

Program Proposal

1. Program: Global Health (Faculty of Health)
2. Degree Designation:

Specialized Honours BSc Program, Global Health Program
Honours BSc Program, Global Health Program
BSc Program, Global Health Program
3. Type of Modification: Changes to program requirements.
4. Effective Date: Fall 2021

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5. Provide a general description of the proposed changes to the program.

The full year course MATH 1505 has been split into two 3.0 credit courses, MATH 1506 and MATH 1507.

6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.

No change to learning outcomes.

7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives. If changes to the admission requirements are being proposed, comment on the appropriateness of the revised requirements to the achievement of the program learning outcomes.

No change in mapping of program requirements to program learning outcomes.

8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.

These changes are the result of consultation with the Mathematics and Statistics Department.

9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a statement from the relevant Dean(s)/Principal confirming resources will be in place to implement the changes.

No resource implications.

10. Provide a summary of how students currently enrolled in the program will be accommodated.

The course requirements specifically still allow the current 6-credit first-year MATH courses to be used to satisfy requirements.

11. Provide as an appendix a side-by-side comparison of the existing and proposed program requirements as they will appear in the Undergraduate or Graduate Calendar.

Change From:	Change To:
Global Health (Specialized Honours BSc Program): 120 credits	Global Health (Specialized Honours BSc Program): 120 credits
Basic science requirement: a minimum of 15 credits as follows:	Basic science requirement: a minimum of 15 credits as follows:
six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00	six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00
Global Health (Honours BSc Program): 120 credits	Global Health (Honours BSc Program): 120 credits
Basic science requirement: a minimum of 15 credits as follows:	Basic science requirement: a minimum of 15 credits as follows:
six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00	six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00
Global Health (BSc Program): 90 credits	Global Health (BSc Program): 90 credits
Basic science requirement: a minimum of 15 credits as follows:	Basic science requirement: a minimum of 15 credits as follows:
six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00	six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00

Program Proposal

1. Program: Kinesiology (Faculty of Health)

2. Degree Designation:

Kinesiology and Health Science (Specialized Honours Bsc Program), Kinesiology
Kinesiology and Health Science (Honours Bsc Program), Kinesiology

3. Type of Modification: Changes to program requirements.

4. Effective Date: Fall 2021

5. Provide a general description of the proposed changes to the program.

The full year course MATH 1505 has been split into two 3.0 credit courses, MATH 1506 and MATH 1507.

6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.

No change to learning outcomes.

7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives. If changes to the admission requirements are being proposed, comment on the appropriateness of the revised requirements to the achievement of the program learning outcomes.

No change in mapping of program requirements to program learning outcomes.

8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.

These changes are the result of consultation with the Mathematics and Statistics Department.

9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a statement from the relevant Dean(s)/Principal confirming resources will be in place to implement the changes.

No resource implications.

10. Provide a summary of how students currently enrolled in the program will be accommodated.

The course requirements specifically still allow the current 6-credit first-year MATH courses to be used to satisfy requirements.

11. Provide as an appendix a side-by-side comparison of the existing and proposed program requirements as they will appear in the Undergraduate or Graduate Calendar.

Change From:	Change To:
<p>KINESIOLOGY AND HEALTH SCIENCE (SPECIALIZED HONOURS BSC PROGRAM): 120 CREDITS</p> <p>Basic science requirement: A minimum of 15 credits as follows:</p> <p>six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00</p>	<p>KINESIOLOGY AND HEALTH SCIENCE (SPECIALIZED HONOURS BSC PROGRAM): 120 CREDITS</p> <p>Basic science requirement: A minimum of 15 credits as follows:</p> <p>six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00</p>
<p>KINESIOLOGY AND HEALTH SCIENCE (HONOURS BSC PROGRAM): 120 CREDITS</p> <p>Basic science requirement: A minimum of 15 credits as follows:</p> <p>six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00</p>	<p>KINESIOLOGY AND HEALTH SCIENCE (HONOURS BSC PROGRAM): 120 CREDITS</p> <p>Basic science requirement: A minimum of 15 credits as follows:</p> <p>six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00</p>

Program Proposal

1. Program: Neuroscience (Faculty of Health)
 2. Degree Designation: Specialized Honours BSc Program in Neuroscience
 3. Type of Modification: Changes to program requirements.
 4. Effective Date: Fall 2021
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5. Provide a general description of the proposed changes to the program.

