

**University of Rajasthan  
Jaipur**

**SYLLABUS**

**P.G. Diploma in Water Conservation  
&  
Management**

**(Annual Scheme)**

**Examination 2019**

**Dy. Registrar  
(Academic)  
University of Rajasthan  
JAIPUR**

**PG Diploma in Water Conservation & Management**  
*Exam*

**Duration of PG Diploma Course:** one year (180 working days)

**Mode:** SFS

**Procedure for admission:** through merit (as per university norms)

**Minimum Eligibility:** Graduate from Science/Engineering discipline

**Maximum no. of seats:** 30

**Fee:** 20,000/- per student for one year + examination fee of the university

**Annual Course: Total Marks-** 400

**Scheme of Examination**

**No. of Papers-** 4, each of 100 marks & three hours duration

**Paper I –**Management and Monitoring of water resources

**Paper II-** Water, Pollution and quality assessment

**Paper-III-** Policies, Administrative machinery community involvement and water analysis

**Paper IV-** Survey, Seminar and Dissertation

A candidate for a pass shall be required to obtain at least 36% marks in the aggregate of all the papers prescribed for the examination and at least 25% marks in individual paper.

Division shall be awarded as noted below:

First division- 60%      Second Division-50%

All the rest will be declared to have passed the examination

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## Syllabus

### **Paper I -Management and Monitoring of Water Resources**

#### **Section A**

Water and its importance. Scenario of water in Rajasthan: sources, geographical distribution, quality. Water (hydrological) cycle, influence of human activity on the water cycle, Surface water resources. Elementary knowledge of ground water: general aquifer. Water quality and its impact on human beings.

#### **Section B**

Water harvesting: need, principles of water harvesting, general water harvesting methods - rain water harvesting - roof top rain water harvesting mostly used in urban areas, subsurface barrier/dykes, farm ponding, etc mostly used in rural areas. Groundwater recharge. Revival of traditional techniques for water harvesting. Calculation of available rain water for harvesting. Preparation of suitable technical drawing and design of rain water harvesting structure


#### **Section C**

Water conservation: importance, elementary knowledge regarding conservation/saving of water in daily use, in agriculture, in industries. Subsurface investigation of Ground water: general, geophysical methods and its importance. Present law regarding water management  
Water footprints.

### **Paper II- Water Pollution and Quality Assessment**

#### **Section A**

Soil & aquifer Properties and their effect on groundwater. Different types of pollutants. Effects of pollutants on water quality, organisms and human health. Water borne diseases and disease control. Feasible water treatment technologies: treatment techniques of used water, use of recycle water, case studies.

  
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### **Section B**

Water supply in urban and rural areas: techniques for water supply in rural areas. National rural drinking water program - rural water quality monitoring and surveillance- operation and maintenance of rural water supplies. Quality issues in water supply. Different methods to conserve water in industries: water recycling.

### **Section C**

Different methods to conserve water in agriculture: sprinkler, drip irrigation, root irrigation, use of polymers, organic amendments usage, dry land farming, agro-forestry, cover crops growing, no till farming, orchard development, rotational crop method (alternate sowing method, alternate irrigation), water saving economic crops.

## **Paper III- Policies, Administrative machinery community involvement and water analysis**

### **Section A**


Act/policies related to water management/conservation at Central and State levels. Administrative machinery for implementation: from State to Panchayat levels.

### **Section B**

Community involvement in water management: roles of Panchayati Raj institutions, NGO's, educational institutions, media, political parties and farmers associations.

### **Section C**

Elementary idea of water analysis and instruments used (chemist). Chemical analysis with the help of portable instrument

  
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## **Paper IV- Survey, Seminar and Dissertation**

### **Section A**

Visit of existing harvesting structures and their workings. To propose the suitable design of roof top rain water harvesting structure of a given building.  
To propose the suitable design for rain water harvesting structure of a given area: rural or urban.


### **Section B**

Community activities (Practical). Theme - Status of water- availability, utilization and conservation Use of participatory approaches for need assessment. Planning, preparation and use of visual Aids: poster, Charts, leaflets, Flannel graphs, Flash graphs. Develop skills in extension activities: demonstrations, drama/role play, puppet show, focus group discussions, and bulletin book display

### **Section C**

Water analysis with the help of portable instrument.

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### Resource persons

1. From various reputed academic departments and professional organisations and/or approved by Director of the centre.

### Books recommended:

1. Ahuja, Satinder 2008, Arsenic Contamination of Groundwater: Mechanism, Analysis, and Remediation WileyIntersci
2. Bennison, E. W. 1947, Ground water: its development, uses & conservation CornellU
3. Bisson 2004, Modern Groundwater Exploration, Drilling, Testing and Integrated WileyIntersci
4. Bitton 2005, Wastewater Microbiology, Third Edition (Online Version) WileyIntersci
5. Edmunds 2008, Natural Groundwater Quality WileyIntersci
6. Erach Bharucha Textbook for Environmental Studies For Undergraduate Courses of all Branches of Higher Education by for University Grants Commission
7. Ganoulis 2009, Risk Analysis of Water Pollution WileyIntersci
8. Gibbons 1994, Statistical Methods for Groundwater Monitoring WileyIntersci
9. Gibbons 2009, Statistical Methods for Groundwater Monitoring, Second Edition
10. Hamilton 2004, Pesticide Residues in Food and Drinking Water - Human Exposure an WileyIntersci
11. Kazemi 2006, Groundwater Age WileyIntersci
12. Misstear 2006, Water Wells and Boreholes WileyIntersci
13. National Research Council 2004 Indicators for Waterborne Pathogens NatAcadPr
14. Singhal, B.B.S. and Gupta, R.P., 1999, Applied Hydrogeology of Fractures Rocks, Kluwer Publishers
15. Todd, D.K. 1980, Ground water Hydrology, John Wiley and Sons
16. Water Resources Management - eolss [www.eolss.net/ebooklib/ebookcontents/E2-16-ThemeContents.pdf](http://www.eolss.net/ebooklib/ebookcontents/E2-16-ThemeContents.pdf) For more information of *e-book* and Print. Volume(s) order, please ... *Water Resources Management* at the Beginning of the Twenty-First Century. 3. The Working ... [PDF] on payment basis
17. Wiesmann 2006, Biological Wastewater Treatment - Fundamentals, Microbiology, Ind WileyIntersci

  
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