TO: University of Toronto Scarborough Academic Committee
SPONSOR: John Scherk, Vice-Dean, Undergraduate
DATE: January 22, 2013
AGENDA ITEM: For approval

ITEM IDENTIFICATION:
Curriculum change proposals from the Department of Biological Sciences:
1. Minor Program Modifications:
   • Specialist in Applied Microbiology
   • Specialist in Cell & Molecular Biology
   • Specialist in Human Biology - Revised
   • Major in Human Biology
   • Specialist in Integrative Biology
   • Specialist in Paramedicine
2. Consent Agenda Course Changes

JURISDICTIONAL INFORMATION:
University of Toronto Scarborough Academic Committee has authority to oversee and approve all curricular and academic matters on which the Committee’s decision is required, including programs, courses, and academic regulations and policies.

SUMMARY:
1. The Department is making a number of small changes to program requirements and options so as to better enable students to progress efficiently through the programs.
2. The Department is revising the prerequisites and exclusions to keep them current.

1. MINOR PROGRAM MODIFICATIONS:

Specialist in Applied Microbiology

Overview of Changes:
• Add BIOB51H3 as a 2nd Year requirement
• Increase total fces to complete program from 16.0 to 16.5
• Add BIOC10H3, BIOC14H3 and BIOD19H3 as options in the “Complementary Elective Courses” bin

Proposed Program Requirements:

SPECIALIST (JOINT) PROGRAM IN APPLIED MICROBIOLOGY (SCIENCE)

Program Requirements
This program consists of 16.0 16.5 required credits (10.5 at UTSC and 6.5 at Centennial). Since a total of 20.0 credits are required to complete a UTSC degree, students taking this program should...
Additionally, take 4.0 credits of UTSC elective courses. When choosing electives, keep in mind the minimum breadth requirements that must be met to complete a degree. It is advised that, including electives, students should plan to take 5.0 credits in each year of their four-year degree. Students should note that they may also be able to accelerate completion of their program and degree by taking advantage of summer course offerings at UTSC and Centennial.

Note that courses with the designators IMC and STE are taught at Centennial College's HP Science and Technology Centre campus, located within 5 minutes walking distance of the UTSC campus.

Required Courses and Suggested Course Sequence
First Year

1.0 Credit of Introductory Biology Courses:
BIOA01H3 Life on Earth: Unifying Principles
BIOA02H3 Life on Earth: Form, Function and Interactions

1.0 Credit in Chemistry
CHMA10H3 Introductory Chemistry I: Structure and Bonding
CHMA11H3 Introductory Chemistry II: Reactions and Mechanisms

1.0 Credit in Mathematics
MATA30H3 & MATA35H3 Calculus I for Biological and Physical Sciences & Calculus II for Biological Sciences

0.5 Credit in Statistics or Computer Science
Choose from:
STAB22H3 Statistics I
PSYB07H3 Data Analysis in Psychology
CSCA08H3 Introduction to Computer Programming
CSCA20H3 Computer Science for the Sciences
PSCB57H3 Introduction to Scientific Computing

Second Year

2.0 2.5 Credits of Biology Core Courses and Lab
BIOB10H3 Cell Biology
BIOB11H3 Molecular Aspects of Cellular and Genetic Processes
BIOB12H3 Cell and Molecular Biology Laboratory
BIOB50H3 Ecology
BIOB51H3 Evolutionary Biology

1.0 Credit of Organic Chemistry Courses
CHMB41H3 Organic Chemistry I
CHMB42H3 Organic Chemistry II

1.5 Credits of Industrial Microbiology Courses at Centennial
*IMCB01H3 Microbiology Basics
*IMCB02H3 Microbial Techniques
*IMCB03H3 Lab Instrumentation
Third Year
2.0 Credits of core Biology/Microbiology Courses
BIOC12H3 Biochemistry I: Proteins and Enzymes
BIOC15H3 Genetics
BIOC17H3 Microbiology: The Bacterial Cell
EESC30H3 Microbial Biogeochemistry

3.0 Credits of Industrial Microbiology Courses at Centennial
*IMCB04H3 Food Microbiology
*IMCB05H3 Microbiology Project
*STEB07H3 Analytical Chemistry and Applications
*IMCB06H3 Pharmaceutical Microbiology
*IMCB07H3 Food Chemistry
*IMCB08H3 Biochemistry and Applications I

