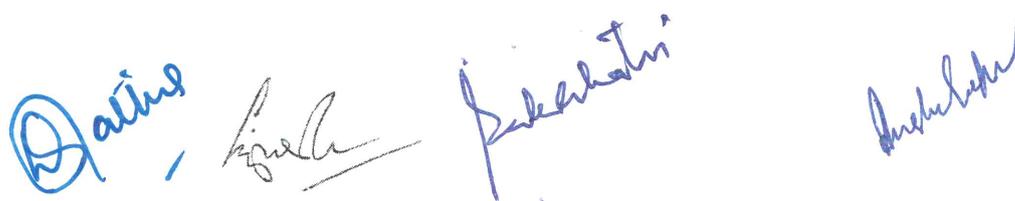
S. No.	Course Type	Course No.	Course Title	Credits	Marks		Total Marks
					Theory/Practical		
1.	Skill Enhancement Course	USEEST111	Solid Waste Management	3	Mid Semester: 25 Marks	End Semester: 50 Marks	75

Second (2nd) Semester

S. No.	Course Type	Course No.	Course Title	Credits	Marks		Total Marks
					Theory/Practical		
1.	Skill Enhancement Course	USEEST211	Liquid Waste Management	3	Mid Semester: 25 Marks	End Semester: 50 Marks	75

Third (3rd) Semester

S. No.	Course Type	Course No.	Course Title	Credits	Marks		Total Marks
					Theory/Practical		
1.	Skill Enhancement Course	USEEST311	Green Technologies	3	Mid Semester: 25 Marks	End Semester: 50 Marks	75



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(Under CBCS as per NEP-2020)

First (1st) Semester

S. No.	Course Type	Course No.	Course Title	Credits	Marks		Total Marks
					Theory/Practical		
1.	Skill Enhancement Course	USEEST111	Solid Waste Management	3	Mid Semester: 25 Marks	End Semester: 50 Marks	75

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UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
(Under CBCS as per NEP-2020)

UG SEMESTER-1
(For the examinations to be held in the years December 2025, 2026, 2027)
SOLID WASTE MANAGEMENT
(SKILL ENHANCEMENT COURSE)

Course Code: USEEST111

Max. Marks: 75 (Theory-25, Practical-50)

	Credits	Contact Hours	Units	Examination			
				Weightage (Marks)		Duration (hours)	
				Mid Semester Examination	End Semester Examination	Mid Semester Examination	End Semester Examination
Theory	01	15	1 to 2	25	0	2	-
Practical	02	60	3 to 4	0	50	-	4

Objectives:

- To introduce the students to causes and associated problems of different types of solid wastes.
- To familiarize the students with various methods of solid waste management.

Learning outcomes

Students shall be able to

- differentiate between different types of solid wastes.
- understand various solid waste management strategies.

UNIT 1: SOLID WASTE MANAGEMENT: BASIC CONCEPTS AND PRACTICES

- 1.1 Solid waste: definition and concept, sources and classification of solid waste
- 1.2 Factors affecting the generation of solid waste, impact of solid waste on the environment, human, and plant health
- 1.3 Management of MSW-biodegradable waste: composting, vermicomposting, farmyard manure, biogas production
- 1.4 Management of MSW-non biodegradable waste: incineration, pyrolysis, gasification, sanitary-landfills.

UNIT 2: SOLID WASTE COLLECTION AND PROCESSING TECHNIQUES

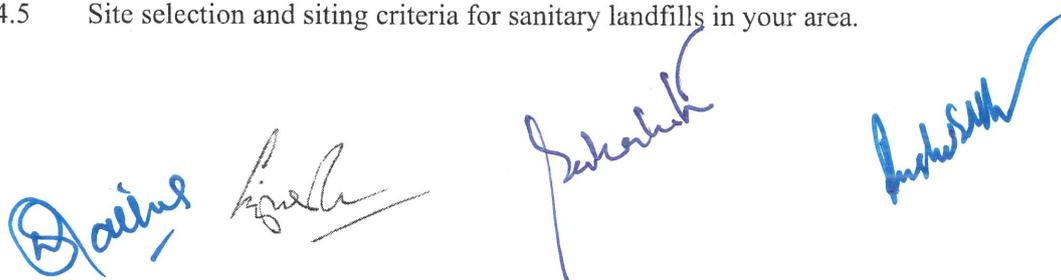
- 2.1 Handling and segregation of solid waste at source and methods of separation, solid waste reduction technique - reuse and recycle
- 2.2 Collection of solid waste and transfer and transportation of solid waste, solid waste processing methods (storage, conveying, compacting, shredding, pulping, granulating)
- 2.3 Site selection criteria for sanitary landfills
- 2.4 Solid Waste Management and handling Rules, 2016: Salient Features

