GEOG2321
Fluvial & Groundwater Geomorphology

Lecturers: Dr Mel Neave (MN)
School of Geosciences
Room 409
Madsen Building (F09)
University of Sydney
Phone: +61 2 9351 6463
Fax: +61 2 9031 0184
Email: mneave@geosci.usyd.edu.au

Dr Willem Vervoort (WV)
Faculty of Agriculture, Food & Natural Resources
Room 503
Watt Building (A04)
University of Sydney
Phone: +61 2 9351 8744
Fax: +61 2 9031 5108
Email: w.vervoort@acss.usyd.edu.au

Classes: Lectures: 11:00 Mondays & 10:00 Tuesdays in Carslaw 273
Practical Classes: 14:00-17:00 Mondays or Tuesdays

Objectives
This Unit of Study provides an introduction to the fundamentals of fluvial geomorphology (surface water as an agent of landscape change) and groundwater hydrology (the movement and storage of water underground). As the quantities and qualities of surface water resources are greatly influenced by the processes of groundwater movement (and vice versa), these two components of the hydrologic cycle (i.e., surface water and groundwater) are intimately linked. These links will be continually highlighted throughout this Unit.

At the conclusion of GEOG2321 you will be able to:
1. Engage in research using appropriate fluvial and hydrogeological data collection and analysis techniques.
2. Present your data in a professional and scientific manner.
3. Describe how the physical characteristics of the aquifer determine the yield, hydraulic conductivity and sustainability.
4. Explain and understand how pumping, recharge rates and hydraulic conductivity influence water tables and relate this to issues of groundwater sustainability.
5. Solve groundwater flow problems using computer simulation and your newly developed computational skills.
6. Interpret stream flows by applying hydraulic equations.
7. Describe relations between stream channel characteristics, fluvial landscape features and flow and sediment conditions.
8. Utilize your newly acquired survey skills to undertake an assessment of river condition.

**Assessment**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Practical Report (WV)</td>
<td>20%</td>
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<tr>
<td>Field Report (MN)</td>
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<tr>
<td>Online Quizzes (MN &amp; WV)</td>
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<td>Final Exam (MN &amp; WV)</td>
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**Fieldwork**

To support the fluvial lecture series, a field trip will run in the third week (subject to change) of classes. The trip itself will consist of a two day excursion to a river in south central NSW and will necessitate two nights stay. Students will be required to work in groups to perform cross- and down-stream surveys of the river, collect velocity measurements, undertake an analysis of the bed sediment and use a GPS to map the setting of the creek within the regional landscape. The purpose of the trip is to provide valuable field experiences, typical of those undertaken by people working in the field of fluvial geomorphology. Data collected in the field will be analyzed in practical sessions in the first half of the semester and will provide the basis for the field report. Precise details on the requirements of the report and the field trip will be provided in-class, during the trip itself and on the eLearning site.

Students not able to attend the field trip will be given an alternative assignment to complete.

**Lecture Outline**

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<tr>
<th>Week</th>
<th>Topics (subject to modification)</th>
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<tbody>
<tr>
<td>1</td>
<td>Surface Hydrology and Groundwater Links (MN &amp; WV)</td>
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<td>2</td>
<td>Catchment Hydrology (MN)</td>
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<td>3</td>
<td>Fluid Properties (MN)</td>
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<td>4</td>
<td>Sediment Transport Processes (MN)</td>
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<td>5</td>
<td>Channel Cross-section Form (MN)</td>
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<td>Channels In Plan Form (MN)</td>
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<td>7</td>
<td>Floodplains (MN)</td>
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<td>8</td>
<td>Groundwater Storage (WV)</td>
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<td>Week 9</td>
<td>Groundwater Flow (WV)</td>
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<td>Week 10</td>
<td>Subsurface Knowledge (WV)</td>
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<td>Week 11</td>
<td>Recharging Aquifers (WV)</td>
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<td>Week 12</td>
<td>Using Groundwater (WV)</td>
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<td>Week 13</td>
<td>Groundwater Health (WV)</td>
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**Practical Outline**

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<tbody>
<tr>
<td>Week 1</td>
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**Reading List**

**Fluvial Section:**


**Groundwater Section:**


