



**GokarajuRangaraju Institute of Engineering and Technology**  
**(Autonomous)**  
**Bachupally, Kukatpally, Hyderabad – 500 090, A.P., India. (040) 6686 4440**

## **TUTORIAL SHEET - 1**

Academic Year : 2012-2013 Date:25/10/12.

Semester : I

Name of the Program: B.Tech ...Mechanical Engineering ...Year: 1 Sem: 1....Section: A

Course/Subject: Environmental Sciences.....

Name of the Faculty: ...G.S.N.Murthy..... Dept.:...Basic Sciences.....

Designation : ASSOCIATE PROFESSOR.

This Tutorial corresponds to Unit No. / Lesson .....1

Q1. What are the different components of ecosystem?

Q2. Define food chain and food web? Give their significance.

Q3. What is biogeochemical cycle? Explain about nitrogen cycle with a neat diagram.

Q4. What is hot-spot of diversity? What are the consumptive, social and productive values of biodiversity?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 4,

1. To develop insight about environment 2) ecology3) classification and function of ecosystem and 4)biodiversity

Outcome Nos.:4...1) They understand about environment 2) concept of ecosystem  
3) Biodiversity 4) values and types of biodiversity.

G.S.N.Murthy  
Signature of HOD  
Date:

Signature of faculty  
Date:



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## **TUTORIAL SHEET - 2**

Academic Year : 2012-2013

Date:15/11/12

Semester : I

Name of the Program: B.Tech ...Mechanical Engineering....Year: 1, Sem: 1 ..Section: A

Course/Subject: Environmental Science

Name of the Faculty: ...G.S.N.Murthy.....Dept.:...Basic Sciences.....

Designation : ASSOCIATE PROFESSOR.

This Tutorial corresponds to Unit No. / Lesson .....2.....

Q1. What are the effects of over utilization of ground water?

Q2. Define renewable and non-renewable resources with example.

Q3. What are mineral resources? Elaborate the impacts of mining?

Q4. What is the role of individual in conservation of natural resources?

Please write the Questions / Problems / Exercises which you would like to give to the students and also mention the Objectives/Outcomes to which these Questions / Problems / Exercises are related.

Objective Nos.: 4,

1. To develop insight about the role of individual in conservation of resources 2) impacts of mining
2. 3) impacts of excess usage of water and 4) forest and wild life protection

Outcome Nos.:4...1) They understand about the importance of resources 2) impacts of mining  
3) Importance of water 4) forest and wild life protection

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## **COURSE SCHEDULE**

Academic Year : 2012-2013

Semester : I

Name of the Program: B.Tech Mechanical Engineering..... Year: 1...Section: A / B

Course/Subject: ...Environmental Science.....Course Code: ...GR11A1009.....

Name of the Faculty: ...G.S.N.Murthy..... Dept.: Basic Sciences.

Designation: ASSOCIATE PROFESSOR.

The Schedule for the whole Course / Subject is:

S. No.	Description	Duration (Date)		Total No. Of Periods
		From	To	
1.	Unit-1:Ecology	19/9/10	4/10/12	12
2.	Unit-2 : Natural resources	10/10/12	31/10/12	12
3.	Unit-3: Environmental pollution	1/11/12	22/11/12	12
4.	Unit-4: Environmental problems and Management policies	28/11/12	19/12/12	14
5.	Unit-5: National policy on Environment protection and sustainability	20/12/12	10/1/13	14
6.				

