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MEMORANDUM

ATTENTION	Senate	**DATE**	September 13, 2013
FROM	Gordon Myers, Chair Senate Committee on Undergraduate Studies	**PAGES**	1/1
RE:	Faculty of Science (SCUS 13-41)		

For information:

Acting under delegated authority at its meeting of September 12, 2013, SCUS approved the following curriculum revisions effective Summer 2014:

1. Department of Biological Sciences (SCUS 13-41a)

   (i) Prerequisite change for BISC 405
   (ii) Title, description and prerequisite change for BISC 471, 472, 473, 474 and 475
   (iii) Description and prerequisite change for BISC 497W, 498
   (iv) Description change for BISC 499
   (v) Stream requirement changes to the Biological Sciences Major and Honours programs

2. Department of Chemistry (SCUS 13-41b)

   (i) Title and prerequisite change for CHEM 483

3. Department of Biomedical Physiology and Kinesiology (SCUS 13-41c)

   (i) Changes to the Upper and Lower Division requirements to the Kinesiology Major and Honours programs
   (ii) Changes to the Upper Division requirements to the Biomedical Physiology Major and Honours programs

SCUS 13-41a

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☐ Description ■ Prerequisite ☐ Course deletion ☐ Learning Outcomes

Indicate number of hours for: Lecture 3 Seminar _____ Tutorial 1 Lab _____

FROM
Course Subject/Number BISC 405
Credits 3

TO
Course Subject/Number _____
Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
Neurobiology

TO:

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Neurobiology

TO:

DESCRIPTION

FROM:
Physiology of neuroscience, focusing on cellular and molecular mechanisms. Topics include: cellular and subcellular organization of the nervous system, electrical properties of neurons, ion channels, synaptic transmission, sensory systems, learning and memory, neurodegenerative diseases.

DESCRIPTION

TO:

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: BISC 305 or KIN 305 with a grade of C- or better. Students who have completed BISC 472 under the title 'Neurobiology' may not complete BISC 405 for further credit.

PREREQUISITE

TO: BISC 305 or BPK 305 or BPK 306 with a grade of C- or better. Students who have completed BISC 472 under the title 'Neurobiology' may not complete BISC 405 for further credit.

LEARNING OUTCOMES

RATIONALE

This would facilitate the use of BISC 405 as an elective in the BPK Behavioural Neuroscience Major as BPK 306 is a required course in this Major whereas BPK 305 is not. BPK 306 is an appropriate prerequisite as it is an upper level physiology course with neural content.

Effective term and year SUMMER 2014

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ■ Title ■ Description ■ Prerequisite ☐ Course deletion ■ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM
Course Subject/Number BISC 471
Credits 3

TO
Course Subject/Number _____
Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
Special Topics in Biology

TO:
Special Topics in Cells, Molecules and Physiology

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Special Topics in Biology

TO:
Special Topics - CMP

DESCRIPTION
FROM:
Selected topics not currently offered within the undergraduate course offerings in the department of Biological Sciences.

DESCRIPTION
TO:
Special topics in Cells, Molecules and Physiology not currently offered in the Department of Biological Science.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: Prerequisite: to be announced

PREREQUISITE
TO: Prerequisite: to be announced

LEARNING OUTCOMES

RATIONALE

Special Topics courses are not currently tracked on the Degree Progress Report because they can not be assigned to a stream leading to some uncertainty as to what credits students have completed within their stream. Relabelling and changes to the program requirements will allow these courses to be tracked.

Effective term and year ~~Spring~~ 2014
SUMMER

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☒ Title ☒ Description ☒ Prerequisite ☐ Course deletion ☒ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM
Course Subject/Number BISC 472
Credits 3

TO
Course Subject/Number _____
Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
Selected Topics in Biology

TO:
Special Topics in Cells, Molecules and Physiology

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Special Topics in Biology

TO:
Special Topics - CMP

DESCRIPTION

FROM:
Selected topics in areas not currently offered within the undergraduate course offerings in the Department of Biological Sciences.

DESCRIPTION

TO:
Special topics in Cells, Molecules and Physiology not currently offered in the Department of Biological Science.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: Prerequisite: to be announced in the Undergraduate Schedule of Classes and Examinations.

PREREQUISITE

TO: Prerequisite: to be announced

LEARNING OUTCOMES

RATIONALE

Special Topics courses are not currently tracked on the Degree Progress Report because they can not be assigned to a stream leading to some uncertainty as to what credits students have completed within their stream. Relabelling and changes to the program requirements will allow these courses to be tracked.

Effective term and year
~~Spring~~ 2014
SUMMER

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ■ Title ■ Description ■ Prerequisite ☐ Course deletion ■ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar_____ Tutorial _____ Lab _____

FROM
Course Subject/Number BISC 473

Credits 3

TO
Course Subject/Number _____

Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
Selected Topics in Biology

TO:
Special Topics in Ecology, Evolution and Conservation

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Selected Topics in Biology

TO:
Special Topics - EEC

DESCRIPTION
FROM:

Selected topics in areas not currently offered within the undergraduate course offerings in the Department of Biological Sciences.

DESCRIPTION
TO:

Special topics in Ecology, Evolution and Conservation not currently offered in the Department of Biological Science.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: Prerequisite: to be announced in the Undergraduate Schedule of Classes and Examinations.

PREREQUISITE
TO: Prerequisite: to be announced

LEARNING OUTCOMES

RATIONALE

Special Topics courses are not currently tracked on the Degree Progress Report because they can not be assigned to a stream leading to some uncertainty as to what credits students have completed within their stream. Relabelling and changes to the program requirements will allow these courses to be tracked.

Effective term and year

~~Spring~~ 2014
SUMMER

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ■ Title ■ Description ■ Prerequisite ☐ Course deletion ■ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM
Course Subject/Number BISC 474

Credits 3

TO
Course Subject/Number _____

Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
Special Topics in Biology

TO:
Special Topics in Ecology, Evolution and Conservation

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Special Topics in Biology

TO:
Special Topics - EEC

DESCRIPTION
FROM:

Selected topics in areas not currently offered within the undergraduate course offerings in the Department of Biological Sciences.

DESCRIPTION
TO:

Special topics in Ecology, Evolution and Conservation not currently offered in the Department of Biological Science.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: Prerequisite: to be announced in the Course Timetable and Exam Schedule.

PREREQUISITE
TO: Prerequisite: to be announced

LEARNING OUTCOMES

RATIONALE

Special Topics courses are not currently tracked on the Degree Progress Report because they can not be assigned to a stream leading to some uncertainty as to what credits students have completed within their stream. Relabelling and changes to the program requirements will allow these courses to be tracked.

Effective term and year

~~Spring~~ 2014
SUMMER

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ■ Title ■ Description ■ Prerequisite ☐ Course deletion ■ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM
Course Subject/Number BISC 475
Credits 3

TO
Course Subject/Number _____
Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
Special Topics in Biology

TO:
Special Topics in Biology

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Special Topics in Biology

TO:
Special Topics - Biology

DESCRIPTION
FROM:
Selected topics not currently offered within the undergraduate course offerings in the Department of Biological Sciences.

DESCRIPTION
TO:
Special topics in Biology not currently offered in the Department of Biological Science.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: Prerequisite: to be announced in the Course Timetable and Exam Schedule.

PREREQUISITE
TO: Prerequisite: to be announced

LEARNING OUTCOMES

RATIONALE

Special Topics courses are not currently tracked on the Degree Progress Report because they can not be assigned to a stream leading to some uncertainty as to what credits students have completed within their stream. Relabelling and changes to the program requirements will allow these courses to be tracked. BISC 475 is retained as a Special Topics label for subjects relevant to both streams with minor changes to ensure descriptions and prerequisites are consistent with other Special Topics course numbers.

Effective term and year ~~Spring~~ 2014
SUMMER

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ■ Description ■ Prerequisite ☐ Course deletion ■ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab 3

FROM
Course Subject/Number BISC 497W
Credits 3

TO
Course Subject/Number _____
Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
BISC 497W - Undergraduate Research:Writing Intensive

TO:

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Undergraduate Research: Writing Intensive

TO:

DESCRIPTION

FROM:
A student will be permitted to enrol in this course only with prior written agreement of a faculty member to act as a research supervisor, who will also provide instruction and feedback on the writing and presentation of results form the research. A maximun of three research courses can be applied towards degree requirements.

DESCRIPTION

TO:
Directed study and research in an area of biological science. A student may enrol in this course only with prior written agreement of a faculty member to act as a research supervisor, who will also provide instruction and feedback on the writiing and presentation of results from the research. A maximum of three upper division research courses can be applied towards the major requirements.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: 90 units. Writing.

PREREQUISITE

TO: Completion of lower division course requirements.

LEARNING OUTCOMES

The student will gain experience with experimental design.
The student will gain technical and/or analytical skills relevant to research in biological sciences.
The student will improve their ability to critically evaluate data and/or experiments presented in scientifc papers.
The student will improve their ability to communicate the results of their reseach in writing and in oral presentations.

