

R. E. Society's
**R. P. Gogate College of Arts & Science and
R. V. Jogalekar College of Commerce
(Autonomous), Ratnagiri**



**Department of Botany
UG Programme 2024-25
Syllabus for F. Y. B. Sc. (VEC-Environmental studies)
Semester I and II
Under Choice Based Credit System (CBCS)**

**R. P. Gogate College of Arts and Science And
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Board of Studies in Botany Syllabus for F. Y. B. Sc. VEC - Environmental Studies
effective from year 2024-25**

Name of Programme	B. Sc.
Level	UG
No of Semesters	01
Year of Implementation	2024-25
Programme Specific Outcomes (PSO)	<ol style="list-style-type: none"> 1. Students will be able to recall details and information about the environment. 2. Students will be able to recall details of the prescribed ecosystem and its components. 3. Students will be able to communicate effectively using oral and written communication skills. 4. Students will be able to understand natural resources and current environmental issues. 5. Students will be able to know about energy consumption and eco-friendly ideas to reduce use of paper. 6. Students will get aware and sensitized towards the prevailing environmental issues.
Relevance of PSOs to the local, regional, national, and global developmental needs (200 words)	<ol style="list-style-type: none"> 1. The students, after completion of the course will be able to understand the environment and concepts of ecology and its components. 2. The students will apply the knowledge about the environment for sustainable livelihood which is useful from local to global level. 3. The students will gain knowledge regarding the natural resources which will be helpful to minimize the usage of natural resources and to improve the awareness among them. 4. The students will be able to analyze global environmental issues like global warming, climate change, and its impacts and get acquainted with their own environment. 5. The students will be able to develop sensitivity for the natural resources in the immediate environment. 6. The students will be able to implant the habit of minimum energy consumption in local and regional circumstances for their ecofriendly approach towards the environment.

The performance of the learners shall be evaluated into two parts. The learner's performance shall be assessed by Internal Assessment with 40% marks in the first part and by conducting the

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Semester End Examinations with 60% marks in the second part. **The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below-**

A) Internal Assessment: 40 % (20 Marks)

Sr. No.	Particulars	Marks
1.	One Periodical Class Test / Online Examination	10
2.	Assignments	10
	Question Paper Pattern for Periodical Class Test/ Online Examination: Maximum Marks: 10 Duration: 20 Minutes Long answer questions/ Multiple Choice Questions	

B) Semester End Examination: 60% (30 Marks)

Duration: The examination shall be of 1 hour duration. Question Paper Pattern

1. There shall be three questions.
2. All questions shall be compulsory with internal options.
3. Questions may be subdivided into sub-questions a, b, c... and the allocation of marks depends on the weightage of the unit.

Standard of Passing

The learner to pass a course shall have to obtain a minimum of 40% marks in aggregate for each course where the course consists of Internal Assessment and Semester End Examination. The learner shall obtain minimum of 40% marks (i.e. 08 out of 20) in the Internal Assessment and 40% marks in Semester End Examination (i.e. 12 out of 30) separately, to pass the course and minimum of Letter Grade "P" in the project component, wherever applicable to pass a particular semester. A learner will be said to have passed the course if the learner passes the Internal Assessment and Semester End Examination together.

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Performance grading

Letter grades and grading points:

Semester GPA / Program CGPA Semester/Program	% of Marks	Alpha-Sign/Letter Grade Result
9.00-10.00	90.0-100	O (Outstanding)
8.00 ≤ 9.00	80.0 ≤ 90.0	A+ (Excellent)
7.00 ≤ 8.00	70.0 ≤ 80.0	A (Very Good)
6.00 ≤ 7.00	60.0 ≤ 70.0	B+ (Good)
5.50 ≤ 6.00	55.0 ≤ 60.0	B (Above Average)
5.00 ≤ 5.50	50.0 ≤ 55.0	C (Average)
4.00 ≤ 5.00	40.0 ≤ 50.0	P (Pass)
Below 4.00	Below 40	F (Fail)
Ab (Absent)	-	Absent