Total No. of Instructional periods available for the course: .....68..... Hours / Periods

# APPENDIX - B

## COURSE FILE

The following are to be filed in each Course File:

1. Get a new file from your office for each course and file each sheet of these formats as and when it is completed.
2. Time Table and Syllabus copy for your course.
3. Course Plan, Unit Plan and Lesson Plan
4. List of Program Objectives & Outcomes; Course Objectives & Outcomes
5. Illustrative verbs used for writing the Objectives and Outcomes
6. List of various Mappings/Matrix for your Course
  - a. *Mapping between Course Objectives and Course Outcomes*
  - b. *Mapping between Course Objectives and Program Outcomes(POs)*
  - c. *Mapping between Course Outcomes and Mandatory/Program Outcomes(POs)(a-k)*
  - d. *Mapping between Courses with titles & codes and Mandatory/Program Outcomes(POs)(a – k)*
  - e. *Mapping between the PEOs and Course Outcomes*
  - f. *Mapping between POs and Assignments and Assessments Methods*
  - g. *Mapping between the Assessment Methods and PEOs*
7. List of Assessments, Assignments/Seminar Topics, Projects, Experiments, etc. you have given to students and the Criteria used for evaluation
8. Assignment sheets, Tutorial Sheets, and Course Schedules
9. At least 1 to 3 Assessment Rubrics for your course
10. Evaluation Strategy
11. Guidelines to study the course
12. Attach the Marks list of the students in respect of CAE -I (Continuous Assessment Exam), CAE-II, etc. and Final Exam for this Course in your course File.
13. Photocopy of the best, average and the worst answer sheets for CAE-I, & CAE-II be included in the Course File.
14. Model question papers if any, which you have distributed to the students in the beginning of the Semester for the Course may be included in the Course File.
15. Any Teaching/Learning Aids, additional resources like OHP transparencies, LCD Projection material, Soft & Hard Copies of handouts used may also be filed in it.
16. Course Completion Status
17. Grading Sheet of the Course for all students



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## **EVALUATION STRATEGY**

Academic Year : 2012-2013

Semester : I

Name of the Program: B.Tech ...Mechanical Engineering.....Year: 1... Section: A / B

Course/Subject: ...Environmental Science

Name of the Faculty: .....G.S.N.Murthy.....Dept. Basic Science

Designation : ASSOCIATE PROFESSOR

1. TARGET: To make all the students understand and secure maximum marks.

A) Percentage for pass: 10 out of 25

b) Percentage of class: 80% of the class secured pass marks.

### 2. COURSE PLAN& CONTENT DELIVERY

(Please write how you intend to cover the contents: i.e., coverage of Units/Lessons by lectures, design, exercises, solvingnumericalproblems, demonstrationofmodels,modelpreparation, experiments in the Lab., orbyassignments,etc.)

**Using aids, with teaching aids, suitable examples, and videos and giving exercises.**

### 3. METHOD OF EVALUATION

3.1  Continuous Assessment Examinations (CAE-I, CAE-II) (yes)

3.2  Assignments/Seminars (yes)

3.3  Mini Projects (yes)

3.4  Quiz (yes)

3.5  Semester/End Examination (yes)

3.6  Others

4. List out any new topic(s) or any innovation you would like to introduce in teaching the subjects in this Semester.

Innovative projects, model making and industrial visits.

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Signature of faculty

Date:

Date:



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## **COURSE OUTCOMES**

Academic Year : 2012-2013

Semester : I

Name of the Program: B.Tech ...Mechanical Engineering... Year: 1... Section: A / B

Course/Subject: ...Environmental Science..... Course Code: GR11A1009

Name of the Faculty: ...G.S.N.Murthy.....Dept. Basic science.....

Designation: ASSOCIATE PROFESSOR.

The expected outcomes of the Course/Subject are:

<b>S.No</b>	<b>Outcomes</b>
1	To develop knowledge of the concept of environment, ecosystem and biodiversity.
2	To develop positive and negative effects of different natural resources.
3	To develop knowledge about the pollution causing agents and their effects.
4	To develop awareness about the role of ozone layer, importance of rain water harvesting and climate change.
5	To develop awareness about environmental protection and sustainability.
6	

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Signature of HOD

Signature of faculty

Date:

Date:

Note: Please refer to Bloom's Taxonomy, to know the illustrative verbs that can be used to state the outcomes.



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### **COURSE COMPLETION STATUS**

Academic Year : 2012-2013

Semester : I

Name of the Program: B.Tech ...Mechanical Engineering Year: ...1..... Section: A / B

Course/Subject: .....Environmental Science..... Course Code: GR11A1009

Name of the Faculty: ...G.S.N.Murthy .....Dept.: Basic Sciences

Designation: ASST.PROFESSOR/ ASSOCIATE PROFESSOR/ PROFESSOR/HOD.