RATIONALE

The previous description provided no information regarding the purpose of the course. Changes to the prerequisite will allow students to gain access to undergraduate research opportunities in their third year rather than waiting until the final year of their degree.

Effective term and year Summer 2014

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ■ Description ■ Prerequisite ☐ Course deletion ■ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab 3

FROM
Course Subject/Number BISC 498

Credits 3

TO
Course Subject/Number _____

Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:

BISC 498 - Undergraduate Research I

TO:

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:

Undergraduate Research I

TO:

DESCRIPTION

FROM:

A student will be permitted to enrol in this course only if he/she obtains the prior written agreement of a faculty member to act as a research advisor. A maximun of three research courses can be applied towards degree requirements.

DESCRIPTION

TO:

Directed study and research in an area of biological science. A student may enrol in this course only with prior written agreement of a faculty member to act as a research supervisor. A maximum of three upper division research courses can be applied towards the major requirements.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM:

PREREQUISITE

TO: Completion of lower division course requirements.

LEARNING OUTCOMES

The student will gain an understanding of experimental design.
The student will gain technical and/or analytical skills relevant to research in biological sciences.
The student will improve their ability to critically evaluate data and/or experiments presented in scientifc papers.

RATIONALE

The previous description provided no information regarding the purpose of the course. The prerequisites had been removed in error at the time of the last calendar change.

Effective term and year

~~Spring~~ 2014
SUMMER

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ☐ Title ☒ Description ☒ Prerequisite ☐ Course deletion ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab 3

FROM
Course Subject/Number BISC 499
Credits 3

TO
Course Subject/Number _____
Credits _____

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM:
BISC 499 - Undergraduate Research II

TO:

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM:
Undergraduate Research II

TO:

DESCRIPTION

FROM:
A student will be permitted to enrol in this course only if he/she obtains the prior written agreement of a faculty to act as a research advisor. A maximun of three research courses can be applied towards degree requirements.

DESCRIPTION

TO:
Directed study and research in an area of biological science. A student may enrol in this course only with prior written agreement of a faculty member to act as a research supervisor. A maximum of three upper division research courses can be applied towards the major requirements.

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: 90 units. A student will be permitted to enroll in this course only if she/he obtains the prior written agreement of a faculty member to act as research advisor.

PREREQUISITE

TO: Completion of lower division course requirements.

LEARNING OUTCOMES

The student will gain an understanding of experimental design.
The student will gain technical and/or analytical skills relevant to research in biological sciences.
The student improve their ability to critically evaluate data and/or experiments presented in scientifc papers.

RATIONALE

The previous description provided no information regarding the purpose of the course. The prerequisites had been removed in error at the time of the last calendar change.

Effective term and year Summer 2014

FROM:

Biological Sciences Major

BACHELOR OF SCIENCE

Program Requirements

Students complete 120 units, as specified below.
Students should complete the lower division core requirements within the first 60 units (four terms), and are required to maintain a minimum 2.00 grade point average (GPA) in these courses.
Students are encouraged to choose their stream upon lower division core completion.
Students who have had more than five course repeats are normally not permitted to remain in the program. Direct entry to the BISC (Biology) major upon acceptance to the University is possible if Faculty of Science criteria is met.

- Basic unit requirements include
- BISC/MBB (lower division) 20 units
- non BISC/MBB (lower division) 27 units
- BISC/MBB (upper division) 36 units
- electives 37 units*

LOWER DIVISION REQUIREMENTS

Students normally complete the following chemistry, mathematics and physics requirements as well as the lower division biological sciences courses within the first 60 units (four terms) of study.
Students complete all of
BISC 101 - General Biology (4)
BISC 102 - General Biology (4)
BISC 202 - Genetics (3)
BISC 204 - Introduction to Ecology (3)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
MBB 222 - Molecular Biology and Biochemistry (3)
MBB 231 - Cellular Biology and Biochemistry (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of
CHEM 282 - Organic Chemistry II (2)
CHEM 283 - Organic Chemistry IIb (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)

MATH 154 - Calculus I for the Biological Sciences (3)
and one of
MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)
PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)
Students are encouraged to complete a full year of organic chemistry. Medical, dental or veterinary school applicants should include all CHEM courses that are listed above.

UPPER DIVISION REQUIREMENTS

Entry into courses numbered 300 and above normally requires completion of the lower division requirements. Prerequisites for any course may be waived with the approval of the department.
Students complete a minimum of 12 upper division courses by completing all of the following, with a grade of C- or better (this minimum grade requirement also applies to BISC and MBB prerequisites).
BISC 300 - Evolution (3)
BISC 333 - Developmental Biology (3)
and one of
BISC 305 - Animal Physiology (3)
BISC 366 - Plant Physiology (3)
and at least one of
BISC 303 - Microbiology (4)
BISC 306 - Invertebrate Biology (4)
BISC 316 - Vertebrate Biology (4)
BISC 317 - Insect Biology (3)
BISC 326 - Biology of Algae and Fungi (3)
BISC 337 - Plant Biology (4)
BISC 318 - Parasitology (3)

Stream Requirement

In addition to the above requirements, students choose remaining requirements in an area of specialization by completing one of three streams: cells, molecules and physiology; ecology, evolution and conservation; and an open stream. The open stream provides broad biological training, or may be used to specialize in an area not offered by the main streams (consult the undergraduate program advisor, individual faculty, or department

website for advice on other areas of specialization).

CELLS, MOLECULES AND PHYSIOLOGY STREAM

Students who choose this stream will complete two of
BISC 302W - Genetic Analysis (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 357 - Gene Cloning (3)
BISC 367W - Plant Physiology Laboratory (3)
and three of
BISC 303 - Microbiology (4)
BISC 313 - Environmental Toxicology (3)
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
BISC 430 - Microbe-Plant Interactions (3)
BISC 432 - Chemical Pesticides and the Environment (3)
BISC 439 - Industrial Microbiology (4)
BISC 445 - Environmental Physiology of Animals (3)
BISC 449 - Histological Techniques in Biology (4)
BISC 455 - Endocrinology (3)
BISC 457 - Plant Molecular Biology and Biotechnology (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and three elective courses (nine units) from any upper division undergraduate BISC courses, or from other units at Simon Fraser University such as the Department of Molecular Biology and Biochemistry, Department of Biomedical Physiology and Kinesiology, Department of Physics, and the Faculty of Health Sciences, which may count as options towards this stream, subject to the approval by the department. Normally no more than two courses from other units may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include one of BISC 497W, 498, 499) among their upper division courses.

ECOLOGY, EVOLUTION AND CONSERVATION STREAM

Students who choose this stream will complete
STAT302 - Analysis of Experimental and Observational Data (3)
and at least one of
BISC 304W - Animal Ecology (3)
BISC 404W - Plant Ecology (3)
and four of
BISC 309 - Conservation Biology (3)
BISC 310 - The Natural History of British Columbia (3)
BISC 406 - Marine Biology and Oceanography (3)
BISC 407 - Population Dynamics (3)
BISC 410 - Behavioral Ecology (3)
BISC 413 - Fisheries Ecology (3)
BISC 414 - Limnology (3)

BISC 419 - Wildlife Biology (3)
BISC 422 - Population Genetics (3)
BISC 434 - Paleoecology and Palynology (3)
BISC 435 - Introduction to Pest Management (3)
BISC 440W - Biodiversity (3)
BISC 441 - Evolution of Health and Disease (3)
BISC 445 - Environmental Physiology of Animals (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and two elective courses (six units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University such as the Faculty of Environment and MASC courses may count as options toward this stream, subject to approval by the department. Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include one of BISC 497W, 498, 499) among their upper division courses.

OPEN STREAM

Students who choose this stream will complete an additional 8 courses (totaling a minimum of 24 units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University may count as options toward this stream, subject to approval by the department.
Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy upper division biology course requirements.
Students complete a total of five lab courses (which may include one of BISC 497W, 498, 499) among their upper division courses.

Minimum Grade Requirement

A grade of C- or better is required on all prerequisite BISC and MBB courses, and all required upper division courses to graduate.

TO:

Biological Sciences Major

BACHELOR OF SCIENCE

Program Requirements

Students complete 120 units, as specified below.
Students should complete the lower division core requirements within the first 60 units (four terms), and are required to maintain a minimum 2.00 grade point average (GPA) in these courses.
Students are encouraged to choose their stream upon lower division core completion.
Students who have had more than five course repeats are normally not permitted to remain in the program. Direct entry to the BISC (Biology) major upon acceptance to the University is possible if Faculty of Science criteria are met.

LOWER DIVISION REQUIREMENTS

Students normally complete the following chemistry, mathematics and physics requirements as well as the lower division biological sciences courses within the first 60 units (four terms) of study.
Students complete all of
BISC 101 - General Biology (4)
BISC 102 - General Biology (4)
BISC 202 - Genetics (3)
BISC 204 - Introduction to Ecology (3)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
MBB 222 - Molecular Biology and Biochemistry (3)
MBB 231 - Cellular Biology and Biochemistry (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of
CHEM 282 - Organic Chemistry II (2)
CHEM 283 - Organic Chemistry IIb (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Calculus I for the Biological Sciences (3)
and one of
MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)

PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)
Students are encouraged to complete a full year of organic chemistry. Medical, dental or veterinary school applicants should include all CHEM courses that are listed above.