Fourth Year
1.0 Credit of Advanced D-level Biology courses
Choose from:
BIOD17H3 Seminars in Cellular Microbiology
BIOD21H3 Advanced Molecular Biology Laboratory
BIOD22H3 Molecular Biology of the Stress Response
BIOD25H3 Genomics
BIOD26H3 Fungal Biology and Pathogenesis
BIOD29H3 Pathobiology of Human Disease
EESD15H3 Cleaning Up Our Mess: Remediation of Terrestrial and Aquatic Environments

2.0 Credits of Industrial Microbiology Courses at Centennial
*IMCC01H3 Advanced Microbiology Project
*IMCC02H3 Microbial Genetics
*IMCC03H3 Biochemistry and Applications II
*IMCC04H3 Environmental Microbiology

B. Complementary Elective Courses (optional)
When selecting electives, students may wish to consider the following courses that may be complementary to their program:
HLTA01H3 Plaques and Peoples
(HLTA10H3) Introduction to Research in Health Studies
HLTB04H3 Health and the Urban Environment
HLTC03H3 Politics of Canadian Health Studies
[(BIOB30H3) Mammalian Physiology I or BIOB34H3 Animal Physiology]
BIOB31H3 Plant Physiology
BIOC10H3 Cell Biology: Intracellular Compartments and Protein Sorting
BIOC14H3 Genes, Environment and Behaviour
BIOB51H3 Evolution
BIOC39H3 Immunology
BIOC65H3 Environmental Toxicology
BIOD19H3 Epigenetics in Health and Disease

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a minimum of 60% is required in courses marked with an asterisk in order to maintain standing in the program.

Specialist/Specialist Co-op in Cell & Molecular Biology

Overview of Changes:
- Move BIOC39H3 from 3\textsuperscript{rd}/4\textsuperscript{th} Year options to 3\textsuperscript{rd} Year requirements
- Increase total fces to complete program from 13.5 to 14.0
- Add BIOC10H3 to the “Cognate Biology Course” bin

Proposed Program Requirements:
SPECIALIST PROGRAM IN CELL & MOLECULAR BIOLOGY (SCIENCE)
SPECIALIST CO-OPERATIVE PROGRAM IN CELL & MOLECULAR BIOLOGY (SCIENCE)

Program Requirements
This program consists of 13.5 to 14 required credits. Since a total of 20 credits are required to complete a degree, students taking this program should also take an additional 6.5 credits of elective courses. In selecting options and electives, students should refer to the University of Toronto guidelines for program breadth and depth (see Degree Requirements).

First Year
1.0 Credit of Introductory Biology Courses
- BIOA01H3 Life on Earth: Unifying Principles
- BIOA02H3 Life on Earth: Form, Function and Interactions

1.0 Credit of Introductory Chemistry Courses
- CHMA10H3 Introductory Chemistry I: Structure and Bonding
- CHMA11H3 Introductory Chemistry II: Reactions and Mechanisms

1.0 Credit in Mathematics
Choose from:
- MATA30H3 & MATA35H3 Calculus I for Biological and Physical Sciences & Calculus II for Biological Sciences
- MATA30H3 & MATA36H3 Calculus I for Biological and Physical Sciences & Calculus II for Physical Sciences

1.0 Credit in Physics
Choose 0.5 credit from:
- PHYA10H3 Introduction to Physics IA
- PHYA11H3 Introduction to Physics IB

Choose 0.5 credit from:
- PHYA21H3 Introduction to Physics IIA
- PHYA22H3 Introduction to Physics IIB
0.5 Credit in Statistics
Choose from:
- **STAB22H3** Statistics I (this course could also be taken in second year)
- **PSYB07H3** Data Analysis in Psychology (this course could also be taken in second year)

**Second Year**

**3.0 Credits of Biology Core Courses**
- **BIOB10H3** Cell Biology
- **BIOB11H3** Molecular Aspects of Cellular and Genetic Processes
  (BIOB30H3) Mammalian Physiology I or **BIOB34H3** Animal Physiology
- **BIOB31H3** Plant Physiology
- **BIOB50H3** Ecology
- **BIOB51H3** Evolutionary Biology

**0.5 Credit of Biology Core Labs**
- **BIOB12H3** Cell and Molecular Biology Laboratory

**1.0 Credit of Organic Chemistry Courses**
- **CHMB41H3** Organic Chemistry I
- **CHMB42H3** Organic Chemistry II

**Third Year**

**2.5 3.0 Credits of Biology C-level Courses**
- **BIOC12H3** Biochemistry I: Proteins & Enzymes
- **BIOC13H3** Biochemistry II: Bioenergetics and Metabolism
- **BIOC15H3** Genetics
- **BIOC17H3** Microbiology: The Bacterial Cell
- **BIOC23H3** Practical Approaches to Biochemistry
- **BIOC39H3** Immunology (can be completed in third or fourth year)