Actual Date of Completion & Remarks, if any

<b>Units</b>	<b>Remarks</b>	<b>No. of Objectives Achieved</b>	<b>No. of Outcomes Achieved</b>
Unit 1	Completed within the planned period	4	3
Unit 2	Completed within the planned period	3	4
Unit 3	Took some extra classes	4	4
Unit 4	Completed within the planned period	3	4
Unit 5	Took some extra classes	3	3
Unit 6			

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Date:

Date:

Note: After the completion of each unit mention the number of Objectives & Outcomes Achieved.



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## **GUIDELINES TO STUDY THE COURSE/SUBJECT**

Academic Year : 2012-2013

Semester : I

Name of the Program: B.Tech...Mechanical Engineering..... Year: 1..... Section: A / B

Course/Subject: .....Environmental Science .....Course Code: ...GRA11A009...

Name of the Faculty: ...G.S.N.Murthy ..... Dept.: Basic Sciences.....

Designation: ASSOCIATE PROFESSOR

Guidelines to study the Course/ Subject:.....Environmental science.....

### **Course Design and Delivery System (CDD):**

- The Course syllabus is written into number of learning objectives and outcomes.
- These learning objectives and outcomes will be achieved through lectures, assessments, assignments, experiments in the laboratory, projects, seminars, presentations, etc.
- Every student will be given an assessment plan, criteria for assessment, scheme of evaluation and grading method.
- The Learning Process will be carried out through assessments of Knowledge, Skills and Attitude by various methods and the students will be given guidance to refer to the text books, reference books, journals, etc.

The faculty be able to –

- Understand the principles of Learning
- Understand the psychology of students
- Develop instructional objectives for a given topic
- Prepare course, unit and lesson plans
- Understand different methods of teaching and learning
- Use appropriate teaching and learning aids
- Plan and deliver lectures effectively
- Provide feedback to students using various methods of Assessments and tools of Evaluation
- Act as a guide, advisor, counselor, facilitator, motivator and not just as a teacher alone

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## **SCHEDULE OF INSTRUCTIONS**

### **UNIT PLAN**

Academic Year : 2012-2013

Semester : I UNIT NO.: .....1.....

Name of the Program: B.Tech...Mechanical Engineering ..... Year: 1.,Sem :1 Section: A

Course/Subject: ...Environmenta Science..... Course Code: ...GR11A1009.....

Name of the Faculty: ...G.S.N.Murthy.....Dept.: Basic Sciences.....

Designation: ASSOCIATE PROFESSOR.

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives Nos	Outcomes Nos.	References (Text Book, Journal) Page Nos.: __to __
1.	20/9/12	1	Concept of Environmental Studies – Introduction			
2.	20/9/12	1	Environmental Studies - Ecosystem introduction	1	1	
3.	21/9/12	1	Environmental Studies – ecosystem and its importance.	3	3	Environmental sciences by Barucha
4.	21/9/12	1	Public participation and awareness.	3	3	Environmental sciences by Barucha
5.	03/10/12	1	Classification of ecosystem & structural features.	4	4	Environmental sciences by Barucha
6.	12/10/12	1	Functions of ecosystem.	4	4	Environmental sciences by Barucha
7.	13/10/12	1	Typical ecosystem – Food chains	3	3	Environmental sciences by Barucha
8.	16/10/12	1	Typical ecosystem – Food Web.	3	2	Environmental sciences by Barucha
9.	17/10/12	1	Biologicalfood web – ecological pyramids.	2	2	Environmental sciences by Barucha
10.	20/10/12	1	Biodiversity and its conservation.	2	2	Environmental sciences by Barucha
11.	21/10/12	1	Biodiversity and its values.	2	2	Environmental sciences by Barucha
12.	23/10/12	1	Threats of biodiversity and hot-spots.	2	2	Environmental sciences by Barucha

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Date:

Signature of faculty  
Date:

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.  
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED IN BOLD  
3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST TEACH TOPIC.