UPPER DIVISION REQUIREMENTS

Entry into courses numbered 300 and above normally requires completion of the lower division requirements. Prerequisites for any course may be waived with the approval of the department.
Students complete a minimum of 12 upper division courses by completing all of the following, with a grade of C- or better (this minimum grade requirement also applies to BISC and MBB prerequisites).
BISC 300 - Evolution (3)
BISC 333 - Developmental Biology (3)
and one of
BISC 305 - Animal Physiology (3)
BISC 366 - Plant Physiology (3)
and at least one of
BISC 303 - Microbiology (4)
BISC 306 - Invertebrate Biology (4)
BISC 316 - Vertebrate Biology (4)
BISC 317 - Insect Biology (3)
BISC 326 - Biology of Algae and Fungi (3)
BISC 337 - Plant Biology (4)
BISC 318 - Parasitology (3)

Stream Requirement

In addition to the above requirements, students choose remaining requirements in an area of specialization by completing one of three streams: cells, molecules and physiology; ecology, evolution and conservation; and an open stream. The open stream provides broad biological training, or may be used to specialize in an area not offered by the main streams (consult the undergraduate program advisor, individual faculty, or department website for advice on other areas of specialization).

CELLS, MOLECULES AND PHYSIOLOGY STREAM

Students who choose this stream will complete two of
BISC 302W - Genetic Analysis (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 357 - Gene Cloning (3)

BISC 367W - Plant Physiology Laboratory (3)
and three of
BISC 303 - Microbiology (4)
BISC 313 - Environmental Toxicology (3)
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
BISC 430 - Microbe-Plant Interactions (3)
BISC 432 - Chemical Pesticides and the Environment (3)
BISC 439 - Industrial Microbiology (4)
BISC 445 - Environmental Physiology of Animals (3)
BISC 449 - Histological Techniques in Biology (4)
BISC 455 - Endocrinology (3)
BISC 457 - Plant Molecular Biology and Biotechnology (3)
BISC 471 - Special Topics in Cells, Molecules and Physiology (3)
BISC 472 - Special Topics in Cells, Molecules and Physiology (3)
BISC 475 – Special Topics in Biology (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and three elective courses (nine units) from any upper division undergraduate BISC courses, or from other units at Simon Fraser University such as the Department of Molecular Biology and Biochemistry, Department of Biomedical Physiology and Kinesiology, Department of Physics, and the Faculty of Health Sciences, which may count as options towards this stream, subject to the approval by the department. Normally no more than two courses from other units may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include one of BISC 497W, 498, 499) among their upper division courses.

ECOLOGY, EVOLUTION AND CONSERVATION STREAM

Students who choose this stream will complete
STAT302 - Analysis of Experimental and Observational Data (3)
and at least one of
BISC 304W - Animal Ecology (3)
BISC 404W - Plant Ecology (3)
and four of
BISC 309 - Conservation Biology (3)
BISC 310 - The Natural History of British Columbia (3)
BISC 406 - Marine Biology and Oceanography (3)
BISC 407 - Population Dynamics (3)
BISC 410 - Behavioral Ecology (3)
BISC 413 - Fisheries Ecology (3)
BISC 414 - Limnology (3)
BISC 419 - Wildlife Biology (3)
BISC 422 - Population Genetics (3)
BISC 434 - Paleoecology and Palynology (3)

BISC 435 - Introduction to Pest Management (3)
BISC 440W - Biodiversity (3)
BISC 441 - Evolution of Health and Disease (3)
BISC 445 - Environmental Physiology of Animals (3)
BISC 473 - Special Topics in Ecology, Evolution and Conservation (3)
BISC 474 - Special Topics in Ecology, Evolution and Conservation (3)
BISC 475 – Special Topics in Biology (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and two elective courses (six units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University such as the Faculty of Environment and MASC courses may count as options toward this stream, subject to approval by the department. Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include one of BISC 497W, 498, 499) among their upper division courses.

OPEN STREAM

Students who choose this stream will complete an additional 8 courses (totaling a minimum of 24 units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University may count as options toward this stream, subject to approval by the department.
Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy upper division biology course requirements.
Students complete a total of five lab courses (which may include one of BISC 497W, 498, 499) among their upper division courses.

Minimum Grade Requirement

A grade of C- or better is required on all prerequisite BISC and MBB courses, and all required upper division courses to graduate.

FROM:

Biological Sciences Honours

BACHELOR OF SCIENCE

This honours program offers independent research and in-depth study. It requires minimum of 132 units as specified below. Entry requires a cumulative grade point average (CGPA) of 3.0 or higher (B standing), and department permission. Students complete all lower division requirements as shown below, and at least 15 upper division units in biological sciences prior to application for entry. Students should contact an advisor before enrolment.

Program Requirements

Students should complete the lower division core requirements within the first 60 units (four terms).
Students are encouraged to choose their stream upon lower division core completion.
Students who have had more than five course repeats are normally not permitted to remain in the program. Direct entry to the BISC major upon acceptance to the University is possible if Faculty of Science criteria is met.
Basic unit requirements include

- BISC/MBB (lower division) 20 units
- non BISC/MBB (lower division) 27 units
- BISC/MBB (upper division) 45 units
- electives 25 units
- honours thesis 15 units
- total (minimum) 132 units

LOWER DIVISION REQUIREMENTS

Students normally complete the following chemistry, mathematics and physics requirements as well as the lower division biological sciences courses within the first 60 units (four terms) of study.
Students complete all of
BISC 101 - General Biology (4)
BISC 102 - General Biology (4)
BISC 202 - Genetics (3)
BISC 204 - Introduction to Ecology (3)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
MBB 222 - Molecular Biology and Biochemistry (3)
MBB 231 - Cellular Biology and Biochemistry (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of

CHEM 282 - Organic Chemistry II (2)
CHEM 283 - Organic Chemistry IIb (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Calculus I for the Biological Sciences (3)
and one of
MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)
PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)
Students are encouraged to complete a full year of organic chemistry. Medical, dental or veterinary school applicants should include all CHEM courses that are listed above.

UPPER DIVISION REQUIREMENTS

Entry into courses numbered 300 and above normally requires completion of the lower division requirements. Prerequisites for any course may be waived with the approval of the department.
Honours students will complete a minimum of 60 upper division units in biological sciences, or related subjects approved by the department, which must include a research-based honours thesis as specified below.
Students complete a minimum of 12 upper division courses by completing all of the following, with a grade of C- or better (this minimum grade requirement also applies to BISC and MBB prerequisites).
BISC 300 - Evolution (3)
BISC 333 - Developmental Biology (3)
and one of
BISC 305 - Animal Physiology (3)
BISC 366 - Plant Physiology (3)
and at least one of
BISC 303 - Microbiology (4)
BISC 306 - Invertebrate Biology (4)
BISC 316 - Vertebrate Biology (4)
BISC 317 - Insect Biology (3)
BISC 326 - Biology of Algae and Fungi (3)
BISC 337 - Plant Biology (4)
BISC 318 - Parasitology (3)

Stream Requirement

In addition to the above requirements, students choose remaining requirements in an area of specialization by completing one of three streams: cells, molecules and physiology; ecology, evolution and conservation; and an open stream. The open stream provides broad biological training, or may be used to specialize in an area not offered by the main streams (consult the undergraduate program advisor, individual faculty, or department website for advice on other areas of specialization).

CELLS, MOLECULES AND PHYSIOLOGY STREAM

Students who choose this stream will complete two of
BISC 302W - Genetic Analysis (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 357 - Gene Cloning (3)
BISC 367W - Plant Physiology Laboratory (3)
and three of
BISC 303 - Microbiology (4)
BISC 313 - Environmental Toxicology (3)
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
BISC 430 - Microbe-Plant Interactions (3)
BISC 432 - Chemical Pesticides and the Environment (3)
BISC 439 - Industrial Microbiology (4)
BISC 445 - Environmental Physiology of Animals (3)
BISC 449 - Histological Techniques in Biology (4)
BISC 455 - Endocrinology (3)
BISC 457 - Plant Molecular Biology and Biotechnology (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and three elective courses (nine units) from any upper division undergraduate BISC courses, or from other units at Simon Fraser University such as the Department of Molecular Biology and Biochemistry, Department of Biomedical Physiology and Kinesiology, Department of Physics, and the Faculty of Health Sciences, which may count as options toward this stream, subject to the approval by the department. Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include BISC 491 and one of BISC 497W, 498, 499) among their upper division courses.

ECOLOGY, EVOLUTION AND CONSERVATION STREAM

Students who choose this stream will complete
STAT 302 - Analysis of Experimental and Observational Data (3)

and at least one of
BISC 304 - Animal Ecology (3)
BISC 404 - Plant Ecology (3)
and four of
BISC 309 - Conservation Biology (3)
BISC 310 - The Natural History of British Columbia (3)
BISC 406 - Marine Biology and Oceanography (3)
BISC 407 - Population Dynamics (3)
BISC 410 - Behavioral Ecology (3)
BISC 413 - Fisheries Ecology (3)
BISC 414 - Limnology (3)
BISC 419 - Wildlife Biology (3)
BISC 422 - Population Genetics (3)
BISC 434 - Paleoecology and Palynology (3)
BISC 435 - Introduction to Pest Management (3)
BISC 440W - Biodiversity (3)
BISC 441 - Evolution of Health and Disease (3)
BISC 445 - Environmental Physiology of Animals (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and two elective courses (six units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University such as the Faculty of Environment and MASC courses may count as options toward this stream, subject to approval by the department. Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include BISC 491 and one of BISC 497W, 498, 499) among their upper division courses.

OPEN STREAM

Students who choose this stream will complete an additional 8 courses (totaling a minimum of 24 units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University may count as options toward this stream, subject to approval by the department.
Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy upper division biology course requirements.
Students complete a total of five lab courses (which may include BISC 491 and one of BISC 497W, 498, 499) among their upper division courses.

Thesis

In addition to the above requirements, honours students will complete a research-based thesis by completing

BISC 490 - Research Design (5)
BISC 491 - Research Technique (5)
BISC 492W - Research Reporting (5)

Minimum Grade Requirement

A grade of C- or better is required on all prerequisite BISC and MBB courses, and all required upper division courses to graduate.

TO:

Biological Sciences Honours

BACHELOR OF SCIENCE

This honours program offers independent research and in-depth study. It requires minimum of 132 units as specified below. Entry requires a cumulative grade point average (CGPA) of 3.0 or higher (B standing), and department permission. Students complete all lower division requirements as shown below, and at least 15 upper division units in biological sciences prior to application for entry. Students should contact an advisor before enrolment.

Program Requirements

Students should complete the lower division core requirements within the first 60 units (four terms).
Students are encouraged to choose their stream upon lower division core completion.
Students who have had more than five course repeats are normally not permitted to remain in the program. Direct entry to the BISC major upon acceptance to the University is possible if Faculty of Science criteria is met.
Basic unit requirements include

LOWER DIVISION REQUIREMENTS

Students normally complete the following chemistry, mathematics and physics requirements as well as the lower division biological sciences courses within the first 60 units (four terms) of study.
Students complete all of
BISC 101 - General Biology (4)
BISC 102 - General Biology (4)
BISC 202 - Genetics (3)
BISC 204 - Introduction to Ecology (3)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
MBB 222 - Molecular Biology and Biochemistry (3)
MBB 231 - Cellular Biology and Biochemistry (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of
CHEM 282 - Organic Chemistry II (2)
CHEM 283 - Organic Chemistry IIb (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Calculus I for the Biological Sciences (3)
and one of

MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)
PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)
Students are encouraged to complete a full year of organic chemistry. Medical, dental or veterinary school applicants should include all CHEM courses that are listed above.

UPPER DIVISION REQUIREMENTS

Entry into courses numbered 300 and above normally requires completion of the lower division requirements. Prerequisites for any course may be waived with the approval of the department.
Honours students will complete a minimum of 60 upper division units in biological sciences, or related subjects approved by the department, which must include a research-based honours thesis as specified below.
Students complete a minimum of 12 upper division courses by completing all of the following, with a grade of C- or better (this minimum grade requirement also applies to BISC and MBB prerequisites).
BISC 300 - Evolution (3)
BISC 333 - Developmental Biology (3)
and one of
BISC 305 - Animal Physiology (3)
BISC 366 - Plant Physiology (3)
and at least one of
BISC 303 - Microbiology (4)
BISC 306 - Invertebrate Biology (4)
BISC 316 - Vertebrate Biology (4)
BISC 317 - Insect Biology (3)
BISC 326 - Biology of Algae and Fungi (3)
BISC 337 - Plant Biology (4)
BISC 318 - Parasitology (3)

Stream Requirement

In addition to the above requirements, students choose remaining requirements in an area of specialization by completing one of three streams: cells, molecules and physiology; ecology, evolution and conservation; and an open stream. The open stream provides broad biological training, or may be used to specialize in an area not offered by the main

streams (consult the undergraduate program advisor, individual faculty, or department website for advice on other areas of specialization).

CELLS, MOLECULES AND PHYSIOLOGY STREAM

Students who choose this stream will complete two of
BISC 302W - Genetic Analysis (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 357 - Gene Cloning (3)
BISC 367W - Plant Physiology Laboratory (3)
and three of
BISC 303 - Microbiology (4)
BISC 313 - Environmental Toxicology (3)
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
BISC 430 - Microbe-Plant Interactions (3)
BISC 432 - Chemical Pesticides and the Environment (3)
BISC 439 - Industrial Microbiology (4)
BISC 445 - Environmental Physiology of Animals (3)
BISC 449 - Histological Techniques in Biology (4)
BISC 455 - Endocrinology (3)
BISC 457 - Plant Molecular Biology and Biotechnology (3)
BISC 471 - Special Topics in Cells, Molecules and Physiology (3)
BISC 472 - Special Topics in Cells, Molecules and Physiology (3)
BISC 475 – Special Topics in Biology (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and three elective courses (nine units) from any upper division undergraduate BISC courses, or from other units at Simon Fraser University such as the Department of Molecular Biology and Biochemistry, Department of Biomedical Physiology and Kinesiology, Department of Physics, and the Faculty of Health Sciences, which may count as options toward this stream, subject to the approval by the department. Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include BISC 491 and one of BISC 497W, 498, 499) among their upper division courses.

ECOLOGY, EVOLUTION AND CONSERVATION STREAM

Students who choose this stream will complete
STAT 302 - Analysis of Experimental and Observational Data (3)
and at least one of
BISC 304 - Animal Ecology (3)
BISC 404 - Plant Ecology (3)
and four of
BISC 309 - Conservation Biology (3)

BISC 310 - The Natural History of British Columbia (3)
BISC 406 - Marine Biology and Oceanography (3)
BISC 407 - Population Dynamics (3)
BISC 410 - Behavioral Ecology (3)
BISC 413 - Fisheries Ecology (3)
BISC 414 - Limnology (3)
BISC 419 - Wildlife Biology (3)
BISC 422 - Population Genetics (3)
BISC 434 - Paleoecology and Palynology (3)
BISC 435 - Introduction to Pest Management (3)
BISC 440W - Biodiversity (3)
BISC 441 - Evolution of Health and Disease (3)
BISC 445 - Environmental Physiology of Animals (3)
BISC 473 - Special Topics in Ecology, Evolution and Conservation (3)
BISC 474 - Special Topics in Ecology, Evolution and Conservation (3)
BISC 475 – Special Topics in Biology (3)
BISC 497W - Undergraduate Research: Writing Intensive (3)
BISC 498 - Undergraduate Research I (3)
BISC 499 - Undergraduate Research II (3)
and two elective courses (six units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University such as the Faculty of Environment and MASC courses may count as options toward this stream, subject to approval by the department. Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy stream requirements and additional upper division biology course requirements. Students complete a total of five lab courses (which may include BISC 491 and one of BISC 497W, 498, 499) among their upper division courses.

OPEN STREAM

Students who choose this stream will complete an additional 8 courses (totaling a minimum of 24 units) chosen from any upper division undergraduate BISC courses. Courses from other units at Simon Fraser University may count as options toward this stream, subject to approval by the department.
Normally no more than two courses from other units and no more than three research intensive courses (BISC 490, 491, 492, 497W, 498, or 499) may be used to satisfy upper division biology course requirements.
Students complete a total of five lab courses (which may include BISC 491 and one of BISC 497W, 498, 499) among their upper division courses.

Thesis

In addition to the above requirements, honours students will complete a research-based thesis by completing
BISC 490 - Research Design (5)
BISC 491 - Research Technique (5)

BISC 492W - Research Reporting (5)

Minimum Grade Requirement

A grade of C- or better is required on all prerequisite BISC and MBB courses, and all required upper division courses to graduate.

SFU

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

COURSE CHANGE/DELETION

EXISTING COURSE, CHANGES RECOMMENDED

Please check appropriate revision(s):

☐ Course number ☐ Credit ■ Title ☐ Description ■ Prerequisite ☐ Course deletion ☐ Learning Outcomes

Indicate number of hours for: Lecture _____ Seminar _____ Tutorial _____ Lab _____

FROM
Course Subject/Number CHEM 483
Credits 5

TO
Course Subject/Number CHEM 483
Credits 5

TITLE

(1) LONG title for calendar and schedule, no more than 100 characters including spaces and punctuation.

FROM: Honors Research

TO: Undergraduate Research II

(2) SHORT title for enrollment and transcript, no more than 30 characters including spaces and punctuation.

FROM: Honors Research

TO: Undergraduate Research II

DESCRIPTION

FROM:

TO:

PREREQUISITE

Does this course replicate the content of a previously approved course to such an extent that students should not receive credit for both courses? If so, this should be **noted in the prerequisite**.