The full year course MATH 1505 has been split into two 3.0 credit courses, MATH 1506 and MATH 1507.

6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.

No change to learning outcomes.

7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives. If changes to the admission requirements are being proposed, comment on the appropriateness of the revised requirements to the achievement of the program learning outcomes.

No change in mapping of program requirements to program learning outcomes.

8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.

These changes are the result of consultation with the Mathematics and Statistics Department.

9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a statement from the relevant Dean(s)/Principal confirming resources will be in place to implement the changes.

No resource implications.

10. Provide a summary of how students currently enrolled in the program will be

accommodated.

The course requirements specifically still allow the current 6-credit first-year MATH courses to be used to satisfy requirements.

11. Provide as an appendix a side-by-side comparison of the existing and proposed program requirements as they will appear in the Undergraduate or Graduate Calendar.

Change From:	Change To:
Basic science requirement: a minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 or SC/MATH 1014 3.00 and SC/MATH 1505 6.00	Basic science requirement: a minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 or SC/MATH 1014 3.00 and SC/MATH 1506 3.00 or SC/MATH 1507 3.00

Program Proposal

1. Program: Psychology (Faculty of Health)

2. Degree Designation:

Specialized Honours BSc Program, Psychology

Honours BSc Program, Psychology

Psychology BSc Program, Psychology

3. Type of Modification: Changes to program requirements.

4. Effective Date: Fall 2021

5. Provide a general description of the proposed changes to the program.

The full year course MATH 1505 has been split into two 3.0 credit courses, MATH 1506 and MATH 1507.

6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.

No change to learning outcomes.

7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives. If changes to the admission requirements are being proposed, comment on the appropriateness of the revised requirements to the achievement of the program learning outcomes.

No change in mapping of program requirements to program learning outcomes.

8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.

These changes are the result of consultation with the Mathematics and Statistics Department.

9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a statement from the relevant Dean(s)/Principal confirming resources will be in place to

implement the changes.

No resource implications.

10. Provide a summary of how students currently enrolled in the program will be accommodated.

The course requirements specifically still allow the current 6-credit first-year MATH courses to be used to satisfy requirements.

11. Provide as an appendix a side-by-side comparison of the existing and proposed program requirements as they will appear in the Undergraduate or Graduate Calendar.

Change From:	Change To:
Psychology (Specialized Honours BSc Program): 120 Credits Basic science requirement: A minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00	Psychology (Specialized Honours BSc Program): 120 Credits Basic science requirement: A minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00
Psychology (Honours BSc Program): 120 Credits Basic science requirement: A minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00	Psychology (Honours BSc Program): 120 Credits Basic science requirement: A minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00
Psychology (BSc Program): 90 Credits A minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1505 6.00	Psychology (BSc Program): 90 Credits A minimum of 15 credits as follows: six credits in mathematics selected from: SC/MATH 1013 3.00 SC/MATH 1014 3.00 SC/MATH 1025 3.00 SC/MATH 1506 3.00 and SC/MATH 1507 3.00

COMMITTEE ON ACADEMIC STANDARDS, CURRICULUM AND PEDAGOGY TEMPLATE

NEW COURSE PROPOSAL FORM

Faculty:
Indicate all relevant
Faculty(ies)

Science

Department:
Indicate department and
course prefix (e.g.
Languages, GER)

Math

Date of Submission: Dec 5, 2019

Course Number:
Special Topics courses
Include variance (e.g.
HUMA 3000C 6.0,
Variance is "C")

1506

Var:

Academic Credit Weight:
Indicate both the fee, and
MTCU weight if different from
academic weight (e.g. AC=6,
FEE=8, MET=6)

3.0

Course Title:
The official name of the
course as it will appear in
the Undergraduate
Calendar and on the
Repository

Mathematics I for the Biological and Health Sciences

Short Title:
Appears on any
documents where space
is limited - e.g.
transcripts and lecture
schedules - **maximum
40 characters**

Math I for Biological/Health Sciences

With every new course proposal it is the Department's responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments is necessary to determine degree credit exclusions and/or cross-listed courses.