**0.5 Credit in Computer Science**
Choose from:
- **CSCA08H3** Introduction to Computer Programming
- **CSCA20H3** Computer Science for the Sciences
- **PSCB57H3** Introduction to Scientific Computing
Computer science might be taken in an earlier year

**Third/Fourth Year**

**0.5 Credit of Cognate Biology Courses**
Choose from:
- **BIOC10H3** Cell Biology: Intracellular Compartments and Protein Sorting
- **BIOC14H3** Genes, Environment and Behaviour
- **BIOC19H3** Animal Developmental Biology
- **BIOC21H3** Vertebrate Histology: Cells and Tissues
  (BGYC22H3) Vertebrate Histology: Organs
- **BIOC31H3** Molecular Aspects of Plant Development
- **BIOC39H3** Immunology
- **BIOD37H3** Biology of Plant Stress
Fourth Year

0.5 Credit in Advanced Molecular Techniques

BIOD21H3 Advanced Molecular Biology Laboratory

0.5 credit of D-level Research-oriented "Cell & Molecular" Course Work

Choose from:

BIOD17H3 Seminars in Cellular Microbiology
BIOD19H3 Epigenetics in Health and Disease
BIOD22H3 Molecular Biology of the Stress Response
BIOD23H3 Special Topics in Cell Biology
BIOD25H3 Genomics
BIOD26H3 Fungal Biology and Pathogenesis
BIOD27H3 Molecular Endocrinology
BIOD95H3 Supervised Study in Biology
BIOD98Y3 Directed Research in Biology

Note: Any of these courses not used to satisfy this requirement may be used to fulfill the '0.5 Credit of Cognate Biology Courses'.

Specialist in Human Biology – (Revised)

Overview of Changes:

- Split the “C-level Biology Courses” bin into: 2.0 credits of Biology Core Courses and 1.5 Credits of Additional C-level Biology Courses. Add BIOC10H3 to 1.5 Credits of Additional C-level Biology Courses
- Restructure “0.5 credit in Psychology” bin

Proposed Program Requirements:

SPECIALIST PROGRAM IN HUMAN BIOLOGY (SCIENCE)

Program Requirements

This Program consists of 15.5 credits. As a total of 20 credits are required to complete a degree, students taking this program should also take an additional 4.5 credits of elective courses. In selecting options and electives, students should refer to the University of Toronto guidelines for program breadth and depth (see Degree Requirements).

Required Courses and Suggested Course Sequence

First Year

1.0 Credit of Introductory Biology Courses

BIOA01H3 Life on Earth: Unifying Principles
BIOA02H3 Life on Earth: Form, Function and Interactions

1.0 Credit of Introductory Chemistry Courses

CHMA10H3 Introductory Chemistry I: Structure and Bonding
CHMA11H3 Introductory Chemistry II: Reactions and Mechanisms

1.0 Credit of Mathematics

MATA30H3 & MATA35H3 Calculus I for Biological and Physical Sciences & Calculus II for Biological Sciences
1.0 Credit of Introductory Physics Courses
PHYA11H3 Introduction to Physics IB
PHYA22H3 Introduction to Physics IIB

1.0 Credit of Introductory Psychology Courses
PSYA01H3 Introductory Psychology: Part I
PSYA02H3 Introductory Psychology: Part II

Second Year
3.0 Credits of Biology Core Courses
BIOB10H3 Cell Biology
BIOB11H3 Molecular Aspects of Cellular and Genetic Processes
(BIOB30H3) Mammalian Physiology I or BIOB34H3 Animal Physiology
BIOB31H3 Plant Physiology
BIOB50H3 Ecology
BIOB51H3 Evolutionary Biology

1.0 Credit of Biology Core Labs
BIOB32H3 Animal Physiology Laboratory
BIOB33H3 Human Development and Anatomy Laboratory

1.0 Credit of Organic Chemistry Courses
CHMB41H3 Organic Chemistry I
CHMB42H3 Organic Chemistry II

Third/Fourth Years
3.5 Credits of C-level Biology Courses
Choose From:
2.0 Credits of C-level Biology Core Courses
BIOC12H3 Biochemistry I: Proteins and Enzymes
BIOC13H3 Biochemistry II: Bioenergetics and Metabolism
BIOC14H3 Genes, Environment and Behaviour
BIOC15H3 Genetics
BIOC16H3 Evolutionary Genetics and Genomics
BIOC17H3 Microbiology: The Bacterial Cell
BIOC19H3 Animal Developmental Biology
BIOC21H3 Vertebrate Histology: Cells and Tissues
(BGYC22H3) Vertebrate Histology: Organs
BIOC32H3 Human Physiology I
BIOC33H3 Human Physiology II: Lecture and Laboratory
BIOC39H3 Immunology