FROM: CHEM 481 and permission of the department. Credit for this course may only be applied to the honors chemistry program.

TO: CHEM 481 and permission of the department. This course cannot be counted towards the 400-level CHEM unit requirement for the Chemistry Majors program.

LEARNING OUTCOMES

RATIONALE

The removal of the restriction that only Honours students can take this research project course for credit will encourage and facilitate Majors students who want to take a more in depth-approach to a research project (beyond CHEM 481). The title is also altered accordingly to remove the reference to Honours-only research. In order to ensure that students take a lecture-based 4th year course, the restriction that CHEM 483 cannot be used to complete CHEM 400-level unit requirements for the Majors Program has been added (no such restriction for the Honours Pgm)

Effective term and year: Summer 2014

recommendations of our External Review. We have lost several faculty members to retirements in the area of Ergonomics over the last five years. There is no plan to replace these faculty members and we are no longer able to offer the Ergonomics Concentration as part of our Kinesiology Major.

Ryan Dill, Senior Lecturer, Chair Undergraduate Program Committee, Department of Biomedical Physiology and Kinesiology, Faculty of Science. 778 782 7851 ryand@sfu.ca

BPK Motion 2: Make the following changes in the Kinesiology Major Program within the Department of Biomedical Physiology and Kinesiology.

Rationale : The Ergonomics Concentration has been deleted, as there is only one Concentration remaining in the Kinesiology Major program the calendar language required adjustment.

FROM:

Department of Biomedical Physiology & Kinesiology | Faculty of Science

Simon Fraser University Calendar | Fall 2013

Kinesiology Major

BACHELOR OF SCIENCE

This bachelor of science (BSc) degree offers students the option of completing either one of two concentrations, or completing the general program instead.
The two areas of concentration are

- active health and rehabilitation kinesiology
- ergonomics/human factors

The program is accredited with the Canadian Council of University Physical Education and Kinesiology Administrators (CCUPEKA).
Please read descriptions of required BPK courses before enrolling in the program.
Note that students cannot combine a double major, nor a double minor, nor a major/minor program in the areas of kinesiology, biomedical physiology and behavioural neuroscience.

Program Requirements

Students complete 120 units, as specified below.
Suggested course selections for majors and any of the two areas of

concentration are available from the general office.

LOWER DIVISION REQUIREMENTS

The program's lower division requirements are structured as a common core set, an additional set of courses for one of the optional concentrations, and general elective courses that include the University's breadth requirements.
Students complete all of the following.

CORE COURSES

BISC 101 - General Biology (4)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
BPK 142 - Introduction to Kinesiology (3)
BPK 201 - Biomechanics (3)
BPK 205 - Introduction to Human Physiology (3)
BPK 207 - Human Motor Systems (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of
MBB 201 - Biochemistry of the Cell (3)
MBB 231 - Cellular Biology and Biochemistry (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Calculus I for the Biological Sciences (3)
and one of
MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)
PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)

LOWER DIVISION CONCENTRATION REQUIREMENTS

Students choosing to specialize in one of the kinesiology concentrations will complete additional lower division courses as specified below.

LOWER DIVISION ACTIVE HEALTH AND REHABILITATION CONCENTRATION

Students who choose this concentration will complete all of
BPK 110 - Human Nutrition: Current Issues (3)
BPK 140 - Contemporary Health Issues (3)
BPK 143 - Exercise: Health and Performance (3)
BPK 241 - Sports Injuries - Prevention and Rehabilitation (3)

LOWER DIVISION ERGONOMICS AND HUMAN FACTORS CONCENTRATION

Students who choose this concentration will complete

BPK 180W - Introduction to Ergonomics (3)

LOWER DIVISION COURSES AND BREADTH AND WRITING REQUIREMENTS

For students admitted prior to September 2006, a minimum of six units must be selected from the Faculty of Arts and Social Sciences.

For students admitted September 2006 or later, a minimum of six units of designated humanities breadth (B-Hum)courses, and a minimum of six units of designated social sciences breadth (B-Soc) courses must be completed. At least three units of lower division course work should also be identified as writing-intensive (W) courses.

The quantitative (Q), science breadth (B-Sci) and undesignated breadth (UB) requirements are satisfied through completion of the kinesiology lower division core course set and hence do not require additional work. For more information, see www.sfu.ca/ugcr.

UPPER DIVISION REQUIREMENTS

All of the following courses must be completed with a grade of C- or higher.

UPPER DIVISION CORE

All students complete the following 19 units, including all of

BPK 304W - Inquiry and Measurement in Kinesiology (3) +
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 340 - Active Health: Behavior and Promotion (3)

and one of

BPK 301 - Biomechanics Laboratory (3)
BPK 407 - Human Physiology Laboratory (3)

+ KIN 304W satisfies the University's breadth requirements of three upper division units in writing

^ Students can complete both KIN 301 and 407, and count one as an elective

CONCENTRATION, OR GENERAL PROGRAM REQUIREMENTS

Students complete either the general program requirements as listed immediately below, or instead of that, they can choose to complete the requirements for one of the two concentrations (see below).

GENERAL PROGRAM

This program option requires a total of 45 upper division units, which is composed of the 19 upper division core courses (see above) and the following additional requirements.

Students who choose this option will complete an additional 21 kinesiology units chosen from upper division KIN courses, excluding KIN 325, 342, 497, 499. MBB 321 may be used to satisfy three units of this requirement.

As well, an additional five upper division units, chosen from any discipline within the University, is required.

Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the 45 upper division unit total for this general program.

ACTIVE HEALTH AND REHABILITATION CONCENTRATION

This program option requires a total of 45 upper division units, which is composed of the 19 upper division core courses (see above) and the following additional requirements. Students who choose this concentration will complete an additional 26 units as specified below, including all of

BPK 303 - Kinanthropometry (3)
BPK 310 - Exercise/Work Physiology (3)
BPK 343 - Active Health: Assessment and Programming (3)

and four of

BPK 308 - Experiments and Models in Systems Physiology (3)
BPK 311 - Applied Human Nutrition (3)
BPK 312 - Nutrition for Fitness and Sport (3)
BPK 375 - Human Growth and Development (3)
BPK 381 - Psychology of Work (3)
BPK 382 - Workplace Health (3)
BPK 402 - Mechanical Behavior of Biological Tissues (3)
BPK 412 - Molecular and Cellular Cardiology (3)
BPK 415 - Neural Control of Movement (3)
BPK 417W - Obesity, Adipocyte Function and Weight Management (3)
BPK 420 - Selected Topics in Kinesiology I (3) ^
BPK 421 - Selected Topics in Kinesiology II (3) ^
BPK 422 - Selected Topics in Kinesiology III (3) ^
BPK 423 - Selected Topics in Kinesiology IV (3) ^
BPK 426 - Neuromuscular Anatomy (3)
BPK 431 - Integrative Cancer Biology (3)
BPK 444 - Cardiac Disease: Pathophysiology and Assessment (3)
BPK 445 - Advanced Cardiac Rehabilitation (3)
BPK 446 - Neurological Disorders (3)
BPK 448 - Rehabilitation of Movement Control (3)
BPK 461 - Physiological Aspects of Aging (3)
BPK 481 - Musculoskeletal Disorders (3)
BPK 496 - Directed Study I (3) ^
BPK 498 - Directed Study II (3) ^

and one additional upper division kinesiology course, excluding KIN 325, 342, 497, 499

and an additional two units of upper division units chosen from any discipline within the University

Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the upper division

unit total for this program.
^ can be counted toward area of concentration if relevant to active health or rehabilitation kinesiology. Please see the head of the area of concentration for permission to count any of these courses toward the area of concentration requirement.

TO:

Department of Biomedical Physiology & Kinesiology | Faculty of Science

Simon Fraser University Calendar | Fall 2013

Kinesiology Major

BACHELOR OF SCIENCE

This bachelor of science (BSc) degree offers students the option of completing either ***the Active Health and Rehabilitation Concentration*** ~~one of two concentrations~~, or completing the general program instead. ~~The two areas of concentration are~~

~~- active health and rehabilitation kinesiology~~
~~- ergonomics/human factors~~

The program is accredited with the Canadian Council of University Physical Education and Kinesiology Administrators (CCUPEKA).
Please read descriptions of required BPK courses before enrolling in the program.
Note that students cannot combine a double major, nor a double minor, nor a major/minor program in the areas of kinesiology, biomedical physiology and behavioural neuroscience.

Program Requirements

Students complete 120 units, as specified below.
Suggested course selections for majors and any of the two areas of concentration are available from the general office.

LOWER DIVISION REQUIREMENTS

The program's lower division requirements are structured as a common core set, an additional set of courses for ~~one of~~ the optional ***Active Health and Rehabilitation Concentration***~~s~~, and general elective courses that include the University's breadth requirements.
Students complete all of the following.

CORE COURSES

BISC 101 - General Biology (4)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
BPK 142 - Introduction to Kinesiology (3)
BPK 201 - Biomechanics (3)

BPK 205 - Introduction to Human Physiology (3)
BPK 207 - Human Motor Systems (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of
MBB 201 - Biochemistry of the Cell (3)
MBB 231 - Cellular Biology and Biochemistry (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Calculus I for the Biological Sciences (3)
and one of
MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)
PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)

~~LOWER DIVISION CONCENTRATION REQUIREMENTS~~

~~Students choosing to specialize in one of the kinesiology concentrations will complete additional lower division courses as specified below.~~

LOWER DIVISION ACTIVE HEALTH AND REHABILITATION CONCENTRATION

Students who choose this concentration will complete all of
BPK 110 - Human Nutrition: Current Issues (3)
BPK 140 - Contemporary Health Issues (3)
BPK 143 - Exercise: Health and Performance (3)
BPK 241 - Sports Injuries - Prevention and Rehabilitation (3)

~~LOWER DIVISION ERGONOMICS AND HUMAN FACTORS CONCENTRATION~~

~~Students who choose this concentration will complete~~
~~BPK 180W - Introduction to Ergonomics (3)~~

LOWER DIVISION COURSES AND BREADTH AND WRITING REQUIREMENTS

For students admitted prior to September 2006, a minimum of six units must be selected from the Faculty of Arts and Social Sciences.
For students admitted September 2006 or later, a minimum of six units of designated humanities breadth (B-Hum)courses, and a minimum of six units of designated social sciences breadth (B-Soc) courses must be completed. At least three units of lower division course work should also be identified as writing-

intensive (W) courses.
The quantitative (Q), science breadth (B-Sci) and undesignated breadth (UB) requirements are satisfied through completion of the kinesiology lower division core course set and hence do not require additional work. For more information, see www.sfu.ca/ugcr.

UPPER DIVISION REQUIREMENTS

All of the following courses must be completed with a grade of C- or higher.

UPPER DIVISION CORE

All students complete the following 19 units, including all of
BPK 304W - Inquiry and Measurement in Kinesiology (3) +
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 340 - Active Health: Behavior and Promotion (3)
and one of
BPK 301 - Biomechanics Laboratory (3)
BPK 407 - Human Physiology Laboratory (3)
+ BPK 304W satisfies the University's breadth requirements of three upper division units in writing
^ Students can complete both BPK 301 and 407, and count one as an elective

CONCENTRATION, OR GENERAL PROGRAM REQUIREMENTS

Students complete either the general program requirements as listed immediately below, or instead of that, they can choose to complete the requirements for ~~one of~~ the ~~two~~ ***Active Health and Rehabilitation Concentration***~~s~~ (see below).

GENERAL PROGRAM

This program option requires a total of 45 upper division units, which is composed of the 19 upper division core courses (see above) and the following additional requirements.
Students who choose this option will complete an additional 21 biomedical physiology and kinesiology units chosen from upper division BPK courses, excluding BPK 325, 342, 497, 499. MBB 321 may be used to satisfy three units of this requirement.
As well, an additional five upper division units, chosen from any discipline within the University, is required.
Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the 45 upper division unit total for this general program.

ACTIVE HEALTH AND REHABILITATION CONCENTRATION

This program option requires a total of 45 upper division units, which is composed of the 19 upper division core courses (see above) and the following additional requirements. Students who choose this concentration will complete an additional 26 units as specified below, including all of
BPK 303 - Kinanthropometry (3)

BPK 310 - Exercise/Work Physiology (3)
BPK 343 - Active Health: Assessment and Programming (3)
and four of
BPK 308 - Experiments and Models in Systems Physiology (3)
BPK 311 - Applied Human Nutrition (3)
BPK 312 - Nutrition for Fitness and Sport (3)
BPK 375 - Human Growth and Development (3)
BPK 381 - Psychology of Work (3)
BPK 382 - Workplace Health (3)
BPK 402 - Mechanical Behavior of Biological Tissues (3)
BPK 412 - Molecular and Cellular Cardiology (3)
BPK 415 - Neural Control of Movement (3)
BPK 417W - Obesity, Adipocyte Function and Weight Management (3)
BPK 420 - Selected Topics in Kinesiology I (3) ^
BPK 421 - Selected Topics in Kinesiology II (3) ^
BPK 422 - Selected Topics in Kinesiology III (3) ^
BPK 423 - Selected Topics in Kinesiology IV (3) ^
BPK 426 - Neuromuscular Anatomy (3)
BPK 431 - Integrative Cancer Biology (3)
BPK 444 - Cardiac Disease: Pathophysiology and Assessment (3)
BPK 445 - Advanced Cardiac Rehabilitation (3)
BPK 446 - Neurological Disorders (3)
BPK 448 - Rehabilitation of Movement Control (3)
BPK 461 - Physiological Aspects of Aging (3)
BPK 481 - Musculoskeletal Disorders (3)
BPK 496 - Directed Study I (3) ^
BPK 498 - Directed Study II (3) ^
and one additional upper division biomedical physiology and kinesiology course, excluding BPK 325, 342, 497, 499
and an additional two units of upper division units chosen from any discipline within the University
Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the upper division unit total for this program.
^ can be counted toward area of concentration if relevant to active health or rehabilitation kinesiology. Please see the head of the area of concentration for permission to count any of these courses toward the area of concentration requirement.

BPK Motion 3: Make the following changes in the Kinesiology Honors Program within the Department of Biomedical Physiology and Kinesiology.

Rationale : The Ergonomics Concentration has been deleted, as there is only one Concentration remaining in the Kinesiology Honors program the calendar language required adjustment.

FROM:

Department of Biomedical Physiology & Kinesiology | Faculty of Science

Simon Fraser University Calendar | Fall 2013

Kinesiology Honours

BACHELOR OF SCIENCE

This bachelor of science with honours (BSc) degree offers students the option of completing either one of two concentrations, or completing the general program instead. The two areas of concentration are

active health and rehabilitation kinesiology
ergonomics/human factors

The program is accredited with the Canadian Council of University Physical Education and Kinesiology Administrators (CCUPEKA).

Please read descriptions of required BPK courses before enrolling in the program.

Note that students cannot combine: a double major, nor a double minor, nor a major/minor program in the areas of kinesiology, biomedical physiology, or behavioural neuroscience.

Admission Requirements

Application requires

- completion of a minimum of 90 units
- a minimum CGPA of 3.00
- submission of a completed program approval form, along with the student's most recent advising transcript, to the undergraduate advisor.

Prerequisite and Required Course Grades

Students enrolling in kinesiology courses must have a grade of C- or better in prerequisite courses. Students enrolled in kinesiology certificate, minor, major (including concentrations), honours, second degree, and post baccalaureate diploma programs must have grade of C- or better in all required courses.

Program Requirements

Suggested course selections for majors and any of the two areas of concentration are available from the general office.

LOWER DIVISION REQUIREMENTS

The program's lower division requirements are structured as a common core set,

an additional set of courses for one of the optional concentrations, and general elective courses that include the University's breadth requirements.

CORE COURSES

Students complete all of the following courses:

BISC 101 - General Biology (4)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
BPK 142 - Introduction to Kinesiology (3)
BPK 201 - Biomechanics (3)
BPK 205 - Introduction to Human Physiology (3)
BPK 207 - Human Motor Systems (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of
MBB 201 - Biochemistry of the Cell (3)
MBB 231 - Cellular Biology and Biochemistry (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Calculus I for the Biological Sciences (3)
and one of
MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)
PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)

CONCENTRATION REQUIREMENTS

Students choosing to specialize in one of the kinesiology concentrations will complete additional lower division courses as specified below.

ACTIVE HEALTH AND REHABILITATION CONCENTRATION

Students who choose this concentration will complete all of
BPK 110 - Human Nutrition: Current Issues (3)
BPK 140 - Contemporary Health Issues (3)
BPK 143 - Exercise: Health and Performance (3)
BPK 241 - Sports Injuries - Prevention and Rehabilitation (3)

ERGONOMICS AND HUMAN FACTORS CONCENTRATION

Students who choose this concentration will complete
BPK 180W - Introduction to Ergonomics (3)

BREADTH AND WRITING REQUIREMENTS

For students admitted prior to September 2006, a minimum of six units must be selected from the Faculty of Arts and Social Sciences.
For students admitted September 2006 or later, a minimum of six units of designated humanities breadth (B-Hum)courses, and a minimum of six units of designated social sciences breadth (B-Soc) courses must be completed.
At least three units of lower division course work should also be identified as writing-intensive (W) courses. The quantitative (Q), science breadth (B-Sci) and undesignated breadth (UB) requirements are satisfied through completion of the kinesiology lower division core course set and hence do not require additional work. For more information, see www.sfu.ca/ugcr.

Upper Division Requirements

UPPER DIVISION REQUIREMENTS

All of the following courses must be completed with a grade of C- or higher.

