

**List of contents for learning outcome-based curriculum framework (LOCF)**

**For Post-graduate program**

**MSc with environmental science and disaster management from 2020 onward**

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## **THE PREAMBLE**

Students would be educated with all required knowledge for Environmental Science and Disaster Management study. The program requires graduates from disciplines like Botany, Zoology, Chemistry, Life Science and Allied disciplines of Life Sciences, Microbiology, Biochemistry and Biotechnology. The curriculum planning has emphasized on domain knowledge, academic outlook, critical approach, professional attitude, adaptability, self-learning, and problem-solving ability, teamwork, performances, and employability. The Environment Science and Disaster Management program has considered the extent of knowledge provided at the graduation level.

Students would be provided with in depth knowledge of all the attributes of Knowledge which will enable them to apply their knowledge to find solutions to various environmental issues locally and globally. It will also provide them the requisite technical skills to deal with issues of environment and develop capabilities to analyze samples and suggest measures to meet the quality standards as per norms. Information regarding latest policies and regulations related to environment. Help them in framing guidelines and environmental policies to end users as per regulations. Provide them training for Disaster management and mitigation, skills for forecasting, taking precautionary actions, for disaster preparedness and problem solving and improve employability of postgraduate students and train them in consultancy services.

Motivate postgraduates to understand their responsibility as important stakeholders in the environmental management of our country and help students to contribute towards achieving sustainable development goals and at least try to contribute towards fulfilling our obligation as a country. The courses in the programme are carefully designed to equip the students for competitive exams like CSIR NET, SET etc. and to write research proposals for grants.

### ***Why Environmental Science and Disaster Management at R J College?***

The department of *Environmental Science and Disaster Management* (ESDM) of R J College is right now, the only department to offer both the degree in single post-graduation programme. It started in 2020, the blooming of the ESDM course started recently in college, thus its new emerging inter-disciplinary course with new way to play role in serving and protecting nature and Mother Earth.

ESDM department offers PG programs as a specialization at post graduate level and is affiliated to recognize by the University of Mumbai. As applied component in the third year, all other allied and biological disciplinary course students learn environmental science and pollution which sensitizes them towards the conservation. So, Environmental Science and Disaster Management and helps them to understand the care they need to take of the environment as one of the members of the living component of the ecosystem. Field trips, mini projects, hands on training sessions, lectures, laboratory experimentation, lecture-based learning, industry visits etc. motivate students to explore more in terms of applications of the subject. Department of ESDM is one of the few departments who have one full semester dedicated to internship where student would learn and further strengthened their skills and satisfy their curiosity with inculcate research works.

## **PROGRAM OUTCOMES OF GENERAL POSTGRADUATE DEGREE PROGRAMS**

Students of all postgraduate degree programme at the time of graduation will be benefited will be able to

### ***Application of knowledge***

Maintain a high level of scientific excellence in botanical research with specific emphasis on the role of plants. Create, select, and apply appropriate techniques, resources and modern technology in multidisciplinary way. Practice of subject with knowledge to design experiments, analyze and interpret data to reach to an effective conclusion.

### ***Ability to covey the concept clearly***

They would identify, formulate, and analyze the complex problems with reaching a substantiated conclusion. Encourage logical thoughts application in biological, physical, and chemical sciences branch. Learning that develops analytical and integrative problem-solving approaches.

### ***Teamwork***

Students would perform functions that demand higher competence in national/international organizations with sporty spirits and helping each other.

### ***Honesty and Integrity, Ethics***

They would be aware of ethical issues and regulatory considerations while addressing society needs for growth with honesty.

### ***Environmental and Sustainability***

Best problem-solving skills in students would encourage them to carry out innovative research projects thereby making them to use knowledge creation in depth.

### ***Lifelong learning and motivating others to learn.***

They would lend the support to other students to grow with them with equal opportunities.

### ***Global thinking***

Knowledgeable disciplined students with good values, ethics, kind heart will help in nation building globally.

### ***Critical Thinking***

Comprehend the matter they come across and be capable to take a sound view point about things which will highlight their intellectual acumen as well as enable them to look at the world through multiple lenses

### ***Effective communication***

Listen, speak, read and write. They should communicate properly by conveying their thoughts. They will use technology for communication. Will be able to network with people with all available channels. They will be developing communication skills in English; Hindi and a local language would be an added advantage.

