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MEMORANDUM

ATTENTION	Senate	DATE	June 5, 2020
FROM	Wade Parkhouse, Chair Senate Committee on Undergraduate Studies	PAGES	1/1
RE:	New Course Proposals		

For information:

Acting under delegated authority at its meeting of June 4, 2020 SCUS approved the following curriculum revisions effective Spring 2021.

a. Faculty of Environment (SCUS 20-46)1. Department of Geography

(i) New course proposals:

- GEOG 118- 3, The Water Planet (Fall 2021)
- GEOG 418 – 4, Ecohydrology

b. Faculty of Science (SCUS 20-47)1. Department of Biological Sciences

(i) New course proposal: BISC 205-3, Principles of Physiology

2. Department of Physics

(i) New course proposal: PHYS 391-3, Introduction to Observational Astrophysics

Senators wishing to consult a more detailed report of curriculum revisions may do so on the Senate DocuShare repository at <https://docuShare.sfu.ca/dsweb/View/Collection-12682>.

COURSE SUBJECT NUMBER **COURSE TITLE LONG** — for Calendar/schedule, no more than 100 characters including spaces and punctuation**COURSE TITLE SHORT** — for enrollment/transcript, no more than 30 characters including spaces and punctuation**CAMPUS** where course will be normally taught: Burnaby Surrey Vancouver Great Northern Way Off campus**COURSE DESCRIPTION** — 50 words max. Attach a course outline. Don't include WQB or prerequisites info in this description box.**REPEAT FOR CREDIT** YES NO Total completions allowed Within a term? YES NO**LIBRARY RESOURCES**

NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by the email that serves as proof of assessment. For more information, please visit www.lib.sfu.ca/about/overview/collections/course-assessments.

RATIONALE FOR INTRODUCTION OF THIS COURSE

Water lies at the intersection of many of the world's largest scientific, societal, and environmental challenges. This is no less true within British Columbia, where the study and prudent management of streams, forests, fisheries, glaciers, and groundwater is central to the wellbeing of humans, the environment, and the regional economy. This course, intended for majors from all faculties across SFU's campuses, will introduce students (with or without a university-level background in the physical sciences) to the fundamentals of hydrology via a series of topical vignettes that intertwine instruction of scientific processes with pressing societal issues, e.g. dams, droughts, and forest mortality.

The boarder intention is for GEOG 118 to be integrated into the Global Environmental Systems major and Climate Change and Society minor (in preparation).



SCHEDULING AND ENROLLMENT INFORMATION

Effective term and year (e.g. FALL 2016) Fall 2021

Term in which course will typically be offered [] Spring [] Summer [x] Fall

Other (describe) []

Will this be a required or elective course in the curriculum? [] Required [] Elective

What is the probable enrollment when offered? Estimate: 200

UNITS Indicate number of units: 3

Indicate no. of contact hours: 3 Lecture [] Seminar [] Tutorial [] Lab [] Other; explain below

OTHER

[]

FACULTY

Which of your present CFL faculty have the expertise to offer this course?

W. Jesse Hahm, Tracy Brennand

WQB DESIGNATION

(attach approval from Curriculum Office)

B-Science certification request is attached

PREREQUISITE AND / OR COREQUISITE

none



EQUIVALENT COURSES [For more information on equivalency, see Equivalency Statements under [Information about Specific Course components.](#)]

1. SEQUENTIAL COURSE [is not hard coded in the student information management system (SIMS).]

Students who have taken *(place relevant course(s) in the blank below (ex: STAT 100))* **first** may not then take this course for further credit.

2. ONE-WAY EQUIVALENCY [is not hard coded in SIMS.]

(Place relevant course(s) in the blank below (ex: STAT 100)) will be accepted in lieu of this course.

3. TWO-WAY EQUIVALENCY [is hard coded and enforced by SIMS.]

Students with credit for *(place relevant course(s) in the blank below (ex: STAT 100))* may not take this course for further credit.

Does the partner academic unit agree that this is a two-way equivalency? YES NO

Please also have the partner academic unit submit a course change form to update the course equivalency for their course(s).

4. SPECIAL TOPICS PRECLUSION STATEMENT [is not hard coded in SIMS.]

FEEES

Are there any proposed student fees associated with this course other than tuition fees? YES NO

COURSE – LEVEL EDUCATIONAL GOALS (OPTIONAL)

At the end of this course students will:

- be able to explain and apply Earth-systems concepts in hydrology
- be able to use the systems approach to identify linkages between Earth’s surface systems
- be able to think critically about the science behind disruptions to Earth systems.
- be able to use Earth-systems knowledge to inform evidence-based thinking about environmental issues.
- be able to identify pathways towards change-making and demonstrate global citizenship
- have a foundational understanding of the diverse relationships between society and space.
- be able to define and explain how physical and environmental processes are related to society and space.



RESOURCES

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

OTHER IMPLICATIONS

Final exam required YES NO

Criminal Record Check required YES NO

OVERLAP CHECK

Checking for overlap is the responsibility of the Associate Dean.