UPPER DIVISION CORE

All students complete the following 34 units, including all of
BPK 304W - Inquiry and Measurement in Kinesiology (3) +
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 340 - Active Health: Behavior and Promotion (3)
BPK 497 - Undergraduate Honors Thesis Proposal (3)
BPK 499 - Undergraduate Honors Thesis (12)
and one of
BPK 301 - Biomechanics Laboratory (3)
BPK 407 - Human Physiology Laboratory (3)
* Students can complete both KIN 301 and 407, and count one as an elective.
+ KIN 304W satisfies the University's breadth requirements of three upper division units in writing

CONCENTRATION OR GENERAL PROGRAM REQUIREMENTS

Students complete either the general program requirements as listed immediately below, or instead of that, they can choose to complete the requirements for one of the two concentrations (see below).

GENERAL PROGRAM

This program option requires a total of 60 upper division units, which is composed of the 34 upper division core courses (see above) and the following additional requirements.
Students who choose this option will complete an additional 21 kinesiology units chosen from upper division KIN courses, excluding KIN 325, 342, 497, 499. MBB 321 may be used to satisfy three units of this requirement.
As well, an additional five upper division units, chosen from any discipline within the University, is required.
Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the 45 upper

division unit total for this general program.

ACTIVE HEALTH AND REHABILITATION CONCENTRATION

This program option requires a total of 60 upper division units, which is composed of the 34 upper division core courses (see above) and the following additional requirements.

Students who choose this concentration will complete an additional 26 kinesiology units as specified below, including all of

BPK 303 - Kinanthropometry (3)
BPK 310 - Exercise/Work Physiology (3)
BPK 343 - Active Health: Assessment and Programming (3)

and four of

BPK 308 - Experiments and Models in Systems Physiology (3)
BPK 311 - Applied Human Nutrition (3)
BPK 312 - Nutrition for Fitness and Sport (3)
BPK 375 - Human Growth and Development (3)
BPK 381 - Psychology of Work (3)
BPK 382 - Workplace Health (3)
BPK 402 - Mechanical Behavior of Biological Tissues (3)
BPK 412 - Molecular and Cellular Cardiology (3)
BPK 415 - Neural Control of Movement (3)
BPK 417W - Obesity, Adipocyte Function and Weight Management (3)
BPK 420 - Selected Topics in Kinesiology I (3) ^
BPK 421 - Selected Topics in Kinesiology II (3) ^
BPK 422 - Selected Topics in Kinesiology III (3) ^
BPK 423 - Selected Topics in Kinesiology IV (3) ^
BPK 426 - Neuromuscular Anatomy (3)
BPK 431 - Integrative Cancer Biology (3)
BPK 444 - Cardiac Disease: Pathophysiology and Assessment (3)
BPK 445 - Advanced Cardiac Rehabilitation (3)
BPK 446 - Neurological Disorders (3)
BPK 448 - Rehabilitation of Movement Control (3)
BPK 461 - Physiological Aspects of Aging (3)
BPK 481 - Musculoskeletal Disorders (3)
BPK 496 - Directed Study I (3) ^
BPK 498 - Directed Study II (3) ^

and one additional upper division kinesiology course, excluding KIN 325, 342, 497, 499.

and an additional two units of upper division units chosen from any discipline within the University

Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the 45 upper division unit total for this general program.

^ can be counted toward area of concentration if relevant to active health or rehabilitation kinesiology. Please see the head of the area of concentration for

permission to count any of these courses toward the area of concentration requirement.

TO:

Department of Biomedical Physiology & Kinesiology | Faculty of Science

Simon Fraser University Calendar | Fall 2013

Kinesiology Honours

BACHELOR OF SCIENCE

This bachelor of science with honours (BSc) degree offers students the option of completing either the ***Active Health and Rehabilitation Concentration*** ~~one of two concentrations~~, or completing the general program instead. ~~The two areas of concentration are~~

~~- active health and rehabilitation kinesiology~~
~~- ergonomics/human factors~~

The program is accredited with the Canadian Council of University Physical Education and Kinesiology Administrators (CCUPEKA).

Please read descriptions of required BPK courses before enrolling in the program.

Note that students cannot combine: a double major, nor a double minor, nor a major/minor program in the areas of kinesiology, biomedical physiology, or behavioural neuroscience.

Admission Requirements

Application requires

- completion of a minimum of 90 units
- a minimum CGPA of 3.00
- submission of a completed program approval form, along with the student's most recent advising transcript, to the undergraduate advisor.

Prerequisite and Required Course Grades

Students enrolling in biomedical physiology and kinesiology courses must have a grade of C- or better in prerequisite courses. Students enrolled in kinesiology certificate, minor, major (including concentrations), honours, second degree, and post baccalaureate diploma programs must have grade of C- or better in all required courses.

Program Requirements

~~Suggested course selections for majors and any of the two areas of concentration are available from the general office.~~

LOWER DIVISION REQUIREMENTS

The program's lower division requirements are structured as a common core set, an additional set of courses for ~~one of~~ the optional ***Active Health and***

Rehabilitation Concentration ~~concentrations~~, and general elective courses that include the University's breadth requirements.

CORE COURSES

Students complete all of the following courses:

BISC 101 - General Biology (4)
CHEM 121 - General Chemistry and Laboratory I (4)
CHEM 122 - General Chemistry II (2)
CHEM 281 - Organic Chemistry I (4)
BPK 142 - Introduction to Kinesiology (3)
BPK 201 - Biomechanics (3)
BPK 205 - Introduction to Human Physiology (3)
BPK 207 - Human Motor Systems (3)
STAT 201 - Statistics for the Life Sciences (3)
and one of
MBB 201 - Biochemistry of the Cell (3)
MBB 231 - Cellular Biology and Biochemistry (3)
and one of
MATH 150 - Calculus I with Review (4)
MATH 151 - Calculus I (3)
MATH 154 - Calculus I for the Biological Sciences (3)
and one of
MATH 152 - Calculus II (3)
MATH 155 - Calculus II for the Biological Sciences (3)
and one of
PHYS 101 - Physics for the Life Sciences I (3)
PHYS 120 - Mechanics and Modern Physics (3)
PHYS 125 - Mechanics and Special Relativity (3)
PHYS 140 - Studio Physics - Mechanics and Modern Physics (4)
and one of
PHYS 102 - Physics for the Life Sciences II (3)
PHYS 121 - Optics, Electricity and Magnetism (3)
PHYS 126 - Electricity, Magnetism and Light (3)
PHYS 141 - Studio Physics - Optics, Electricity and Magnetism (4)

~~CONCENTRATION REQUIREMENTS~~

~~Students choosing to specialize in one of the kinesiology concentrations will complete additional lower division courses as specified below.~~

ACTIVE HEALTH AND REHABILITATION CONCENTRATION

Students who choose this concentration will complete all of
BPK 110 - Human Nutrition: Current Issues (3)
BPK 140 - Contemporary Health Issues (3)
BPK 143 - Exercise: Health and Performance (3)
BPK 241 - Sports Injuries - Prevention and Rehabilitation (3)

~~ERGONOMICS AND HUMAN FACTORS CONCENTRATION~~

~~Students who choose this concentration will complete~~
~~BPK 180W - Introduction to Ergonomics (3)~~

BREADTH AND WRITING REQUIREMENTS

For students admitted prior to September 2006, a minimum of six units must be selected from the Faculty of Arts and Social Sciences.
For students admitted September 2006 or later, a minimum of six units of designated humanities breadth (B-Hum)courses, and a minimum of six units of designated social sciences breadth (B-Soc) courses must be completed.
At least three units of lower division course work should also be identified as writing-intensive (W) courses. The quantitative (Q), science breadth (B-Sci) and undesignated breadth (UB) requirements are satisfied through completion of the kinesiology lower division core course set and hence do not require additional work. For more information, see www.sfu.ca/ugcr.

Upper Division Requirements

UPPER DIVISION REQUIREMENTS

All of the following courses must be completed with a grade of C- or higher.

UPPER DIVISION CORE

All students complete the following 34 units, including all of
BPK 304W - Inquiry and Measurement in Kinesiology (3) +
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 340 - Active Health: Behavior and Promotion (3)
BPK 497 - Undergraduate Honors Thesis Proposal (3)
BPK 499 - Undergraduate Honors Thesis (12)
and one of
BPK 301 - Biomechanics Laboratory (3)
BPK 407 - Human Physiology Laboratory (3)
* Students can complete both BPK 301 and 407, and count one as an elective.
+ BPK 304W satisfies the University's breadth requirements of three upper division units in writing

CONCENTRATION OR GENERAL PROGRAM REQUIREMENTS

Students complete either the general program requirements as listed immediately below, or instead of that, they can choose to complete the requirements for ***the Active Health and Rehabilitation Concentration*** ~~one of the two concentrations (~~see below).

GENERAL PROGRAM

This program option requires a total of 60 upper division units, which is composed of the 34 upper division core courses (see above) and the following additional requirements.
Students who choose this option will complete an additional 21 biomedical physiology and kinesiology units chosen from upper division BPK courses, excluding BPK 325, 342, 497, 499. MBB 321 may be used to satisfy three units of this requirement.
As well, an additional five upper division units, chosen from any discipline within the University, is required.
Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which

includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the 45 upper division unit total for this general program.

