

GOVERNMENT GENERAL DEGREE COLLEGE, MANGALKOTE

Department of Chemistry

Add-On Course:

Water Conservation

(Academic Session: 2019-2020)



Dr. Pradipta Kumar Basu
OFFICER IN CHARGE, W.B.E.S.
Government General Degree College, Mangalkote
Dt. Purba Bardhaman, West Bengal- 713132

Course Design

Course Description:

The Water Conservation add-on course is designed to provide BSc students with comprehensive knowledge and practical skills in understanding water resources, conservation techniques, and water quality management. Through a combination of theoretical knowledge and hands-on activities, students will explore the principles of water conservation, effects of water waste, rainwater harvesting, and water budgeting.

Objectives of the course:

1. To understand the significance of water conservation and its impact on the environment and society.
2. To explore the physiochemical parameters of water and their implications for water quality management.
3. To familiarize students with various techniques for rainwater harvesting and groundwater recharge.
4. To introduce concepts of water budgeting and aquifer properties for sustainable water management.
5. To develop practical skills for assessing and improving water quality through laboratory exercises and fieldwork.

Career prospects:

Completion of this course opens up various career opportunities in environmental science, hydrology, water resource management, urban planning, and sustainable development. Graduates can pursue roles such as water quality analyst, environmental consultant, hydrologist, water conservation officer, or research scientist in governmental agencies, NGOs, research institutions, and private sector organizations.

Requirements:

➤ Students:

- Compulsory for students of B.Sc. Zoology (H).
- Presence of biology and chemistry subjects at (10+2) level.

➤ Teachers:

- Faculty members of the Department of Chemistry, GGDC, Mangalkote.



- External faculty members, research scholars and scientists may be invited to conduct some classes depending on their willingness and availability.

- **Course Fee:** Nil
- **Intake Capacity:** 25
- **Class/Lecture duration:** 1 hour
- **Practical:** 2 hours
- **Total Contact hours:** 30 hours

Course contents			
Theory			
Units	Topic	Class/Lectures	Duration (hours)
1.	<p>Water:</p> <p>Hard and soft water, total dissolved solids and total suspended solids; hydro-logical cycle; precipitation, runoff, infiltration, evaporation;</p> <p>Physiochemical parameters: pH, Electrical Conductivity (E.C), Total Solids (TS), Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Total Hardness, Calcium Hardness, Magnesium Hardness, Nitrates, Phosphates, Sulphates, Chlorides, Dissolved Oxygen (D.O), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD). WHO & BIS (Bureau of Indian Standards) quality parameters for drinking water</p>	10	10
2.	<p>Rain Water Harvesting and Conservation:</p> <p>Techniques for ground water recharge; river structure and patterns, watershed and drainage basins, Importance of watershed and watershed management, rain water harvesting in urban settings; Conservation Techniques.</p>	8	8
3.	<p>Water Budgeting:</p>	4	4



	Introduction to surface and ground water; surface and ground water pollution; water table; vertical distribution of water; formation and properties of aquifers.		
Practical			
1.	<ul style="list-style-type: none"> Determination of pH of ground water, rain water, drinking water, pond water, etc Determination of TDS of ground water, drinking water, pond water, etc. 	4	8
Total duration of the course			30

Assessment and Evaluation pattern:

1. Multiple Choice Questions – 15 marks
2. Viva-voce/Oral Presentation/Project Report – 15 marks

Full Marks: **30**

Percentage of marks obtained	Grade
90-100	Excellent-A
70-89	Good-B
50-69	Fair-C
40-49	Not Eligible for Certificate - D

*** CERTIFICATE WILL BE PROVIDED BY THE COLLEGE AFTER COMPLETION OF COURSE.**

Expected outcomes of the course:

Upon successful completion of the course, students should be able to achieve the following-

1. Enhanced understanding of water resources and their management.
2. Proficiency in analyzing water quality parameters and interpreting their implications.
3. Competence in implementing rainwater harvesting and groundwater recharge techniques.
4. Ability to develop strategies for sustainable water use and conservation.
5. Skills in conducting water budgeting assessments and aquifer characterization.

Pedagogical Approach:



- Classroom lectures and discussions.
- Smart classroom teaching.

Resources:

- Chemistry for environmental Engineering and Science by Sawyer, C. and Mc Carty P. and Parkin, G.
- Analytical Chemistry by Dr. Alka L. Gupta.
- Environmental Biology and Toxicological By P. D. Sharma.



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Department of Chemistry

GOVERNMENT GENERAL DEGREE COLLEGE MANGALKOTE

(Affiliated to The University of Burdwan)

Certificate of Completion

This certificate is awarded to Mr./Missbearing Roll No.....of Semester.....of the session **2019-2020** of the Department of...**Chemistry**....,G.G.D.C.Mangalkote, for successfully completing Add-on Course entitled “**WATER CONSERVATION**” during his/her.....Semester study.

The candidate has fulfilled all requirements and specifications set by the institute.


Grade:

Dr.Pradipta Kumar Basu
(Head, Department of Chemistry.)
G.G.D.C.Mangalkote

Dr.Pradipta Kumar Basu
(IQAC Coordinator)
G.G.D.C. Mangalkote

Dr.Raj Kumar Singh
(Officer In Charge)
G.G.D.C. Mangalkote

Grade for the certificate, 90-100% 'A', 70-89% 'B', 50-69% 'C' and 40-49% 'D'


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Date of issue: