**GEOG 333 / NRES 763 + Special Topics**

**Geomorphology, Water Resources, and Geospatial Methods in the American Southwest**

**Instructors: Dr. Brian Menounos and Dr. Joseph Shea**

**Course Summary**

This field course and the accompanying content courses will examine geomorphology and water resources in the arid continental rift setting (Basin and Range Region) of eastern California, Nevada and southern Utah. The high relief (3000 m) in the region allows for the examination of rocks and sediments ranging from pre-Cambrian (~500 Ma) to the present. We will expose students to some of the most stunning geomorphic processes and landscapes on Earth. Our courses will integrate a variety of hands-on activities (sample collection, mapping, and surveys) with classroom lectures to impart students with both theory and skills pertinent to applied geology and geomorphology.

**Course Details**

* **1 - 4 May:** Lectures at Prince George UNBC campus (or via teleconference)
* **6 – 15 May:** Field School in Death Valley (California), Basin and Range (Utah), and Grand Canyon (Arizona)

**Courses Offered**

1. **GEOG-333/NRES-763 - Geography Field School (3 credits)**

This field course provides an opportunity for students to apply their in-class theory to field situations. Students will record geologic and geomorphic observations in field notes and sketches; create maps and cross sections; help collect and analyse geospatial data from unmanned air vehicles (UAV); and present summaries of field investigations. Field school participation includes planning, shopping, packing, and day-to-day camp operations. Students will also be required to register for **at least one** of the two additional courses (see below) which focus on interpreting and providing context for the information and data collected as part of the field school.

1. **GEOG-498/NRES-798 – Special Topics: Basin and Range development during the Cenozoic Era (3 credits)**

This course will build upon the observations and data collected as part of the field school. Students will use this information to investigate the tectonic, faulting and volcanic processes that have resulted in the unique landscape of the Basin and Range region.

1. **GEOG-498/NRES-798 – Special Topics: Water Resources in the American Southwest (3 credits)**

Field visits, data collection and analysis, and course readings will provide students with an understanding of how water is a critical resource in the arid southwest. Topics of study will include the meteorological and hydrological characteristics of the region, the history and extent of water management, and the

**Important Dates**

* Information session: 31 January 2018, Room 5-155
* Deposit of $500 due: 15 March 2018
* Lectures: 1-4 May 2018
* Field School: 6 – 15 May 2018

**Specific Course Objectives**

Students will:

* develop skills in recording geologic and geomorphic observations in field settings
* apply the scientific method to design and complete research projects
* collect and analyze geologic and geomorphic information in a field setting
* develop tools and understanding of UAV research survey techniques
* relate sedimentary features and structures to depositional environments and surface processes
* recognize the relations between tectonics and the landscape form
* develop and demonstrate leadership skills and the ability to work collaboratively

**Risks and Policies**

Pre-departure meetings will involve frank discussions with students about potential risks related to participation in this field school: remote travel; severe weather; animal encounters; camping; and other hazards associated with working outdoors. Participants will be required to sign a waiver, accepting responsibility for what might happen during the field school, and proof of emergency medical insurance for the US may be required. We have ZERO tolerance for drug use or any harassment, abuse, or discrimination. Students in violation of these terms will be personally and financially responsible for arranging their early return from Las Vegas.

**Fees**

Fees are broken down below into field school costs (accommodation, travel in the field, and food). In addition to these costs, students are responsible for the costs of tuition and their return travel to/from Las Vegas.

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| **Item** | **Cost per student** |
| Accommodation   * camping (6 nights) * hotels (4 nights, double occupancy) | $100  $300 |
| Van rental + fuel (11 days) | $300 |
| Food | $400 |
| **TOTAL** | $1100 |

**Instructors**

**Dr. Brian Menounos** is a Professor of the Geography Program and a Canada Research Chair in Glacier Change. Brian's research interests include process geomorphology, paleo-environmental reconstruction, Quaternary and surficial geology and surface hydrology.

**Dr. Joseph Shea** is an Assistant Professor in Environmental Geomatics in the Geography Program at UNBC. His research focuses on airborne and spaceborne imagery and data; changes in snow, ice, and water supplies in mountain regions; and unmanned air vehicle (UAV) research applications.