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**SCHEDULE OF INSTRUCTIONS**  
**UNIT PLAN**

Academic Year : 2012-2013

Semester : I UNIT NO.: .....1.....

Name of the Program: B.Tech...Mechanical Engineering ..... Year: 1.,Sem :1 Section: A

Course/Subject: ...Environmenta Science..... Course Code: ...GR11A1009.....

Name of the Faculty: ...G.S.N.Murthy.....Dept.: Basic Sciences.....

Designation: ASSOCIATE PROFESSOR.

Lesson No.	Date	No. of Periods	Topics / Sub - Topics	Objectives Nos	Outcomes Nos.	References (Text Book, Journal) Page Nos.: __ to __
1.	24/10/12	1	Natural resources – Introduction.			
2.	24/10/12	1	Natural resources – Forest resources.	1	1	
3.	25/10/12	1	Natural resources – Water resources.	3	3	Environmental sciences by Barucha
4.	26/10/12	1	Natural resources –Mineral resources	3	3	Environmental sciences by Barucha
5.	27/10/12	1	Natural resources – Energy resources.	4	4	Environmental sciences by Barucha
6.	30/10/12	1	Natural resources – Land resources	4	4	Environmental sciences by Barucha
7.	31/10/12	1	Role of individual-natural resources conservation.	3	3	Environmental sciences by Barucha
8.	31/11/12	1	Role of individual-water resources conservation.	3	2	Environmental sciences by Barucha
9.	02/11/12	1	Role of individual-energy resources conservation.	2	2	Environmental sciences by Barucha
10.	03/10/12	1	Role of individual, to protect the soil resources.	2	2	Environmental sciences by Barucha
11.	04/10/12	1	Value of natural resources for human society	2	2	Environmental sciences by Barucha
12.	05/10/12	1	Total unit repeated and discussed.	2	2	

G.S.N.Murthy  
Signature of HOD  
Date:

Signature of faculty  
Date:

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.  
2. ADDITIONAL TOPICS COVERED, IF ANY, MAY ALSO BE SPECIFIED IN BOLD  
3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST TEACH TOPIC.



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## **LESSON PLAN - 1**

Academic Year : 2012-2013 Date: 07-11-2012

Semester: I

Name of the Program: B.Tech : Mechanical Engineering Year: 1, Sem:1Section:A/B

Course/Subject: Environmental Sciences Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No:1 , Duration of lesson: 1 hr

Lesson Title: Concept of Environmental Studies – Introduction

### **INSTRUCTIONAL/LESSON OBJECTIVES:**

On completion of this lesson the student shall be able to develop & understand the concepts of Environmental Studies.

TEACHING AIDS :White Board , Marker, Teaching material, OHP, LCD projector.

### **TEACHING POINTS:**

\*Environment is sum total of water, air, and land, inter-relationships among themselves and also with the human beings, other living organisms and property. Scope of environmental studies is broad based and it encompasses a large number of areas and aspects .

\*Environment belongs to all and is thus important for all. Environmental Studies can be highly specialized also which may concentrate on more technical aspects like Environmental Sciences, Environmental Engineering, Environmental Management, Environmental Biotechnology etc.

### **Assignment / Questions:**

1. What is the need for studying environmental issues?
2. What is the scope of environmental education?

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Note: Mention for each question the relevant Objectives and Outcomes Nos. 1,3(obj) 1,2(outc)



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## **LESSON PLAN - 2**

Academic Year : 2012-2013 Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical EngineeringYear:1 Sem: 1Section: A / B

Course/Subject: Environmental Sciences Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No2Duration of lesson: 1hr

Lesson Title: Environmental Studies - Ecosystem introduction

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know theenvironmental ecosystem.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Ecology deals with the study of organisms in their natural home interacting with their surroundings.
2. Environment consists of other living organism(biotic) & physical{abiotic) components.
3. Now ecology is often defined as the study of ecosystems.
4. Ecosystem is an integrated unit consisting of interacting plants, animals and microorganisms whose survival depends upon the maintenance regulations of their biotic abiotic structures &funcios.