ACTIVE HEALTH AND REHABILITATION CONCENTRATION

This program option requires a total of 60 upper division units, which is composed of the 34 upper division core courses (see above) and the following additional requirements.

Students who choose this concentration will complete an additional 26 biomedical physiology and kinesiology units as specified below, including all of

BPK 303 - Kinanthropometry (3)
BPK 310 - Exercise/Work Physiology (3)
BPK 343 - Active Health: Assessment and Programming (3)

and four of

BPK 308 - Experiments and Models in Systems Physiology (3)
BPK 311 - Applied Human Nutrition (3)
BPK 312 - Nutrition for Fitness and Sport (3)
BPK 375 - Human Growth and Development (3)
BPK 381 - Psychology of Work (3)
BPK 382 - Workplace Health (3)
BPK 402 - Mechanical Behavior of Biological Tissues (3)
BPK 412 - Molecular and Cellular Cardiology (3)
BPK 415 - Neural Control of Movement (3)
BPK 417W - Obesity, Adipocyte Function and Weight Management (3)
BPK 420 - Selected Topics in Kinesiology I (3) ^
BPK 421 - Selected Topics in Kinesiology II (3) ^
BPK 422 - Selected Topics in Kinesiology III (3) ^
BPK 423 - Selected Topics in Kinesiology IV (3) ^
BPK 426 - Neuromuscular Anatomy (3)
BPK 431 - Integrative Cancer Biology (3)
BPK 444 - Cardiac Disease: Pathophysiology and Assessment (3)
BPK 445 - Advanced Cardiac Rehabilitation (3)
BPK 446 - Neurological Disorders (3)
BPK 448 - Rehabilitation of Movement Control (3)
BPK 461 - Physiological Aspects of Aging (3)
BPK 481 - Musculoskeletal Disorders (3)
BPK 496 - Directed Study I (3) ^
BPK 498 - Directed Study II (3) ^

and one additional upper division biomedical physiology and kinesiology course, excluding BPK 325, 342, 497, 499.

and an additional two units of upper division units chosen from any discipline within the University

Students admitted in September 2006 or later are also required to complete the University's writing, quantitative and breadth (WQB) requirements, which includes the requirement of completing three units of writing-intensive credit at the upper division. The W component may be included within the 45 upper division unit total for this general program.

^ can be counted toward area of concentration if relevant to active health or rehabilitation kinesiology. Please see the head of the area of concentration for permission to count any of these courses toward the area of concentration requirement.

BPK Motion 4: Add MBB 324 – Protein Biochemistry to the list of Biology and MBB courses of which one must be taken in the Biomedical Physiology Major within the Department of Biomedical Physiology and Kinesiology.

MBB 324 – Protein Biochemistry
An exploration of the fundamental aspects of proteins; their chemical and physical nature, their synthesis, stability and turnover, as well as their structure and function. Methods of protein analysis and structure determination will be presented

FROM :

Department of Biomedical Physiology & Kinesiology | Faculty of Science

Simon Fraser University Calendar | Fall 2013

Biomedical Physiology Major

UPPER DIVISION REQUIREMENTS

Students complete 46-47 upper division units in the following courses, each of which must be completed with a grade of C- or higher.
Students complete all of
BPK 304 - Inquiry and Measurement in Kinesiology (3)
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 407 - Human Physiology Laboratory (3)
MBB 321 - Intermediary Metabolism (3)
and one of
BISC 303 - Microbiology (4)
BISC 307 - Animal Physiology Laboratory (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 316 - Vertebrate Biology (4)
BISC 329 - Introduction to Experimental Techniques (4)
BISC 333 - Developmental Biology (3) ^
BISC 357 - Gene Cloning (3) ^
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
CHEM 360 - Thermodynamics and Chemical Kinetics (3)
MBB 308 - Molecular Biology Laboratory (3) ^
MBB 309W - Biochemistry Laboratory (4)

MBB 322 - Molecular Physiology (3)
MBB 323 - Introduction to Physical Biochemistry (3)
MBB 331 - Molecular Biology (3) ^

TO:

Department of Biomedical Physiology & Kinesiology | Faculty of Science

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Biomedical Physiology Major

UPPER DIVISION REQUIREMENTS

Students complete 46-47 upper division units in the following courses, each of which must be completed with a grade of C- or higher.

Students complete all of

BPK 304 - Inquiry and Measurement in Kinesiology (3)
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 407 - Human Physiology Laboratory (3)
MBB 321 - Intermediary Metabolism (3)

and one of

BISC 303 - Microbiology (4)
BISC 307 - Animal Physiology Laboratory (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 316 - Vertebrate Biology (4)
BISC 329 - Introduction to Experimental Techniques (4)
BISC 333 - Developmental Biology (3) ^
BISC 357 - Gene Cloning (3) ^
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
CHEM 360 - Thermodynamics and Chemical Kinetics (3)
MBB 308 - Molecular Biology Laboratory (3) ^
MBB 309W - Biochemistry Laboratory (4)
MBB 322 - Molecular Physiology (3)
MBB 323 - Introduction to Physical Biochemistry (3)
MBB 324 – Protein Biochemistry (3)
MBB 331 - Molecular Biology (3) ^

Rationale ;

This course has just been introduced by MBB and fills a gap in what has been available. Biomedical Physiology Major and Honor students are already required to take the only pre-requisite for this course (MBB 222). The content is

appropriate for Biomedical Physiology Major and Honor students, and is excellent preparation for future work in several labs within our Department.

BPK Motion 5: Add MBB 324 – Protein Biochemistry to the list of Biology and MBB courses of which one must be taken in the Biomedical Physiology Honors program within the Department of Biomedical Physiology and Kinesiology.

MBB 324 – Protein Biochemistry
An exploration of the fundamental aspects of proteins; their chemical and physical nature, their synthesis, stability and turnover, as well as their structure and function. Methods of protein analysis and structure determination will be presented

FROM:

Department of Biomedical Physiology & Kinesiology | Faculty of Science
Simon Fraser University Calendar | Fall 2013

Biomedical Physiology Honours

UPPER DIVISION REQUIREMENTS
Students complete a minimum of 61 upper division units in the following courses, each of which must be completed with a grade of C- or higher.
Students complete all of
BPK 304 - Inquiry and Measurement in Kinesiology (3)
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 407 - Human Physiology Laboratory (3)
BPK 497 - Undergraduate Honors Thesis Proposal (3)
BPK 499 - Undergraduate Honors Thesis (12)
MBB 321 - Intermediary Metabolism (3)
and one of
BISC 303 - Microbiology (4)
BISC 307 - Animal Physiology Laboratory (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 316 - Vertebrate Biology (4)
BISC 329 - Introduction to Experimental Techniques (4)
BISC 333 - Developmental Biology (3) ^
BISC 357 - Gene Cloning (3) ^
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
CHEM 360 - Thermodynamics and Chemical Kinetics (3)
MBB 308 - Molecular Biology Laboratory (3) ^
MBB 309W - Biochemistry Laboratory (4)

MBB 322 - Molecular Physiology (3)
MBB 323 - Introduction to Physical Biochemistry (3)
MBB 331 - Molecular Biology (3) ^

TO:

Department of Biomedical Physiology & Kinesiology | Faculty of Science

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Biomedical Physiology Honours

UPPER DIVISION REQUIREMENTS

Students complete a minimum of 61 upper division units in the following courses, each of which must be completed with a grade of C- or higher.

Students complete all of

BPK 304 - Inquiry and Measurement in Kinesiology (3)
BPK 305 - Human Physiology I (3)
BPK 306 - Human Physiology II (Principles of Physiological Regulation) (3)
BPK 326 - Functional Anatomy (4)
BPK 407 - Human Physiology Laboratory (3)
BPK 497 - Undergraduate Honors Thesis Proposal (3)
BPK 499 - Undergraduate Honors Thesis (12)
MBB 321 - Intermediary Metabolism (3)

and one of

BISC 303 - Microbiology (4)
BISC 307 - Animal Physiology Laboratory (3)
BISC 307W - Animal Physiology Laboratory (3)
BISC 316 - Vertebrate Biology (4)
BISC 329 - Introduction to Experimental Techniques (4)
BISC 333 - Developmental Biology (3) ^
BISC 357 - Gene Cloning (3) ^
BISC 403 - Current Topics in Cell Biology (3)
BISC 405 - Neurobiology (3)
CHEM 360 - Thermodynamics and Chemical Kinetics (3)
MBB 308 - Molecular Biology Laboratory (3) ^
MBB 309W - Biochemistry Laboratory (4)
MBB 322 - Molecular Physiology (3)
MBB 323 - Introduction to Physical Biochemistry (3)
MBB 324 – Protein Biochemistry (3)
MBB 331 - Molecular Biology (3) ^

Rationale ;

This course has just been introduced by MBB and fills a gap in what has been available. Biomedical Physiology Major and Honor students are already required to take the only pre-requisite for this course (MBB 222). The content is appropriate for Biomedical Physiology Major and Honor students, and is excellent preparation for future work in several labs within our Department.