Each new course proposal must have confirmation of an overlap check completed prior to submission to the Faculty Curriculum Committee.

Name of Originator

Jesse Hahm

COURSE SUBJECT NUMBER

COURSE TITLE LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

COURSE TITLE SHORT — for enrollment/transcript, no more than 30 characters including spaces and punctuation

CAMPUS where course will be normally taught: Burnaby Surrey Vancouver Great Northern Way Off campus

COURSE DESCRIPTION — 50 words max. Attach a course outline. Don't include WQB or prerequisites info in this description box.

REPEAT FOR CREDIT YES NO Total completions allowed Within a term? YES NO**LIBRARY RESOURCES**

NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by the email that serves as proof of assessment. For more information, please visit www.lib.sfu.ca/about/overview/collections/course-assessments.

RATIONALE FOR INTRODUCTION OF THIS COURSE

Transpiration, or the return of water to the atmosphere by plants, is the largest flux in the terrestrial hydrologic cycle. Understanding how plants source water is critically important in predicting changes to the hydrologic and carbon cycles due to feedbacks between transpiration, productivity, and subsurface water availability. Progress in the field of ecohydrology, which has grown substantially in the past decade, is therefore essential if we are to make accurate and robust assessments about the fate of the Earth system under a shifting climate.

This course will provide students with a foundation in ecohydrology and fill an existing gap in SFU's course offerings within this subject area. It will provide students with a process-level understanding of ecohydrology through instructor-led lectures, reading seminar-style interactions with primary and secondary literature, homework assignments, and field-based measurements of ecohydrologic fluxes and states. Students will be introduced to both foundational texts as well as recent findings in order to understand both historical origins and the current state of the field. Students will gain experience in dissecting scientific papers and communication of scientific ideas (through in class presentations and writing assignments).

Note that Geography only has the resources to offer one GEOG 41x hydrology course per year. Geography currently has GEOG 411 (Advanced Hydrology) in the calendar. An option would have been to just change the name of GEOG 411 from Advanced Hydrology to Ecohydrology. However, one of the reasons that Jesse Hahm was hired was his strength in fieldwork and he wishes to add a field component to his 4th year hydrology course, which will require a fee. Currently, GEOG 411 does not include a fee and we are unable to add one because of provincial fee regulations. This necessitates a new course number and thus a new course proposal. Assuming the course is a success, GEOG 411 will be temporarily withdrawn and likely deleted in time.



SCHEDULING AND ENROLLMENT INFORMATION

Effective term and year (e.g. FALL 2016) SPRING 2021

Term in which course will typically be offered [checked] Spring [] Summer [] Fall

Other (describe) []

Will this be a required or elective course in the curriculum? [] Required [checked] Elective

What is the probable enrollment when offered? Estimate: 21

UNITS Indicate number of units: 4

Indicate no. of contact hours: 2 Lecture 2 Seminar 0 Tutorial 0 Lab 0 Other; explain below

OTHER

[]

FACULTY

Which of your present CFL faculty have the expertise to offer this course?

W. Jesse Hahm

WQB DESIGNATION

(attach approval from Curriculum Office)

[]

PREREQUISITE AND / OR COREQUISITE

One of GEOG 311, GEOG 314, GEOG 316, GEOG 317, EASC 304, or EASC 405; one of GEOG 251, STAT 101, 201, 203 (formerly 103), or 270.



EQUIVALENT COURSES [For more information on equivalency, see Equivalency Statements under [Information about Specific Course components.](#)]

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Does the partner academic unit agree that this is a two-way equivalency? YES NO

Please also have the partner academic unit submit a course change form to update the course equivalency for their course(s).

4. SPECIAL TOPICS PRECLUSION STATEMENT [is not hard coded in SIMS.]

FEEES

Are there any proposed student fees associated with this course other than tuition fees? YES NO

COURSE – LEVEL EDUCATIONAL GOALS (OPTIONAL)

At the end of this course students will:

- be able to explain and apply Earth-systems concepts in hydrology
- be able to use the systems approach to identify linkages between Earth’s surface systems
- have practiced field-based acquisition of Earth-systems data
- understand the role of the scientific method in Earth-systems research.
- be able to find, read and accurately summarize Earth-systems research.
- practice diverse modes of communication, demonstrating awareness of audience



RESOURCES

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

OTHER IMPLICATIONS

Final exam required YES NO

Criminal Record Check required YES NO

OVERLAP CHECK

Checking for overlap is the responsibility of the Associate Dean.

Each new course proposal must have confirmation of an overlap check completed prior to submission to the Faculty Curriculum Committee.

Name of Originator

**COURSE SUBJECT****NUMBER**
COURSE TITLE LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

COURSE TITLE SHORT — for enrollment/transcript, no more than 30 characters including spaces and punctuation

CAMPUS where course will be normally taught: Burnaby Surrey Vancouver Great Northern Way Off campus

COURSE DESCRIPTION — 50 words max. Attach a course outline. Don't include WQB or prerequisites info in this description box.