Brief Course Description:

Maximum 2000 characters

(approximately 300 words including spaces and punctuation).

The course description should be carefully written to convey what the course is about. It should be followed by a statement of prerequisites and co-requisites, if applicable. This description appears in the calendar.

For editorial consistency, and in consideration of the various uses of the Calendars, verbs should be in the present tense (i.e., "This course analyzes the nature and extent of...", rather than "This course will analyze...")

A presentation of functions, systems of linear equations, and an in-depth presentation of single variable differential calculus. Emphasis is placed on basic mathematical skills and their applications.

Prerequisites: 12U Advanced Functions (MHF4U) or equivalent, or SC/MATH 1510

Course Credit exclusions: SC/MATH 1013 3.00, SC/MATH 1300 3.00, SC/MATH 1530 3.00, SC/MATH 1550 6.00, GL/MATH/MODR 1930 3.00, AP/ECON 1530 3.00, SC/ISCI 1401 3.00, SC/ISCI 1410 6.00, SC/MATH 1505 6.00

Generic Course Description:

This is the description of the "Parent / Generic course" for Special Topics courses under which variances of the "Generic" course can be offered in different years (Max. 40 words). Generic course descriptions are published in the calendar.

List all degree credit exclusions, prerequisites, integrated courses, and notes below the course description.

Not applicable

Expanded Course Description:

Please provide a detailed course description, including topics / theories and learning objectives, as it will appear in supplemental calendars.

List of topics:

1. Systems of linear equations
2. Definition of functions, their domain, range and graphs. Functions to be covered include: polynomials, power functions, exponential functions, piecewise-defined functions, trig functions, and rational functions.
3. Transforming, composing and inverting functions.
4. Limits of functions
5. Derivatives of functions
6. Continuity of functions
7. Differentiation Rules
8. Applications of derivatives including optimization, rates of change, extrema, L'hospital's Rule, exponential growth and decay, average value, related rates, linearization.

Course Learning Outcomes:

Solve systems of linear equations.

Recognize and classify functions (eg. polynomials, rational, trigonometric, exponential, logarithm, absolute value, root functions), identify their domain, range and graphs.

Reflect, translate and invert polynomials, rational, trigonometric, exponential, logarithm, absolute value, and root functions.

Define and calculate the limit of a function.

Define continuity and differentiation using limits.

Compute the derivative of functions.

Solve examples involving rates of decay and rates of growth; this requires knowledge of differentiation.

Apply differentiation for the following applications: linear approximations, L'hospital's rule and optimization.

Qualitatively sketch the graphs of functions and their derivatives.

Mathematically interpret the graphs of functions and their derivatives.

Communicate in written form and in a mathematically precise way the concept of limits and differentiation.

Course Design:

Indicate how the course design supports students

This course and Math 1507 (both 3 credits) are to replace Math 1505 (6 credits). Most students enrolled in Math 1505 are from Kinesiology,

in achieving the learning objectives. For example, in the absence of scheduled contact hours what role does student-to-student and/or student-to-instructor communication play, and how is it encouraged? Detail any aspects of the content, delivery, or learning goals that involve "face-to-face" communication, non-campus attendance or experiential education components. Alternatively, explain how the course design encourages student engagement and supports student learning in the absence of substantial on-campus attendance.

psychology and biology; and this is a required course for their program and will satisfy their six credit math requirement.

All three units were consulted about splitting Math 1505 into two three credits and all three units approved this. More details can be found in the "course rationale" section below.

Currently math 1505 is a six-credit course and we are finding students are struggling with this course. By splitting Math 1505 as two three credit courses (namely, Math 1506 and Math 1507), this will give students more flexibility in choosing their math courses. Students are to take Math 1506 before Math 1507. If a student struggles with Math 1506 they will then be able to take a remedial math course (such as Math 1510) before re-attempting Math 1506 or taking Math 1507.

