UNIVERSITY OF THE FRASER VALLEY

OFFICIAL UNDERGRADUATE COURSE OUTLINE (page 1)

COURSE IMPLEMENTATION DATE: April 2008
COURSE REVISED IMPLEMENTATION DATE: May 2014
COURSE TO BE REVIEWED: May 2020
(six years after UEC approval) *(month, year)*

OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.
Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

GEOG 303	Geography	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS

Principles of Hydrology
COURSE DESCRIPTIVE TITLE

CALENDAR DESCRIPTION:

The hydrological cycle provides the mechanism by which the finite water resources on the Earth are cycled through the environment. This course will discuss the various processes that make up the hydrological cycle including precipitation, evaporation, run-off, flooding, and broader implications of water quality. These will be addressed from both a qualitative and quantitative perspective. Emphasis will be placed on the hydrology of British Columbia to provide context for the theoretical concepts being presented. The impacts of human use on the hydrology of a region will also be addressed.

Field trips outside of class time will be required.

PREREQUISITES: One of GEOG 201, GEOG 202 or GEOG 219.
COREQUISITES:
PRE or COREQUISITES:

SYNONYMOUS COURSE(S):
(a) Replaces:
(b) Cross-listed with:
(c) Cannot take: for further credit.

SERVICE COURSE TO: *(department/program)*

TOTAL HOURS PER TERM: **75**

STRUCTURE OF HOURS:

Lectures:	**25**	Hrs
Seminar:		Hrs
Laboratory:	**25**	Hrs
Field experience:	**15**	Hrs
Student directed learning:	**10**	Hrs
Other (specify):		Hrs

TRAINING DAY-BASED INSTRUCTION:
Length of course:
Hours per day:

OTHER:
Maximum enrolment: **25**
Expected frequency of course offerings: Once every 3 years
(every semester, annually, every other year, etc.)

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	☐ Yes	☒ No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	☒ Yes	☐ No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	☐ Yes	☒ No

Course designer(s):	**Claire Beaney**		
Department Head:	**Michelle Rhodes**	Date approved:	**October 3, 2013**
Campus-Wide Consultation (CWC)		Date of meeting:	**October 11, 2013**
Curriculum Committee chair:	**David Fenske**	Date approved:	**October 18, 2013**
Dean/Associate VP:	**Lucy Lee**	Date approved:	**October 18, 2013**
Undergraduate Education Committee (UEC) approval		Date of meeting:	**November 22, 2013**

LEARNING OUTCOMES:

Upon successful completion of this course, students will be able to:

1. Discern and articulate the processes involved in the hydrologic cycle.
2. Apply hydrologic principles to describe and explain the hydrology of a specific environment, both qualitatively and quantitatively.
3. Predict the response of a specific hydrologic environment to climate change.
4. Apply physical and human geographic perspectives to address complex hydrologic and environmental issues.
5. Apply appropriate geographic skills and techniques (data collection and analysis, mapping, GIS etc) to solve problems commonly seen by professional geoscientists, hydrologists, and physical geographers.
6. Demonstrate numerical, written and, verbal competency in the scientific arena, use professional and respectful communication and work effectively in team settings.

METHODS: *(Guest lecturers, presentations, online instruction, field trips, etc.)*

Instructional methods include lectures and/or problem-based learning strategies, laboratory (or data collection/analysis) activities, self-directed learning, and field trips.

METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):

☒ Examination(s) ☒ Portfolio assessment ☐ Interview(s)

☐ Other (specify):

☐ PLAR cannot be awarded for this course for the following reason(s):

TEXTBOOKS, REFERENCES, MATERIALS:

[Textbook selection varies by instructor. An example of texts for this course might be:]

Davie, T. (2008) Fundamentals of Hydrology. Routledge, 2nd edition (or most recent edition)
Ward, RC and Robinson, M. 2000 . Principles of Hydrology. McGraw Hill. 4th edition (or most recent edition).
Arnell, N. 2001. Hydrology and Global Environmental Change. Prentice Hall.

SUPPLIES / MATERIALS:

There may be a fee for field trip transportation and accommodation costs, if applicable.

STUDENT EVALUATION:

[An example of student evaluation for this course might be:]

Project:	20%
Primary data collection and analysis (similar to labs):	15%
Oral Presentation:	20%
Poster:	20%
Project timeline and reporting assignment:	10%
Self-reflective journal:	15%

An alternative evaluation plan:

Project/research paper:	25%
Exams:	30%
Lab exercises (involves primary data collection and analysis):	25%
Oral Presentation:	20%

COURSE CONTENT:

[Course content varies by instructor. An example of course content might be:]

Traditional course delivery:
The course may be offered using a more traditional delivery method that uses lectures, lab exercises, discussion of journal articles, and field trips. Course breakdown is as follows:

Week 1 – Course introduction
Week 2 – Properties of water
Week 3 – The hydrological cycle and water balance
Week 4 – Understanding watersheds and drainage basins
Week 5 – Precipitation
Week 6 - Evaporation

Course Content continued:

Week 7 – Interception and soil moisture
Week 8 – Run-off
Week 9 – Water quality
Week 10 – Hydrology and water quality issues in B.C.
Week 11 – Student presentations and posters
Week 12 – Student presentations and posters
Week 13 – Course review

Lab exercises will be in the format of primary data collection and analysis activities. These activities will be assessed as formal lab exercises/reports. Students will be involved in all aspects of the data collection and analysis process. The lab content for the course is as follows:

1. Project design (Week 1)
2. Project implementation (Week 2)
3. Data collection (Weeks 3-8) – students will be collecting data on precipitation, evaporation, run-off, soil moisture, temperature, humidity, and other parameters as appropriate
4. Data analysis (Weeks 4-10) – analysis of the collected data will occur in conjunction with continued data collection activities and be completed following collection period

Course delivered using PBL:
This course may also be offered using a modified problem-based learning strategy and as such much of the learning and content of the course will be largely determined by the students. Students will be introduced to a real-world problem at the beginning of the course and will then be responsible for determining the strategies and content required to meet the course learning outcomes while answering the posed question. Depending on the problem, fieldtrips to the study site will be arranged. Short mini lessons on key topics will be given by the instructor to guide the students' learning with the remainder of the content resulting from student investigation of the topic. The instructor will facilitate the learning environment and provide key direction, mini lessons, and background information. The content covered will mirror that covered in a traditional course model but organization will be somewhat fluid and a weekly breakdown is not possible (due to the PBL delivery mode). Topics to be covered (although not in necessarily in this order):

- Properties of water
- The hydrological cycle
- Water balance
- Watershed analysis
- Hydrological processes (precipitation, evaporation, infiltration, interception, soil moisture, run-off)
- Water quality
- Managing water resources

Data Collection and analysis activities (similar to labs):
Students will be required to undertake primary data collection and analysis activities to answer the posed question. They will be involved in the following activities which will be assessed in a manner similar to traditional labs (equivalent to eight labs) but will also be incorporated into the final project write-up. The data collection and analysis activities are:

1. Project design (Week 1)
2. Project implementation (Week 2)
3. Data collection (Weeks 3-8) – students will be collecting data on precipitation, evaporation, run-off, soil moisture, temperature, humidity, and other parameters as appropriate
4. Data analysis (Weeks 4-10) – analysis of the collected data will occur in conjunction with continued data collection activities and be completed following collection period