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Nomenclature of the Course	VEC - Environmental studies -I	
Class	F. Y. B. Sc.	
Semester	1	
Course Code	USES01	
No. of Credits	02	
Nature	Theory	
Type	Value Education Course	
Course Outcomes:		
Students will be able to:		
CO1: Gain knowledge about the environment and the environmental factors.		
CO2: Understand the concept of ecosystem and prescribed types of ecosystem.		
CO3: Get aware about the need of natural resources and its conservation.		
CO4: Learn and think about prescribed global environmental issues.		
CO5: Understand the energy conservation and get an idea to minimize it.		
CO6: Acquire the habit of paperless work with an ecofriendly approach towards the environment.		
Syllabus:		
Unit No.	Unit Title	Sub titles (Learning Points)
1	Introduction to Environment	Environment Definition of Environment, Environmental factors, Ecosystems Definition and Concept, Components of ecosystem: Biotic and Abiotic, Types of Ecosystem: Terrestrial and Aquatic, Food Chain and Food Web, Ecological Pyramids.
2	Natural Resources and Climate change	Natural Resources Concept and types of natural resources , Major Natural Resources : Water, Land, Minerals, Biological and Energy Resources , Introduction to climate change, global warming and its effects. Greenhouse substances: Sources & effects. Environmental issues ● Pollution: definition, Air Pollution, Water Pollution, Soil Pollution, Noise Pollution , Control measures
3	Clean development mechanism:	Clean development mechanism:- Introduction, carbon foot printing, carbon credits, carbon sequestration and Polluter pay principle. Green building practices. Approaches to green

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		computing and nano-technology, Role of information technology in environment and human health.	
Prescribed Text/s :			
<ul style="list-style-type: none">● Ecology and Environment - P.D. Sharma (13th Edition), Rastogi publications,2018.● Fundamentals of Ecology - Odum, E.P.,W.B. Sounders,2015.● Ecology, Environment and Resource Conservation - Singh, J.S., Singh, S.P. & Gupta, S.R. Anamaya Publications,2006.● Atmosphere, Weather and Climate - Barry, R. G. Routledge Press, UK.15,2003.● Climate Change and India - Mitra, A.P., Sharma, S., Bhattacharya, S., Garg, A., Devotta, S. & Sen, K. Universities Press, India,2004.● Natural Resource Conservation Management for a Sustainable Future (7th edition) - Owen, O.S, Chiras, D.D, & Reganold, J.P.. Prentice Hall,1998.● Resources of the Earth: Origin, Use, and Environmental Impacts (2nd edition) - Craig, J.R., Vaughan. D.J. & Skinner. B.J.. Prentice Hall, New Jersey,1996.● Fundamentals of Materials for Energy and Environmental Sustainability -Ginley, D.S. & Cahen, D. Cambridge University Press,2011.● Conservation of Natural Resources - Klee, G.A. Prentice Hall Publication,1991.● Ecology of Natural Resources - Ramade, F. John Wiley & Sons Ltd.,1984.● Renewable Energy Resources: Basic Principles and Application.- Tiwari, G.N. & Ghosal. M. K. Narosa Publishing House,2005.			
Teaching Plan:			
Unit No.	Unit Title	Teaching Methods	No. of Lectures
1	Introduction to Environment	Presentation, Chalk and talk	9
2	Natural Resources and Climate change	Presentation, Chalk and talk	9
3	Clean development mechanism	Presentation, Chalk and talk	9
4	Field visit to ecosystem		3

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Evaluation Pattern

A) Continuous Internal Evaluation: Maximum Marks:20

Method	Marks
Class test	10
Assignment/Field report (Research methodology or review)	10

B) Semester End Examination: Maximum Marks: 30

Question No. and Sub questions	Unit and sub unit (with number and title)	Type of Question	Marks
1 A	I	Long answer questions (Any 1 out of 2)	06
1 B	I	Answer in brief (Any 1 out of 2)	04
2 A	II	Long answer questions (Any 1 out of 2)	06
2 B	II	Answer in brief (Any 1 out of 2)	04
3 A	III	Long answer questions (Any 1 out of 2)	06
3 B	III	Answer in brief (Any 1 out of 2)	04

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Nomenclature of the Course	VEC - Environmental studies -II	
Class	F. Y. B. Sc.	
Semester	2	
Course Code	USES02	
No. of Credits	02	
Nature	Theory	
Type	Value Education Course	
Course Outcomes:		
Students will be able to:		
<p>CO1: Gain knowledge about the biodiversity and its prescribed levels with concern conservation methods.</p> <p>CO2: Understand the environmental issues knowing prescribed types of pollution.</p> <p>CO3: Aware about the green practices and its positive approach towards the environment.</p> <p>CO4: Learn and think about prescribed global environmental issues.</p> <p>CO5: Understand communities in India and their role to conserve the environment.</p> <p>CO6: Know about the role of prescribed National and International organizations in environmental conservation.</p> <p>CO7: Acquire the method of waste management and their processing technologies.</p>		
Syllabus:		
Unit No.	Unit Title	Sub titles (Learning Points)
1	Biodiversity and Environment Conservation	<p>Biodiversity and Environment Definition, Levels of Biodiversity, Values of Biodiversity – Direct and Indirect, Bio-diversity hotspots of India,, Threats to Bio-diversity</p> <p>Environment Conservation: Role of National and International Organizations in environment conservation: BSI, ZSI, FRI, NEERI, WWF, UNEP, CPCB, MPCB, BNHS, WII.</p>
2	Human Population and the Environment	<p>Human Population and the Environment</p> <ul style="list-style-type: none"> ● Population growth, variation among nations. ● Population explosion ● Family Welfare Programme ● Environment and human health. ● Human Rights.