There will be 3 hours of lecture, plus an additional hour of tutorial per week. In addition, math help for this course outside of lecture and tutorial time is offered through the following free services:

1. There will be weekly assigned exercise problems provided to students to help keep them on pace and connected to the lectures outside of class time.
2. [Math Background Tutorials offered through Bethune College](#)
3. [Peer Assisted Study Session \(PASS\)](#) offered through Bethune College; PASS is lead by a former student who successfully completed the course and did well. They share their knowledge of study tools to current students and create mock tests that help students prepare for their actual tests.
4. Study groups formed via the course discussion forum or the class rep. Bethune college coordinates class reps.
5. Instructor office hours
6. Students are able to submit questions for tests on the course website.
7. A study guide specifically for learning mathematics is provided to students as many students enrolled in this course will be first year university students.

Instruction:

1. Planned frequency of offering and number of sections anticipated (every year, alternate years, etc.).
2. Number of department members currently competent to teach the course.
3. Instructor(s) likely to teach the course in the coming year.
4. An indication of the number of contact hours (defined in terms of hours, weeks, etc.) involved, in order to indicate whether an effective length of term is being maintained **OR** in the absence of scheduled contact hours a detailed breakdown of the estimated time students are likely to spend engaged in learning activities required by the course.

1. In the fall semester, approximately 6 sections with each section of approximately 250 students enrolled. In the winter and summer semesters, one to two sections will be offered. One of the section instructors will be designated as the course coordinator. The responsibility of the course coordinator will be to organize/chair instructor meetings and ensure consistent teaching and evaluation amongst sections. There will also a faculty member appointed as the tutorial coordinator.
2. As this is a first year mathematics course, all department members are capable of teaching this course.
3. Andrew McEachern, Norm Purzitsky, Stephen Watson, Andrew Skelton, Pam Sargent, Jude Kong.
4. 3 hours of lectures, plus one hour of tutorial, per week over 12 weeks; for every one hour of lecture time in the classroom, students are expected (on average) to be studying one hour outside of lectures either on their own or in study groups.

Evaluation:

A detailed percentage breakdown of the basis of evaluation in the proposed course must be provided.

If the course is to be integrated, the additional requirements for graduate students are to be listed. If the course is amenable to technologically mediated forms of delivery please identify how the integrity of learning evaluation will be maintained. (e.g. will "on-site" examinations be required, etc.)

Online Assessment Quiz,* 1%

Test 1, 20%

Test 2, 20%

Tutorial Quizzes, 9%

Final Exam, 50%

*this quiz determines whether the student is mathematically prepared for Math 1506, and will test their knowledge of arithmetic, exponents, trigonometry, geometry, inequalities and algebraic equations. If students do poorly on the quiz, they will be strongly encouraged to take Math1510 first.

Bibliography:

A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES

The Library has requested that the reading list contain complete bibliographical information, such as full name of author, title, year of publication, etc., and that you distinguish between required and suggested readings. A statement is required from the bibliographer responsible for the discipline to indicate whether resources are adequate to support the course.

Also please list any online resources.

If the course is to be integrated (graduate/undergraduate), a list of the additional readings to be required of graduate students must be included. If no additional readings are to be required, a rationale should be supplied.

LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.

This is not a new course, but is Math 1505 split into two three credit courses, and this course is the first half of Math1505. The textbook used in Math 1505 is "Biocalculus: calculus, probability and statistics for the life sciences" by Troy Day and James Stewart, which can also be used for Math 1506.

Students may need to purchase an online interactive set of exercise problems related to the course. An online copy of the textbook is usually included with this purchase. There maybe a cost associated to this.

Other Resources:

A statement regarding the adequacy of physical resources (equipment, space, etc.) must be appended. If other resources will be required to mount this course, please explain

COURSES WILL NOT BE APPROVED UNLESS IT IS CLEAR THAT ADEQUATE RESOURCES ARE AVAILABLE TO SUPPORT IT.

Once several iterations of this course has been taught, we hope to develop a set of course notes for this course that will act as the textbook. This will require a faculty member familiar with the course to put together a manuscript of the course notes.

