M. S. by Research in Glaciology
Department of Environmental Science and Engineering
School of Science, Kathmandu University
Dhulikhel, Nepal

Overview

The M. S. by Research in Glaciology course focuses on the cryosphere. In this Masters by Research course we take students to glaciers in the Himalayas and offer research projects in the Himalayan region, focusing on variations of glaciers, glacier-climate interactions, effects of changes on snow, glaciers, glacial lakes and permafrost on mountain ecosystems.

The program is designed with lectures, seminars and hands on exercises in the first semester and self study, field work and dissertation thereafter on the Himalayan glacier. During field visits students will collect glaciological, meteorological and hydrological data from a glacier and glacierized basin and finally they will defend their dissertation at the end of the course.

The two year Masters by Research degree consists of 36 credits out of which lectures will cover 15 credits in the first semester. The remaining 21 credits will be allocated for dissertation work in the second, third and fourth semesters.

Aim of the Course

The proposed course on M. S. by research in Glaciology aims to producing professionals with interdisciplinary skills and capacity on cryospheric science. The course is intended to produce graduates with knowledge in glaciological, hydrological and climatological sciences and their applications in cryosphere. Upon completion of the course, the graduates are expected to be able to:

- Assessing variation of cryosphere with changing environment and climate
- Carrying out mass balance measurement of glaciers
- Studying glaciological, hydrological and meteorological condition of mountain river basins
- Delivering key role in management of water resources of glacierized river basins
- Assessing water induced disaster and glacial hazards such as Glacial Lake Outburst Flood (GLOF)

Admission Requirements:

Students having completed a 4-year Bachelor’s degree in Hydrology, Meteorology, Geosciences, Environmental Science, Environmental Engineering or Civil Engineering with minimum 2.5 CGPA or 50% or more in aggregate marks are eligible to apply. Priority will be given to qualified female candidates, marginalized groups and candidates with sound health and high altitude field work experience.
Course Structure

<table>
<thead>
<tr>
<th>Code</th>
<th>Courses</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>MESN 529</td>
<td>Advances in Glaciology</td>
<td>3</td>
</tr>
<tr>
<td>MESN 530</td>
<td>Glacier Hydrology</td>
<td>2</td>
</tr>
<tr>
<td>MESN 531</td>
<td>General Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>MESC 532</td>
<td>Meteorology and Climate Science</td>
<td>3</td>
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<tr>
<td>MESC 533</td>
<td>Himalayan Geology</td>
<td>2</td>
</tr>
<tr>
<td>MESC 511</td>
<td>Surveying, GIS and Remote Sensing Techniques</td>
<td>2</td>
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<tr>
<td></td>
<td>Dissertation</td>
<td>21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>36</strong></td>
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**First Semester**

The above theory courses will offer in the first semester. Students can also start their self study as well as field study during the first semester.

**Second, Third and Fourth Semesters**

Students will give full time to their research topic by self study, colloquium and field work during the second, third and fourth semesters of the course for their dissertation work. Research topics may be on glacier mass balance, estimation of snow and ice melt both on debris-free and debris-covered glaciers, glacio-hydrological modeling of glacierized river basin, geo-morphological study of glacier and other related topics. In general, the period of this course is two years. However, students must finish their course in maximum four years. Students are advised to publish a paper in a related journal in the second year.

**Evaluation**

Evaluation at the school is continuous. The student is evaluated on class participation, assignments, practical and project works, end semester examinations and defense of dissertation according to the rule of university.