REPEAT FOR CREDIT	YES	NO	Total completions allowed	Within a term?	YES	NO
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LIBRARY RESOURCES

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RATIONALE FOR INTRODUCTION OF THIS COURSE



EQUIVALENT COURSES [For more information on equivalency, see Equivalency Statements under [Information about Specific Course components.](#)]

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4. SPECIAL TOPICS PRECLUSION STATEMENT [is not hard coded in SIMS.]

FEEES

Are there any proposed student fees associated with this course other than tuition fees? YES NO

COURSE – LEVEL EDUCATIONAL GOALS (OPTIONAL)



RESOURCES

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

OTHER IMPLICATIONS

Final exam required YES NO

Criminal Record Check required YES NO

OVERLAP CHECK

Checking for overlap is the responsibility of the Associate Dean.

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Name of Originator

COURSE SUBJECT NUMBER

COURSE TITLE LONG — for Calendar/schedule, no more than 100 characters including spaces and punctuation

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CAMPUS where course will be normally taught: Burnaby Surrey Vancouver Great Northern Way Off campus

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REPEAT FOR CREDIT YES NO Total completions allowed Within a term? YES NO**LIBRARY RESOURCES**NOTE: Senate has approved (S.93-11) that no new course should be approved by Senate until funding has been committed for necessary library materials. Each new course proposal must be accompanied by the email that serves as proof of assessment. For more information, please visit www.lib.sfu.ca/about/overview/collections/course-assessments.**RATIONALE FOR INTRODUCTION OF THIS COURSE**

Why a new course:

This course fills a gap in the physics undergraduate curriculum. It is an observational astronomy course that utilizes the Trottier Observatory for credit. Our other astronomy course, Introduction to Astronomy, PHYS 190, already has a lab component that is an excellent experiential component for non-physicists/scientists, but physics majors are not allowed to take it. I want to propose a more advanced/computational 3-credit course for physics undergraduates at the 3rd year level. Physics undergraduates have lamented over the lack of astronomy courses that they are allowed to take. Even though it is designed with physics undergraduates in mind, I believe that general public interest in astronomy as well as the chance to use the Trottier Observatory will be an attractive feature of this course that will encourage higher enrollment from other departments.

Transferable skills:

The skills students will learn in this course will benefit them long after the course is over since they will be doing all their analysis in the Python programming language. Several departments have recently recognized the strategic importance of Python and have begun using it in several courses. Python is ubiquitous, not only in the astronomical community, but also in the wider world of industry. Astronomical applications of Python will strengthen and prepare our students for countless career opportunities after graduation. The recent transition to Python in the Department of Physics has understandably come with some growing pains, in part because the faculty themselves are also learning the language. However I have been fluent in Python for many years and will have no trouble training students, particularly in astronomical applications.

One additional advantage is that students who have taken this course will become a pool of trained observatory users who are familiar with astrophysics, who could become guides for public astronomy events at SFU such as Starry Nights.

Extendability:

There are many projects that can be done with the Trottier Observatory. In time students will get to decide from a range of photometric and spectroscopic projects they will do. Eventually, when we build a radio telescope, I will replace one of the spectroscopy projects with a project to measure the rotation velocity profile of the Milky Way in order to infer the presence of dark matter.



SCHEDULING AND ENROLLMENT INFORMATION

Effective term and year (e.g. FALL 2016) SPRING 2021

Term in which course will typically be offered [X] Spring [] Summer [] Fall

Other (describe) []

Will this be a required or elective course in the curriculum? [] Required [X] Elective

What is the probable enrollment when offered? Estimate: 20

UNITS Indicate number of units: 3

Indicate no. of contact hours: 2 Lecture [] Seminar [] Tutorial 2 Lab [] Other; explain below

OTHER

lab hours include 12 hrs of observation time at the telescope during the semester, weather permitting

FACULTY

Which of your present CFL faculty have the expertise to offer this course?

Dr. Joanna Woo

WQB DESIGNATION

(attach approval from Curriculum Office)

[]

PREREQUISITE AND / OR COREQUISITE

Prerequisite: PHYS 233, or equivalent. Recommended prerequisite: CMPT 120, or equivalent.



EQUIVALENT COURSES [For more information on equivalency, see Equivalency Statements under [Information about Specific Course components.](#)]

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4. SPECIAL TOPICS PRECLUSION STATEMENT [is not hard coded in SIMS.]

FEEES

Are there any proposed student fees associated with this course other than tuition fees? YES NO

COURSE - LEVEL EDUCATIONAL GOALS (OPTIONAL)



RESOURCES

List any outstanding resource issues to be addressed prior to implementation: space, laboratory equipment, etc:

The lectures should take place in a computer lab.

OTHER IMPLICATIONS

Final exam required YES NO

Criminal Record Check required YES NO

OVERLAP CHECK

Checking for overlap is the responsibility of the Associate Dean.

Each new course proposal must have confirmation of an overlap check completed prior to submission to the Faculty Curriculum Committee.

Name of Originator

Joanna Woo