Course Rationale:

*The following points should be addressed in the rationale:
How the course contributes to the learning objectives of the program / degree.
The relationship of the proposed course to other existing offerings, particularly in terms of overlap in objectives and/or content. If inter-Faculty overlap exists, some indication of consultation with the Faculty affected should be given.
The expected enrolment in the course.*

This course and Math 1507 (both 3 credits) are to replace Math 1505 (6 credits). Most students enrolled in Math 1505 are from Kinesiology, psychology and biology. All three units were consulted about splitting Math 1505 into two three credits and all three units approved this. Attached is more details on this consultation.

Currently math 1505 is a six-credit course and we are finding students are struggling with this course. Math 1505 has high withdrawal and high failure rates. About half the students are withdrawing from the course before the final exam, and about 1/3 of those that finish the course fail. The Math department is doing many things to remedy this. One such example is splitting Math 1505 as two three credit courses, namely, Math 1506 and Math 1507. The hope is that this will give these students more flexibility in choosing their math courses. Students are to take Math 1506 before Math 1507. If students struggle with Math 1506 they will then be able to take a remedial math course (such as Math 1510) before re-attempting Math 1506 or taking Math 1507.

Enrolment: 6 sections with each section having approximately 250 students enrolled.

Faculty and Department Approval for Cross-listings:

If the course is to be cross-listed with another department, this section needs to be signed by all parties. In some cases there may be more than two signatures required (i.e. Mathematics, Women's Studies). In the majority of the cases either the Undergraduate Director or Chair of a unit approves the agreement to cross-list. All relevant signatures must be obtained prior to submission to the Faculty curriculum committee.

Dept: _____	_____	_____
Signature (Authorizing cross-listing)	Department	Date
Dept: _____	_____	_____
Signature (Authorizing cross-listing)	Department	Date
Dept: _____	_____	_____
Signature (Authorizing cross-listing)	Department	Date

Accessible format can be provided upon request.

**COMMITTEE ON ACADEMIC STANDARDS, CURRICULUM AND PEDAGOGY
TEMPLATE**

NEW COURSE PROPOSAL FORM

Faculty:
Indicate all relevant
Faculty(ies)

Science

Department:
Indicate department and
course prefix (e.g.
Languages, GER)

Math

Date of Submission: Dec 5, 2019
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Course Number:
Special Topics courses
Include variance (e.g.
HUMA 3000C 6.0,
Variance is "C")

1507

Var:

Academic Credit Weight: Indicate both the fee, and MTCU weight if different from academic weight (e.g. AC=6, FEE=8, MET=6)

3.0

Course Title:
The official name of
the course as it will
appear in the
Undergraduate
Calendar and on the
Repository

Mathematics II for the Biological and Health Sciences

Short Title:
Appears on any
documents where space
is limited - e.g.
transcripts and lecture
schedules - **maximum
40 characters**

Math II for Biological/Health Sciences
--

With every new course proposal it is the Department's responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments is necessary to determine degree credit exclusions and/or cross-listed courses.

Brief Course Description:

Maximum 2000 characters

(approximately 300 words including spaces and punctuation).

The course description should be carefully written to convey what the course is about. It should be followed by a statement of prerequisites and co-requisites, if applicable. This description appears in the calendar.

For editorial consistency, and in consideration of the various uses of the Calendars, verbs should be in the present tense (i.e., "This course analyzes the nature and extent of..." rather than "This course will analyze...")

An introduction to single variable integral, probability and statistics. This course is designed to provide a comprehensive mathematical background for students of the biological and social sciences. Students continue to develop basic mathematical skills and applications from SC/MATH 1506.

Prerequisites: SC/MATH 1506

Course Credit exclusions: SC/MATH 1014 3.00, SC/MATH 1310 3.00, SC/MATH 1540 3.00, SC/MATH 1550 6.00, GL/MATH/MODR 1940 3.00, AP/ECON 1540, SC/ISCI 1402 3.00, SC/ISCI 1410 6.00, SC/MATH 1505 6.00.

Generic Course Description:

This is the description of the "Parent / Generic course" for Special Topics courses under which variances of the "Generic" course can be offered in different years (Max. 40 words). Generic course descriptions are published in the calendar.

List all degree credit exclusions, prerequisites, integrated courses, and notes below the course description.

Not applicable.

Expanded Course**Description:**

Please provide a detailed course description, including topics / theories and learning objectives, as it will appear in supplemental calendars.