### ***Social Interaction***

Respect each other and should be able to resolve conflicts and help in reaching amicable solution. They should be able to work in diverse teams. They should be able to distinguish when and what is socially acceptable.

### ***Responsible citizen***

Contribute to Nation development through social service. Being empathetic and sympathetic to fellow beings.

### ***Honesty and Integrity, Ethics***

Recognize different values and systems and respect them. In decision making moral values should be given prime importance.

### ***Environmental and Sustainability***

Environmental issues would be considered and problem solving with sustainable development would be chosen.

### ***Lifelong learning***

Enjoy learning in every situation.

## **Programme Specific Outcome M Sc Program with Environmental Science and Disaster Management**

Environmental Science and Disaster Management play a significant role in our life. From climate change, reason for natural disaster to meeting the day-to-day activity of our life. The uniqueness of nature like plant capability of trapping solar energy and understanding the energy flow in ecosystem. Standard studies like environmental science are now having a new application in terms of applied hypothesis for predicting and prospecting the key role of nature. The courses have been designed to benefit students to study various aspects of environment science including its practical applications. Keeping in mind the need for employability and entrepreneurship topics have been included in the curriculum.

|      |   |
|------|---|
| PS01 | Understand the basic concept of environment, energy, natural resource management and sustainable development and environmental education. exploring fundamentals of environmental chemistry, environmental pollution and control followed by water and soil pollution and its current issues. |
| PS02 | Understand the concepts of thermal, marine pollution and radioactive, environmental biology; environmental geosciences and soil weathering, hydrogeology, and environmental implications of energy use  |
| PS03 | Understand the current issue related natural hazards, disaster management; some statistical concepts for application ; environmental instrumentation; environmental assessment, management and legislation followed by environmental economics and contemporary environmental issues          |
| PS04 | Internship and understanding required skills for entrepreneur   |

## ESDM Core Course Programme Outcome

|                  | PROGRAMME OUTCOMES | CORE COMPETENCY | CRITICAL THINKING | ANALYTICAL | RESEARCH SKILLS | PROBLEM SOLVING | TEAMWORK |
|------------------|--------------------|-----------------|-------------------|------------|-----------------|-----------------|----------|
| Msc Semester I   | RJSPGESDM101       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDM102       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDM103       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDM104       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP101      | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP102      | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP103      | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP104      | √               | √                 | √          | √               | √               | √        |
| Msc Semester II  | RJSPGESDM201       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDM202       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDM203       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDM204       | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP201      | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP202      | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP203      | √               | √                 | √          | √               | √               | √        |
|                  | RJSPGESDMP204      | √               | √                 | √          | √               | √               | √        |
| Msc Semester III | RJSPGESDM301       | √               | √                 | √          | √               | √               | √        |



|                        |               |   |   |   |   |   |   |
|------------------------|---------------|---|---|---|---|---|---|
|                        | RJSPGESDM302  | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDM303  | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDM304  | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP301 | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP302 | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP303 | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP304 | √ | √ | √ | √ | √ | √ |
| Msc<br>Semest<br>er IV | RJSPGESDM401  | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDM402  | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDM403  | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDM404  | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP401 | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP402 | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP403 | √ | √ | √ | √ | √ | √ |
|                        | RJSPGESDMP404 | √ | √ | √ | √ | √ | √ |

## **Teaching Learning Process**

The teaching learning process in the learning outcomes-based curriculum framework in the subject is designed to develop the cognitive skills of every learner. The course offers the requisite skills for a profession. All courses have practical's as an integral part which promotes the learner to acquire the requisite skills for employment by experiential learning.

An interesting combination of teaching learning processes is adopted in which the teacher and learners are actively involved.

### **Some of the salient teaching learning processes are**

- Class lectures
- Presentations
- Documentary and educational video
- Group Discussion, workshops, case studies
- Peer teaching and learning
- Flipped classroom, project-based learning, quiz, seminars, exhibitions, posters
- Practical's experimental design planning, analysis, interpretation, application of knowledge gained
- Technology enabled self-learning,
- Internships

The effective teaching strategies would address the requirements of learner to learn at their own pace. The teaching pedagogy adopted to ensure inculcate higher order skills in the learner. The entire program is also designed to foster human values, environmental consciousness for an equitable society. The teaching learning processes adopted would aim at participatory pedagogy.