### **Assignment / Questions:**

1. Define ecology and ecosystems.
2. What are the biotic and abiotic components of an ecosystem?s

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Note: Mention for each question the relevant Objectives and Outcomes Nos.1,3(obj) 1,2(outc)



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## **LESSON PLAN - 3**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 3 Duration of lesson: 1hr

Lesson Title: Environmental Studies –ecosystem and its importance.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know the environmental ecosystem.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Environmental balance is more important for all living beings.
2. Ecological imbalance take place due to irregular environmental conditions

### **Assignment / Questions:**

1. Define ecology and ecosystems.
2. What are the biotic and abiotic components of an ecosystem?s

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 4**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 4 , Duration of lesson: 1hr

Lesson Title: Public participation and awareness in the environmental studies.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the importance of environmental sciences.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Importance of environmental studies in our life.
2. Need for public awareness in the case of society.
3. The public has to be educated about the fact that if we are degrading our environment, we are actually harming our ourselves.
4. There is a Chinese proverb "if you plan for one year ,plant rice , if you plan for ten years ,plant trees & if you plan for hundred years , educate the people. If we want to manage our planet earth, we have to make all the persons environmentally educated.

### **Assignment / Questions:**

1. Write the importance of environmental studies?
2. Explain about the public participation and awareness in the environmental studies.

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN– 5**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 5 , Duration of lesson: 1hr

Lesson Title: Concept ofecosystem , classification of ecosystem & structural features.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the importance of environmental ecosystems.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Ecology deals with the study of organisms in their natural home interacting with their surroundings.
2. The surroundings or environment consists of other of other living organisms(biotic) & physical (abiotic) components.
3. Biotic structure divided in to three types – a) producers (plants) b) consumers(animals) c) decomposers(microorganisms)
4. Abiotic structuretwo types a)Physicalcomponents ex:-sunlight, soil type, temperature, wind, rain etc. b)Chemical component factors ex:- Carbon, Nitrogen, Phosphorous, Potassium etc.

### **Assignment / Questions:**

1. Define ecology and ecosystems ?
2. What are the biotic and abiotic components of an ecosystem?

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 6**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No :1 , Lesson No : 6,Duration of lesson: 1hr

Lesson Title:Functions of ecosystem - Forest ecosystem, aquatic ecosystem, grassland ecosystem, desert ecosystem.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able toknow about the functions of ecosystem.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Forest ecosystem, aquatic ecosystem, grassland ecosystem, desert ecosystem.
2. (a) Food chain, food webs & trophic structures (b) Energy flow (c) Cycling of nutrients(biogeochemical cycles) (d) primary and secondary production.

### **Assignment / Questions:**

1. Describe about the grassland ecosystem ?
2. Explain about the food chain and food web.

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)





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## **LESSON PLAN - 7**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 7 ,Duration of lesson: 1hr

Lesson Title: Typical ecosystem – Food chains

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the food chains in the ecosystem..

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Sequence of eating and being eaten by in an ecosystem is known as food chains.
2. Two types of major food chains are observed.
3. Major food chains are (a) Grazing food chain (b) Detritus food chain

### **Assignment / Questions:**

1. Describe about the grazing food chain in the ecosystem ?
2. Explain about the detritus food chain.

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 8**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 8 ,Duration of lesson: 1hr

Lesson Title: Typical ecosystem – Food Web.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the food web systems in the ecosystem..

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Food web is a network of food chains.
2. Food webs play a very significant role in the ecosystem. Energy flow & nutrient cycling take place through ecosystem.
3. Food webs show ecological balance and show a unique property of biological magnification.

### **Assignment / Questions:**

1. Describe about the food webs in the ecosystem ?
2. How the food webs show ecological balance and unique property of biological magnification.

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 9**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 9 ,Duration of lesson: 1hr

Lesson Title: Biologicalfood web – ecological pyramids.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the ecological pyramids .