List of topics taught.

1. Riemann sums and area
2. Definite integral, Indefinite integral
3. Fundamental Theorem of Calculus
4. Substitution rule
5. Integration by parts
6. Descriptive Statistics (mean, median, mode, sample, population, etc.)
7. Principles of counting
8. Probability
9. Discrete random variables
10. Continuous random variables
11. Sampling distributions (if time permits)
12. Confidence intervals (if time permits)
13. Hypothesis testing (if time permits)

Course learning outcomes:

Apply techniques of integration to integrals.

Classify different types of integrals (antiderivatives, definite integrals, indefinite integrals, improper integrals).

Use the Riemann sum to approximate the area between curves.

Apply integration to find the area between curves and average value of a function.

Connect the relationship between differentiation and integration via the Fundamental Theorem of Calculus.

Qualitatively sketch the graphs of Riemann Sums.

Communicate in written form and in a mathematically precise way the concept of integration.

Computing mean, mode, median, variance, standard deviation, and knowing what they measure.

Comparing samples versus populations.

Represent probability scenarios via sketches of Venn Diagrams.

Apply probability rules and concepts, such as conditional probability, dependence, multiplication rule, law of total probability and Bayes Rule, to solve probability scenarios.

Classify random variables and compute their mean and variance.

Qualitatively sketch the graphs of Venn diagrams, histograms, probability density functions (for continuous random variables) and cumulative probability functions.

Mathematically interpret the graphs of Venn diagrams, histograms, probability density functions (for continuous random variables) and cumulative probability functions.

Communicate in written form and in a mathematically precise way the concepts of functions, matrices, probability and random variables.

Course Design:

Indicate how the course design supports students in achieving the learning objectives. For example, in the absence of scheduled contact hours what role does student-to-student and/or student-to-instructor communication play, and how is it encouraged?

Detail any aspects of the content, delivery, or learning goals that involve "face-to-face" communication, non-campus attendance or experiential education components.

Alternatively, explain how the course design encourages student engagement and supports student learning in the absence of substantial on-campus attendance.

This course and Math 1506 (both 3 credits) are to replace Math 1505 (6 credits). Most students enrolled in Math 1505 are from Kinesiology, psychology and biology; and this is a required course for their program and will satisfy their six credit math requirement.

All three units were consulted about splitting Math 1505 into two three credits and all three units approved this. More details can be found in the "course rationale" section below.

Currently math 1505 is a six-credit course and we are finding students are struggling with this course. By splitting Math 1505 as two three credit courses (namely, Math 1506 and Math 1507), this will give students more flexibility in choosing their math courses. We recommend students take Math 1506 before Math 1507. If a student struggles with Math 1506 they will then be able to take a remedial math course (such as Math 1510) before re-attempting Math 1506 or taking Math 1507.

There will be 3 hours of lectures per week, but in addition, math help for this course outside of lecture time is offered through the following free services:

1. There will be weekly assigned exercise problems provided to students to help keep them on pace and connected to the lectures outside of class time.
2. [Math Background Tutorials offered through Bethune College](#)
3. [Peer Assisted Study Session \(PASS\)](#) offered through Bethune College; PASS is lead by a former student who successfully completed the course and did well. They share their knowledge of study tools to current students and create mock tests that help students prepare for their actual tests.
4. Study groups formed via the course discussion forum or the class rep. Bethune college coordinates class reps.
5. Instructor office hours

6. Students are able to submit questions for tests on the course website.

A study guide specifically for learning mathematics is provided to students as many students enrolled into this course will be first year university students.

Instruction:

1. Planned frequency of offering and number of sections anticipated (every year, alternate years, etc.).
2. Number of department members currently competent to teach the course.
3. Instructor(s) likely to teach the course in the coming year.
4. An indication of the number of contact hours (defined in terms of hours, weeks, etc.) involved, in order to indicate whether an effective length of term is being maintained **OR** in the absence of scheduled contact hours a detailed breakdown of the estimated time students are likely to spend engaged in learning activities required by the course.

