Integrated Watershed Management

**Semester -IV: January - June 2021**

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| Cooordinator | Will be Decided after the Course Has been Approved by the University |
| Credits | 100 Marks [4 Credits]\* |
| Lecturers | Will be Decided after the Course Has been Approved by the University |
| Level | M.A./M.Sc. |
| Host institution | Department of Geography, Faculty of Arts, Kumaun University, Nainital |
| Course duration | One Semester [January - June] Likely to Start in January 2021 |

### Summary

*This one full semester course provides the Master level students of Geography the basic understanding of the significance and relevance Integrated Watershed Management in the management of natural resources in the mountain regions. It will present a comprehensive overview of the relevance and significance of Integrated Watershed Management approach for sustainable development of high mountain ecosystem in the era of global environmental changes, particularly climate change and environmental degradation with specific reference to Himalaya. It will also highlight the importance of watershed management in mainstreaming climate change adaptation and disaster risk reduction in mountain regions, particularly in developing countries. The course includes individual assignments.*

### Target Student Audiences

Semester - IV Students of M.A./M.Sc.

### Prerequisites

Required Courses (or equivalents):

* Environmental Management
* Ecology
* Introduction to Computer Science or Information Technologies,
* Environmental Management

### Aims and Objectives

This course has been designed with a view to help students in developing a comprehensive understanding and knowledge of the Integrated Watershed Management approach and its significance and rationale for sustainable mountain development in context of the Indian Himalayan Region. The main objectives of the revised course are: (i) to help students in understanding the significance of watershed approach in sustainable mountain development; (ii) to provide students with the state-of-art recent knowledge about the relevance of watershed approach in climate change adaptation and Disaster Risk Reduction mountains; (iii) to educate students about the rationale and importance of Trans-boundary Watershed Management in Himalaya; and (iv) to make students to understand upstream and downstream linkages in river-basin system

\* ***Note: Kumaun University has Mark System at all Levels***

### General Learning Outcomes:

By the end of the course, successful students will:

* Understand the significance and importance of watershed management in mountains
* Comprehend the role of watershed management in addressing impacts of global environmental changes on mountains
* Gain adequate knowledge of watershed as ideal unit for integrated development planning in mountains
* Understand significance of watershed approach in integrating climate change adaptation and disaster management
* Develop comprehensive understanding of the role of watershed management in environmental governance
* Understand the approaches and techniques of Integrated Watershed Management

### Overview of Sessions and Teaching Methods

The course will make most of interactive and self-reflective methods of teaching and learning including mainly lectures and presentations. It will start with an overview of watershed management approaches and their significance in the sustainable development of mountain regions. Subsequent sessions will combine interactive lecturing on different course components divided up into 5 Units, and individual assignments. The third part of the course is built around supervised preparation of short interdisciplinary dissertation by students.

### Course Workload

The table below summarizes course workload distribution:

|  |  |  |  |
| --- | --- | --- | --- |
| **Activities** | **Learning outcomes** | **Assessment** | **Estimated workload (hours)** |
| **In-class activities** | | | |
| Lectures and Presentations | **Unit I -** **Watershed:** Understanding Watershed;Concept; Watershed Perimeters; Characteristics and Function of Watershed | End Semester Written Examination | 08 |
| Lectures and Presentations | **Unit II - Watershed Approach:** Watershed Approach and its Rationale; Significance of Watershed Approach in Mountain Development | End Semester Written Examination | 08 |
| Lectures and Presentations | **Unit - III - Climate Change Adaptation and Disaster Management at Watershed Level**: Mainstreaming Climate Change Adaptation and Disaster Risk Reduction in Integrated Watershed Management; Watershed Level Early Warning System for Flood Risk Mitigation | End Semester Written Examination | 08 |
| Lectures and Presentations | **Unit - IV - Trans-boundary Headwater Management in Himalaya:** Upstream-Downstream Linkages; Significance of Trans-boundary Headwater Governance | End Semester Written Examination | 08 |
| Lectures and Presentations | **Unit V- Integrated Watershed Management:** Concept and Scope; Natural resource Management at Watershed Level; Participatory Watershed Management; Integrating Social and Economic Development in Watershed Management. | End Semester Written Examination | 08 |
| **Independent work** | | | |
| * Individual Assignments | Ability to interpret data, and to use the concepts, tools, and methods for communicating information | Individual Presentations | 20 |
| ***Total*** |  |  | ***60*** |

### Grading

The students’ performance will be based on the following:

* Written performance at the end Semester Written Examination 75%
* 25% based on the evaluation of 2 individual Assignments and attendance in classroom lectures

### Course Schedule: Semester -IV: January - June 2021 [Proposed]

### Course Assignments

The Structure of Course Assignments will be as follows:

* The Course Teacher will set 5 detailed answer Questions one each from 5 Units.
* Each of the students will have answer 2 questions of his/her choice before the commencement of the Semester End Examinations.

**Literature**

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* P. Wester, A. Mishra, A. Mukherji, A. B. Shrestha (eds), The Hindu Kush Himalaya Assessment: Mountains, Climate Change, Sustainability and People, Springer Nature Switzerland AG, Cham. pp., 2019
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* ICIMOD, Mountains of the world: ecosystem Services in a Time of global and climate change: seizing opportunities meeting challenges Framework paper prepared for the Mountain Initiative of the Government of Nepal by ICIMOD and the Government of Nepal, Food and Agricultural Organization, Food Security in Mountains – High time for action. Brochure of the International Mountain Day 2008. <http://www.mountaineering.ie/documentbank/uploads/IMD08%20brochure.pdf>
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