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		<ul style="list-style-type: none"> ● Value Education. ● Women and Child Welfare.
3	Energy conservation and Waste management	Energy conservation Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Going Paperless, Organizational Realities, Changing Over, Paperless Billing. Solid waste processing technologies: Mechanical and thermal volume reduction. Biological and chemical techniques for energy and other resource recovery. Composting, vermicomposting and incineration of solid wastes. Biomedical Waste Management: and its management & disposal and preventive measures

Prescribed Text/s :

- Ecology and Environment - P.D. Sharma (13th Edition), Rastogi publications,2018.
- Fundamentals of Ecology - Odum, E.P.,W.B. Saunders,2015.
- Ecology, Environment and Resource Conservation - Singh, J.S., Singh, S.P. & Gupta, S.R. Anamaya Publications,2006.
- Atmosphere, Weather and Climate - Barry, R. G. Routledge Press, UK.15,2003.
- Climate Change and India - Mitra, A.P., Sharma, S., Bhattacharya, S., Garg, A., Devotta, S. & Sen, K. Universities Press, India,2004.
- Natural Resource Conservation Management for a Sustainable Future (7th edition) -Owen, O.S, Chiras, D.D, & Reganold, J.P.. Prentice Hall,1998.
- Resources of the Earth: Origin, Use, and Environmental Impacts (2nd edition) - Craig, J.R., Vaughan. D.J. & Skinner. B.J.. Prentice Hall, New Jersey,1996.
- Fundamentals of Materials for Energy and Environmental Sustainability -Ginley, D.S. & Cahen, D. Cambridge University Press,2011.
- Conservation of Natural Resources - Klee, G.A. Prentice Hall Publication,1991.
- Ecology of Natural Resources - Ramade, F. John Wiley & Sons Ltd.,1984.
- Renewable Energy Resources: Basic Principles and Application.- Tiwari, G.N. & Ghosal. M. K. Narosa Publishing House,2005.

Teaching Plan:

Unit No.	Unit Title	Teaching Methods	No. of Lectures
1	Biodiversity and Environment Conservation	Presentation, Chalk and talk	9
2	Human Population and the Environment	Presentation, Chalk and talk	9

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3	Energy conservation and Waste management	Presentation, Chalk and talk	9
4	Field visit to ecosystem		3

Evaluation Pattern

C) Continuous Internal Evaluation: Maximum Marks:20

Method	Marks
Class test	10
Assignment/Field report (Research methodology or review)	10

D) Semester End Examination: Maximum Marks: 30

Question No. and Sub questions	Unit and sub unit (with number and title)	Type of Question	Marks
1 A	I	Long answer questions (Any 1 out of 2)	06
1 B	I	Answer in brief (Any 1 out of 2)	04
2 A	II	Long answer questions (Any 1 out of 2)	06
2 B	II	Answer in brief (Any 1 out of 2)	04
3 A	III	Long answer questions (Any 1 out of 2)	06
3 B	III	Answer in brief (Any 1 out of 2)	04

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	Waste management		
4	Field visit to ecosystem		3

Evaluation Pattern

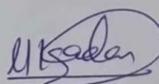
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Method	Marks
Class test	10
Assignment/Field report (Research methodology or review)	10

D) Semester End Examination: Maximum Marks: 30

Question No. and Sub questions	Unit and sub unit (with number and title)	Type of Question	Marks
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1 B	I	Answer in brief (Any 1 out of 2)	04
2 A	II	Long answer questions (Any 1 out of 2)	06
2 B	II	Answer in brief (Any 1 out of 2)	04
3 A	III	Long answer questions (Any 1 out of 2)	06
3 B	III	Answer in brief (Any 1 out of 2)	04

Date: 16/04/24
Place: Ratnagiri



Signature
Chairperson and HoD