UNIT 3: PRACTICALS-I

- 3.1 Qualitative and quantitative estimation of solid waste from household/commercial/Institutional areas.
- 3.2 Cost estimation of recyclable waste generated from households/commercial /Institutional areas.
- 3.3 Estimate energy content of household solid waste.
- 3.4 Preparation and collection of items from recycled/reused material.
- 3.5 Laboratory demonstration of Vermicomposting and Aerobic Composting.

UNIT 4: PRACTICALS-II

- 4.1 Field visits to waste dumping/disposal site.
- 4.2 Field visit to paper recycling unit.
- 4.3 Field visit to plastic recycling unit.
- 4.4 Construction and working of incinerators/biogas plants.
- 4.5 Site selection and siting criteria for sanitary landfills in your area.



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SOLID WASTE MANAGEMENT
(SKILL ENHANCEMENT COURSE)

Course Code: USEEST111

Max. Marks: 75 (Theory-25, Practical-50)

SUGGESTED READINGS

1. Bhatia, S. C. (2007). Solid and hazardous waste management, Atlantic Publishers and Distributions (P). New Delhi
2. Khan, I. H. and Ahsan, N. (2011). Textbook of Solid Waste Management. CBS Publishers, New Delhi
3. Mishra, S. G. and Mani D. (1993). Pollution through solid waste. Ashok Publishing House, New Delhi.
4. Tchobanoglous, G. and Kreith, F. (2002). Handbook of Solid Waste Management: Mc Graw Hill Handbooks, New York.
5. TERI (2014). Waste to resources - A waste management Handbook. The Energy and Resources Institute (TERI) New Delhi. www.teriin.org.
6. Zhu, D., Asnani, P.U., Zurbrigg, C., Anapolsky, S. and Mani, S. (2008). Improving solid waste management in India. The world Bank Washington D.C. www.worldbank.org.

SCHEME OF EXAMINATION

The paper will carry a total of seventy-five (75) marks (25 marks for Theory; 50 marks for Practical). For evaluation of theory component, a theory paper of twenty-five (25) marks shall be conducted during the mid Term Examination: Part-1 (as mentioned below).

For Practical/Skill component, 50 marks will be conducted during the Final Examination: Part-2 (as mentioned below).

Final examination/evaluation for skill course will be done internally through the Board of three (3) members (including the trainer of the skill course).

Exam	Mid Semester	End Semester	Total (component-wise breakage)
Theory	25		25 marks
Practical		50 marks (Practical test- 25 marks; Practical file/report-10 marks; Day to day performance-5 marks; Attendance-5 marks; Viva-voce- 5 marks)	50 marks
Total Marks			75 marks

NOTE FOR PAPER SETTING

Mid Term Examination: Part-1: (Total marks: 25; syllabus to be covered: upto 40%; time: 2 hrs):

The question paper for theory examination will have two (2) sections. 'Section A' will be compulsory having four (04) short answer type questions of two and half (2.5) marks each and spread over entire theory syllabus (i.e first two units). 'Section B' will have four (04) long answer type questions, two (02) questions from each unit (units 1 and 2). Each question will carry seven and half (7.5) marks. The candidate will be required to answer one (01) question from each unit.

EVALUATION OF SKILLS: Final Examination: Part-2 (Total marks: 50; syllabus to be covered: 100%; time: 4 hrs): The evaluation of skills will be internal. The examination shall be of 50 marks. Distribution of 50 marks shall be as shown in the table above.

UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
(Under CBCS as per NEP-2020)

Second (2nd) Semester

S. No.	Course Type	Course No.	Course Title	Credits	Marks		Total Marks
					Theory/Practical		
1.	Skill Enhancement Course	USEEST211	Liquid Waste Management	3	Mid Semester: 25 Marks	End Semester: 50 Marks	75

Q. Ains

Pruthi

Devkanti

Arshdeep

UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
(Under CBCS as per NEP-2020)

UG SEMESTER-2
(For the examinations to be held in the years May 2026, 2027, 2028)
LIQUID WASTE MANAGEMENT
(SKILL ENHANCEMENT COURSE)

Course Code: USEEST211

Max. Marks: 75 (Theory-25, Practical-50)

	Credits	Contact Hours	Units	Examination			
				Weightage (Marks)		Duration (hours)	
				Mid Semester Examination	End Semester Examination	Mid Semester Examination	End Semester Examination
Theory	01	15	1 to 2	25	0	2	-
Practical	02	60	3 to 4	0	50	-	4

Objectives

- To introduce the students to causes, associated problems and control of different types of liquid waste pollution.
- To make students aware about various steps involved in wastewater treatment.

Learning outcomes

Students shall be able to

- differentiate between different types of liquid wastes.
- understand working and applications of various wastewater treatment technologies.

UNIT 1: INTRODUCTION TO LIQUID WASTES

- 1.1 Water as a resource and its significance on planet earth
- 1.2 Water pollution-I: types, sources and impacts, surface water and groundwater pollution.
- 1.3. Water pollution-II: Wastewater: domestic black and greywater; agricultural wastewater
- 1.4 Characteristics of industrial wastewater, types of industrial pollutants

UNIT 2: WASTEWATER TREATMENT

- 2.1 Wastewater treatment: primary treatment, pre-treatment: screening, grit removal, flow equalization, sedimentation
- 2.2 Secondary treatment: chemical unit processes: precipitation, coagulation, disinfection
- 2.3 Secondary treatment: biological unit processes: aerobic process - activated sludge system, trickling filters, anaerobic process - CSTR (continuous stirred tank reactors), anaerobic filters, UASB (upflow anaerobic sludge blanket technology)
- 2.4 Tertiary treatment, concepts and treatment of wastewater with aquatic macrophytes, algal treatment systems

UNIT 3: PRACTICALS-I

- 3.1. Determination of pH and conductivity of wastewater.
- 3.2 Determination of Total Suspended Solids (TSS) in wastewater.
- 3.3 Determination of Total Dissolved Solids (TDS) in wastewater.
- 3.4 Determination of Biochemical Oxygen Demand (BOD) in wastewater.
- 3.5 Determination of turbidity difference between clean and turbid water.

UNIT 4: PRACTICALS-II

- 4.1 To estimate the daily and monthly water drainage from RO water filtration unit of your Institution.
- 4.2 Design system for utilization of wastewater from RO water filtration unit.
- 4.3 Design system for utilization of greywater of your department/campus.
- 4.4 Visit to Sewage Treatment Plant (STP).
- 4.5 Visit to Effluent Treatment Plant (ETP) of nearby industry.

B. Arora

Arora

Sakshi

Arora

UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
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UG SEMESTER-2
(For the examinations to be held in the years May 2026, 2027, 2028)
LIQUID WASTE MANAGEMENT
(SKILL ENHANCEMENT COURSE)

Course Code: USEEST211

Max. Marks: 75 (Theory-25, Practical-50)

LITERATURE RECOMMENDED

1. Garg, S. K. (2003). Sewage Disposal and Air Pollution Engineering, Khanna Publishers, Delhi.
2. Manual of Water Supply and Treatment. (1999). Central Public Health and Environmental Engineering Organization, Ministry of Urban Development, New Delhi.
3. Manual on Sewerage and Sewage Treatment. (1993). Central Public Health and Environmental Engineering Organization, Ministry of Urban Development, New Delhi.
4. McGhee, T. J. (1991). Water Supply and Sewerage. McGraw-Hill, New York.
5. Metcalf & Eddy Inc. Revised by Tchobanoglous, G., Burton, F. L. and Stensel, H. D. (2002). Wastewater Engineering Treatment and Reuse 4/e. Tata McGraw-Hill Publishing Company Limited, New Delhi.
6. Pollution Control Acts, Rules and Notifications issued thereunder. (2001). Pollution Control Law Series, PCLS/02/1002, 4th Edition, Central Pollution Control Board, Delhi.
7. Qasim, S. R. (1999). Wastewater Treatment Plant: Planning, Design and Operation. Lancaster Technomic, New York.