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Pyramid of numbers , pyramid of biomass , pyramid of energy.
2. Energy flow in an ecosystem –(a)Universal energy flow model (b)Single channel energy flow model (c) double channel or Y-shaped energy flow model.

### **Assignment / Questions:**

1. Describe about the pyramid of numbers in an ecosystem ?
2. Explain about the Universal energy flow model.

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 10**

Academic Year : 2012-2013 Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 10 ,Duration of lesson: 1hr

Lesson Title: Biodiversity and its conservation.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the biodiversity.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Types of biodiversity – genetic biodiversity, species biodiversity,ecosystem biodiversity and global biodiversity.
2. Biological diversity at national level( Indian biodiversity)

### **Assignment / Questions:**

1. What is genetic biodiversity explain clearly ?
2. Explain about the Biological diversity at national level( Indian biodiversity).

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 11**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 11 ,Duration of lesson: 1hr

Lesson Title: Biodiversity and its values.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the biodiversity values .

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Types of biodiversity values – (a) Consumptive value (b) Productive use value (c) Social value (d)Ethical value (f) Aesthetic value
2. Regional and local biodiversity.

### **Assignment / Questions:**

1. Explain about the types of biodiversity values.
2. Explain about the regional and local biodiversity.

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 12**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 1 , Lesson No : 12 ,Duration of lesson: 1hr

Lesson Title: Threats of biodiversity and hot-spots.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the threats of biodiversity and hot-spots..

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### TEACHING POINTS :

1. Threats of biodiversity , Man – wild life conflicts , India as a mega –diversity naton.
2. Hot-spots.
3. Conservation of biodiversity (a) in-situ conservation (b) Ex-situ conservation.

### **Assignment / Questions:**

1. What are the threats of biodiversity ?
2. Explain about the hot – spots.

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 1**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 Lesson No : 1 Duration of lesson: 1hr

Lesson Title: Natural resources – Introduction.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the natural resources.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Life on this planet earth depends upon a large number of things and services provided by the nature , which are known as natural resources ex:- water, air , soil , crops & wild life.
2. Two kinds of natural resources (a) Renewable resources – regenerated within a given span of time Ex:- forests , Hydropower, Solar energy. (b) Non-renewable sources – which can not be generated ex:- coal, petroleum , minerals.
3. Major natural resources i.e., i) forest resources (ii)water resources(ii) mineral resources (iv) food resources(v) energy resources (iv) land resources

### **Assignment / Questions:**

1. Describe about the natural resources in the ecosystem?
2. Explain about the renewable and non-renewable energy sources with examples,

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 2**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 Lesson No : 2Duration of lesson: 1hr

Lesson Title: Natural resources – Introduction and explanation of forest resources.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the forest resources.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

4. Life on this planet earth depends upon a large number of things and services provided by the nature , which are known as natural resources ex:- water, air , soil , crops & wild life.
5. Two kinds of natural resources (a) Renewable resources – regenerated within a given span of time Ex:- forests , Hydropower, Solar energy. (b) Non-renewable sources – which can not be generated ex:- coal, petroleum , minerals.
6. Major natural resources i.e., i) forest resources (ii) water resources (ii) mineral resources (iv) food resources (v) energy resources (iv) land resources

### **Assignment / Questions:**

3. Describe about the l resources in the ecosystem?
4. Explain about the forest ecosytems,

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## **LESSON PLAN - 3**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 Lesson No : 3 Duration of lesson: 1hr

Lesson Title: Natural resources – Introduction and explanation of water resources.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the water resources.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Water is an indispensable natural resource on this earth on which all life depends.
2. About 97% of earth's surface covered by water and most of the animals and plants have 60 to 65% of water in their body.
3. Hydrological cycle is discussed clearly here.
4. Water is a precious natural resource. Ground and effects of ground water usage discussed here.
5. Surface water, floods are discussed here.
6. Draughts, conflicts of over water.
7. Big dams – benefits and problems.