1. In the winter semester, approximately 6 sections with each section of approximately 250 students enrolled. In the summer and fall semesters, one to two sections will be offered. One of the section instructors will be designated as the course coordinator. The responsibility of the course coordinator will be to organize/chair instructor meetings and ensure consistent teaching and evaluation amongst sections.
2. As this is a first year mathematics course, all department members are capable of teaching this course.
3. Andrew McEachern, Norm Purzitsky, Stephen Watson, Andrew Skelton, Pam Sargent, Jude Kong.
4. 3 hours of lectures per week over 12 weeks; for every one hour of lecture time in the classroom, students are expected (on average) to be studying one hour outside of lectures either on their own or in study groups.

Evaluation:

A detailed percentage breakdown of the basis of evaluation in the proposed course must be provided.

If the course is to be integrated, the additional requirements for graduate students are to be listed.

If the course is amenable to technologically mediated forms of delivery please identify how the integrity of learning evaluation will be maintained. (e.g. will "on-site" examinations be required, etc.)

Test 1, 25%
Test 2, 25%
Final Exam, 50%

Bibliography:

A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES

The Library has requested that the reading list contain complete bibliographical information, such as full name of author, title, year of publication, etc., and that you distinguish between required and suggested readings. A statement is required from the bibliographer responsible for the discipline to indicate whether resources are adequate to support the course.

Also please list any online resources.

If the course is to be integrated (graduate/undergraduate), a list of the additional readings to be required of graduate students must be included. If no additional readings are to be required, a rationale should be supplied.

LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.

This is not a new course, but is Math 1505 split into two three credit courses, and this course is the first half of Math1505. The textbook used in Math 1505 is "Biocalculus: calculus, probability and statistics for the life sciences" by Troy Day and James Stewart, which can also be used for Math 1506.

Students may need to purchase an online interactive set of exercise problems related to the course. An online copy of the textbook is usually included with this purchase. There maybe a cost associated to this.

Other Resources:

A statement regarding the adequacy of physical resources (equipment, space, etc.) must be appended. If other resources will be required to mount this course, please explain

COURSES WILL NOT BE APPROVED UNLESS IT IS CLEAR THAT ADEQUATE RESOURCES ARE AVAILABLE TO SUPPORT IT.

Once several iterations of this course has been taught, we hope to develop a set of course notes for this course that will act as the textbook. This will require a faculty member familiar with the course to put together a manuscript of the course notes.

Course Rationale:

The following points should be addressed in the rationale:

How the course contributes to the learning objectives of the program / degree.

The relationship of the proposed course to other existing offerings, particularly in terms of overlap in objectives and/or content. If inter-Faculty overlap exists, some indication of consultation with the Faculty affected should be given.

The expected enrolment in the course.

This course and Math 1506 (both 3 credits) are to replace Math 1505 (6 credits). Most students enrolled in Math 1505 are from Kinesiology, psychology and biology. All three units were consulted about splitting Math 1505 into two three credits and all three units approved this. Attached is more details on this consultation.

Currently math 1505 is a six-credit course and we are finding students are struggling with this course. Math 1505 has high withdrawal and high failure rates. About half the students are withdrawing from the course before the final exam, and about 1/3 of those that finish the course fail. The Math department is doing many things to remedy this. One such example is splitting Math 1505 as two three credit courses, namely, Math 1506 and Math 1507. The hope is that this will give these students more flexibility in choosing their math courses. We recommend students take Math 1506 before Math 1507. If students struggle with Math 1506 they will then be able to take a remedial math course (such as Math 1510) before re-attempting Math 1506 or taking Math 1507.

Enrolment: 6 sections with each section having approximately 250 students enrolled.

Faculty and Department Approval for Cross-listings:

If the course is to be cross-listed with another department, this section needs to be signed by all parties. In some cases there may be more than two signatures required (i.e. Mathematics, Women's Studies). In the majority of the cases either the Undergraduate Director or Chair of a unit approves the agreement to cross-list. All relevant signatures must be obtained prior to submission to the Faculty curriculum committee.

Dept:	_____	_____	_____
	Signature (Authorizing cross-listing)	Department	Date
Dept:	_____	_____	_____
	Signature (Authorizing cross-listing)	Department	Date
Dept:	_____	_____	_____
	Signature (Authorizing cross-listing)	Department	Date

Accessible format can be provided upon request.