SCHEME OF EXAMINATION

The paper will carry a total of seventy-five (75) marks (25 marks for Theory; 50 marks for Practical). For evaluation of theory component, a theory paper of twenty-five (25) marks shall be conducted during the mid Term Examination: Part-1 (as mentioned below).

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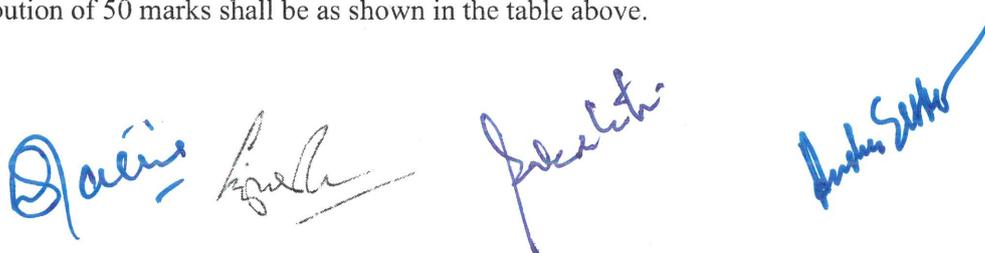
Exam	Mid Semester	End Semester	Total (component-wise breakage)
Theory	25		25 marks
Practical		50 marks (Practical test- 25 marks; Practical file/report-10 marks; Day to day performance-5 marks; Attendance-5 marks; Viva-voce- 5 marks)	50 marks
Total Marks			75 marks

NOTE FOR PAPER SETTING

Mid Term Examination: Part-1: (Total marks: 25; syllabus to be covered: upto 40%; time: 2 hrs):

The question paper for theory examination will have two (2) sections. 'Section A' will be compulsory having four (04) short answer type questions of two and half (2.5) marks each and spread over entire theory syllabus (i.e first two units). 'Section B' will have four (04) long answer type questions. two (02) questions from each unit (units 1 and 2). Each question will carry seven and half (7.5) marks. The candidate will be required to answer one (01) question from each unit.

EVALUATION OF SKILLS: Final Examination: Part-2 (Total marks: 50; syllabus to be covered: 100%; time: 4 hrs): The evaluation of skills will be internal. The examination shall be of 50 marks. Distribution of 50 marks shall be as shown in the table above.



UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
(Under CBCS as per NEP-2020)

Third (3rd) Semester

S. No.	Course Type	Course No.	Course Title	Credits	Marks		Total Marks
					Theory/Practical		
1.	Skill Enhancement Course	USEEST311	Green Technologies	3	Mid semester: 25 Marks	End Exam: 50 Marks	75

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UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
(Under CBCS as per NEP-2020)

UG SEMESTER-3
(For the examinations to be held in the years December 2026, 2027, 2028)
GREEN TECHNOLOGIES
(SKILL ENHANCEMENT COURSE)

Course Code: USEEST311

Max. Marks: 75 (Theory-25, Practical-50)

	Credits	Contact Hours	Units	Examination			
				Weightage (Marks)		Duration (hours)	
				Mid Semester Examination	End Semester Examination	Mid Semester Examination	End Semester Examination
Theory	01	15	1 to 2	25	0	2	-
Practical	02	60	3 to 4	0	50	-	4

Objectives

- To give an overview of importance of green technologies for sustainable development.
- To encourage the adoption of sustainable technologies in daily life.
- To highlight the use of green technology for creating environment friendly smart cities.

Learning outcomes

Students shall be able to

- understand importance of green technologies for sustainable urban planning.
- make micro-modifications in lifestyles to bring a long-term positive impact on the environment.