### **Assignment / Questions:**

1. Describe about the water resources in the ecosystem?
2. Explain about the hydrological cycle clearly.

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 4**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 4 Duration of lesson: 1hr

Lesson Title: Natural resources – Mineral resources

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the mineral resources as a natural resource in the ecosystem.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Uses and exploitation of mineral.
2. Major world reserves of metal and important uses of some of the major metals.
3. Environmental impacts of mineral extraction and use. impacts of mining.
4. impacts of mining – surface mining three types – (a) open-pit mining (b)dredging (c) strip mining.
5. Environmental damage caused by mining activities are discussed here. i.e., (i)De- vegetation and defacing of landscape (ii)Subsidence of land (iii)Ground water contamination (iv)Surface water pollution (v)Air pollution (iv) Occupational Health Hazards.
6. Remedial measures – safety of mine workers. Microbial - leaching technique.

### **Assignment / Questions:**

1. Describe about the mineralresources ?
2. What are the environmental damage activities in the mining process?

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 5**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 Lesson No : 5 Duration of lesson: 1hr

Lesson Title: Natural resources – Energy resources

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the energy resources as a natural resource in the ecosystem.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Growing energy needs, renewable and non-renewable energy resources.
2. Renewable energy resources – Solar energy examples: solar heat collectors, solar cookers, solar cells, solar water heaters. Wind energy , Hydropower, Tidal energy, Ocean thermal energy(OTE),Geothermal energy(GTE), Biomass energy, Biogas, Bio-fuels, Hydrogen as a fuel.
3. Non- renewable energy sources Examples : coal , Petroleum , LPG.
4. Natural gas , CNG, nuclear energy- nuclear fission and nuclear fusion.

### **Assignment / Questions:**

3. Describe about the natural resources like energy resources?
4. Explain about the renewable and non-renewable energy sources with examples,

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 6**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 6Duration of lesson: 1hr

Lesson Title: Natural resources – Land resources

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the Land resources as a natural resource in the ecosystem.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### TEACHING POINTS :

1. Land is a finite and valuable resource upon which we depend for our food ,fibre, fuel wood, the basic amenities of life.
2. Soil erosion is one of important aspect in the land resources.
3. We have to know about the Land degradation.
4. The normal or geologic erosion and accelerated erosion are essential .
5. We have to know about the Water loggingaspects .
6. We have know about the Landslides nature in the land resources .

### **Assignment / Questions:**

1. Describe about the land resources ?
2. Explain about theland degradation and soil erosion.

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 7**

Academic Year : 2012-2013 Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 7Duration of lesson: 1hr

Lesson Title: Natural resources – Role of individual in the conservation of natural resources.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the role of individual in the conservation of natural resources.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Introduction to role of individual in the conservation of natural resources.
2. Different natural resources like forests, water, soil, food, mineral, and energy resources play a vital role in the development of a nation.
3. The overuse of these resources in our modern society is resulting in fast depletion of these resources and several related problems.
4. Conservation efforts are underway at National as well as International level, the individual efforts for conservation of natural resources can go a long way.
5. Environment belongs to each one of us and all of us have a responsibility to contribute towards its conservation and protection.

### **Assignment / Questions:**

1. Describe about role of individual in the conservation of natural resources ?

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 8**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 8 Duration of lesson: 1hr

Lesson Title: Natural resources – Role of individual in the conservation of water resources.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the role of individual in the conservation of water resources.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Introduction to role of individual in the conservation of water resources.
2. Natural resource water resource play a vital role in the development of a nation.
3. Don't keep water taps running while brushing , shaving, washing or bathing etc
4. Build rain water harvesting system in your house. Even the President of India is doing this.
5. Use drip irrigation and sprinkling irrigation to improve irrigation efficiency.

### **Assignment / Questions:**

1. explain about the role of individual in the conservation of water resources ?