UNIT 1: GREEN TECHNOLOGY AND GREEN INFRASTRUCTURE

- 1.1 Definition and concept: green technology, green infrastructure
- 1.2 Sustainable consumption of resources. R's approach for sustainable waste management
- 1.3 Concepts of green cities and green buildings, need, and relevance of green buildings over conventional buildings
- 1.4 Eco-Mark certification: importance and implementation

UNIT 2: GREEN CHEMISTRY AND SUSTAINABLE FUTURE

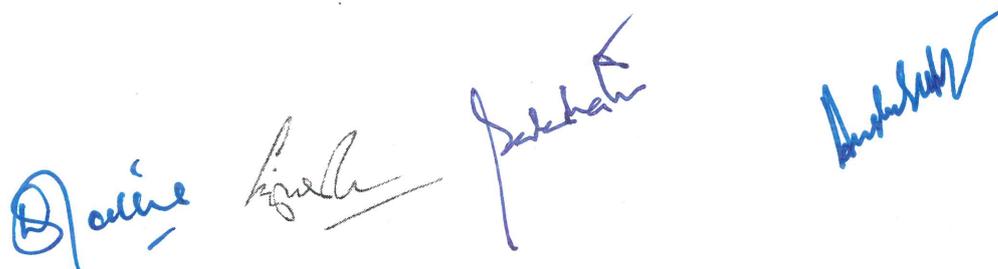
- 2.1 Introduction, principles and recognition of green criteria, green products: biodegradable products and bioaccumulative products
- 2.2 ISO 14000, green nanotechnology, UNEP's green economy initiative
- 2.3 Major challenges in implementation of green technologies
- 2.4 Successful green technology initiatives in India

UNIT 3: PRACTICALS-I

- 3.1 To calculate carbon footprint of your daily activities.
- 3.2 Prepare a report on utilization of natural ways to cool as well as heat your buildings in summers and winters respectively, with least dependence on electric consumption.
- 3.3 To inventorize daily as well as monthly electric consumption of your household and suggest measures to minimize that.
- 3.4 To prepare a report on eco-friendly products being used in your household/area.
- 3.5 To collect, measure, and repurpose water drained from an air conditioning unit in a sustainable way.

UNIT 4: PRACTICALS-II

- 4.1 To visit buildings with rooftop solar paneling.
- 4.2 Visit to industrial units to observe the use of green technology.
- 4.3 To prepare a model of an ideal green building.
- 4.4 To prepare a working model of solar panel or windmill.
- 4.5 To enlist products with eco-mark certification.



UNIVERSITY OF JAMMU
Syllabus for FYUGP in ENVIRONMENTAL SCIENCES
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UG SEMESTER-3
(For the examinations to be held in the years December 2026, 2027, 2028)
GREEN TECHNOLOGIES
(SKILL ENHANCEMENT COURSE)

Course Code: USEEST311

Max. Marks: 75 (Theory-25, Practical-50)

LITERATURE RECOMMENDED

1. Arceivala, Soli. J. (2017). Green Technologies McGraw-Hill Education – Europe.
2. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. (2006). Environmental and Pollution Science. Elsevier Academic Press.
3. Purohit, S.S. & Ranjan, R. (2007). Ecology, Environment & Pollution. Agrobios Publications.
4. Park, K. (2015). Park's Textbook of Preventive and Social Medicine (23rd Ed.). Banarsidas Bhanot Publishers.
5. Savitskaya, T., Kimlenka, I., Lu, Y., Hrynshpan, D., Sarkisov, V., Yu, J., Sun, N., Wang, S., Ke, W. and Wang, L. (2021). Green Chemistry: Process Technology and Sustainable Development. Springer Nature.
6. Singh, R. and Kumar, S. (2018). Green Technologies and Environmental Sustainability. Springer.
7. Vesilind, P.J., Peirce, J.J. & Weiner R. F. 1. (1990). Environmental Pollution and Control. Butterworth-Heinemann, USA.

SCHEME OF EXAMINATION

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Theory	25		25 marks
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Total Marks			75 marks

NOTE FOR PAPER SETTING

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EVALUATION OF SKILLS: Final Examination: Part-2 (Total marks: 50; syllabus to be covered: 100%; time: 4 hrs): The evaluation of skills will be internal. The examination shall be of 50 marks. Distribution of 50 marks shall be as shown in the table above.