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 9**

Academic Year : 2012-2013 Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 9Duration of lesson: 1hr

Lesson Title: Natural resources – Role of individual in the conservation of energy resources.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the conservation of energy.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Turn of lights , fans and other appliances when not in use.
2. Use solar cooking your food on sunny days which will be more nutritious and will cut down on your LPG expenses.
3. Grow deciduous trees at proper places outside your home to cut off intense heat of summers and get cool breeze and shade. This will cut off your electricity charges on coolers and air conditioners.
4. A big tree is estimated to have a cooling effect equivalent to five air conditioners.
5. Try riding bicycle or just walk down small distances instead of using yr car or scooter.

### **Assignment / Questions:**

1. Describe about the role of individual in the conservation of energy resources ?

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 10**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 10Duration of lesson: 1hr

Lesson Title: Natural resources – Role of individual, to protect the soil resources.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the role of individual , to protect the soil resources. .

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Better use sprinkling irrigation.
2. Use green manure in the garden and kitchen – garden which will protect the soil.
3. Do not irrigate the plants using a strong flow of water, as it would wash of the soil.
4. Grow different types of ornamental plants , herbs and trees in your gardens. Grow grass in the open areas which will bind the soil and prevent its soil erosion.
5. Use mixed cropping so that some specific soil nutrients do not get depletion.
6. While constructing house, plant the disturbed areas with a fast growing native ground cover.

### **Assignment / Questions:**

1. Describe about the role of individual, to protect the soil resources ?

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)





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## **LESSON PLAN - 11**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 11 Duration of lesson: 1hr

Lesson Title:Classification of natural resources – important natural resources for human society.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the classification of natural resources – important natural resources for human society.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### TEACHING POINTS :

1. Natural resources two types -renewable resources and non-renewable resources.
2. Major natural resources are discussed.
3. Forest resources, water resources, mineral resources, food resources, energy resources, land resources.

### **Assignment / Questions:**

1. Give a classification diagram of the natural resources on the earth ?

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Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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## **LESSON PLAN - 12**

Academic Year : 2012-2013

Date: 07-11-2012

Semester: I

Name of the Program: B.TechMechanical Engineering

Year:1 Sem: 1 Section: A / B

Course/Subject: Environmental Sciences

Course Code:GR11A1009

Name of the Faculty:G.S.N.MurthyDept.:H&S

Designation: ASSOCIATE PROFESSOR

Unit No : 2 , Lesson No : 12 Duration of lesson: 1hr

Lesson Title:Total unit repeated and discussed about the uses of natural resources, explained with some case studies.

### INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to know about the importance of natural resources for human society.

TEACHING AIDS: White Board , Marker, OHP, LCD projector.

### **TEACHING POINTS :**

1. Renewable natural resources and non- renewable natural resources and their importance.
2. Uses of water resources, energy resources, mineral resources, forest resources, food resources.
3. Construction of dams – uses.
4. This is infact essential if we want to live in a clean, healthy, aesthetically beautiful, safe secure environment for a long time and wish to hand over a clean and safe earth to our children and great grand children.
5. We have to make all the persons environmentally educated.

### **Assignment / Questions:**

1. What is the scope of environmental education ?
2. How would environmental awareness help to protect our environment ?

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Signature of faculty

Note: Mention for each question the relevant Objectives and Outcomes Nos..1,3(obj) 3,2(outc)



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### **Assessment Methods**

**Subject : Environmental Sciences**

Evaluation scheme based on OBE system ---- 25marks

Marks are distributed in the following way

- |                                    |       |          |
|------------------------------------|-------|----------|
| 1. Tutorial sheets & assignment    | ----  | 5 marks  |
| 2. Seminars allotted to students   | ----  | 10 marks |
| i) Gathering of information        | ----- | 3 marks  |
| ii) Presentation                   | ----- | 4 marks  |
| iii) Interaction                   | ----- | 3 marks  |
| 3. Attitude & Classroom assessment | ----  | 5m       |
| i) Punctuality                     |       |          |
| ii) Interaction and participation  |       |          |
| iii) Maintaining notes             |       |          |
| iv) Proper dress code              |       |          |
| v) Decent behavior in classroom    |       |          |
| 4. Rubrics based on each unit      | ----  | 5m       |