1.5 Credits of Additional C-level Biology Courses
Choose From:
BIOC10H3 Cell Biology: Intracellular Compartments and Protein Sorting
BIOC12H3 Biochemistry I: Proteins and Enzymes
BIOC13H3 Biochemistry II: Bioenergetics and Metabolism
BIOC14H3 Genes, Environment and Behaviour
BIOC16H3 Evolutionary Genetics and Genomics
BIOC19H3 Animal Developmental Biology
BIOC21H3 Vertebrate Histology: Cells and Tissues
BIOC33H3 Human Physiology II: Lecture and Laboratory or BIOC34H3 Human Physiology II: Lecture
BIOC58H3 Biological Consequences of Global Change
BIOC65H3 Environmental Toxicology

1.0 Credit of D-level Biology Courses
Choose From:
BIOD17H3 Seminars in Cellular Microbiology
BIOD19H3 Epigenetics in Health and Disease
BIOD26H3 Fungal Biology and Pathogenesis
BIOD27H3 Molecular Endocrinology
BIOD29H3 Pathobiology of Human Disease
BIOD33H3 Comparative Animal Physiology
BIOD43H3 Animal Movement and Exercise
BIOD65H3 Pathologies of the Nervous System

0.5 Credit in Statistics
Choose From:
STAB22H3 Statistics I
PSYB07H3 Data Analysis in Psychology

0.5 Credit in Psychology: Choose From: Any B-, C- or D-level Psychology Course

0.5 Credit in Psychology or Health Studies:
Choose from:
Any B, C or D-level Psychology course or from the Health Studies courses listed below:
HLTB15H3 Introduction to Health Research Methodology
HLTB16H3 Introduction to Public Health
HLTB17H3 Conceptual Models of Health
HLTB20H3 Contemporary Human Evolution and Variation
HLTB21H3 Infectious Diseases
HLTB22H3 Biological Determinants of Health
HLTB40H3 Health Policy and Health Systems
Major in Human Biology

Overview of Changes:

- Add BIOB32H3 as an option to the Biology Core Lab requirements
- Add BIOC10H3 and BIOC39H3 as options to the 1.5 Credits of Additional C-Level Courses requirements

Proposed Program Requirements:
MAJOR PROGRAM IN HUMAN BIOLOGY (SCIENCE)

Program Requirements
This program consists of 8.5 credits. To complete their degree, students should combine this major program with another major program, or two minor programs, from disciplines outside of biology. When selecting their course of studies, students should refer to the University of Toronto guidelines for program breadth and depth (see Degree Requirements).

Required Courses and Suggested Course Sequence

First Year
1.0 Credit of Introductory Biology Courses
BIOA01H3 Life on Earth: Unifying Principles
BIOA02H3 Life on Earth: Form, Function and Interactions

1.0 Credit in Introductory Chemistry Courses
CHMA10H3 Introductory Chemistry I: Structure and Bonding
CHMA11H3 Introductory Chemistry II: Reactions and Mechanisms

1.0 Credit in Introductory Psychology Courses
PSYA01H3 Introductory Psychology: Part I
PSYA02H3 Introductory Psychology: Part II

0.5 Credit in Calculus or Statistics
Choose From:
MATA30H3 Calculus I for Biological and Physical Sciences
STAB22H3 Statistics I
PSYB07H3 Data Analysis in Psychology

Second Year
2.5 Credits of Biology Core Courses
BIOB10H3 Cell Biology
BIOB11H3 Molecular Aspects of Cellular and Genetic Processes
(BIOB30H3) Mammalian Physiology I or BIOB34H3 Animal Physiology
BIOB50H3 Ecology
BIOB51H3 Evolutionary Biology
0.5 Credit in a Biology Core Lab
Choose From:
BIOB32H3 Animal Physiology Laboratory
BIOB33H3 Human Development and Anatomy

Third/Fourth Years
1.5 Credits of Additional C-Level Courses
Choose From:
BIOC10H3 Cell Biology: Intracellular Compartments and Protein Sorting
BIOC14H3 Genes, Environment and Behaviour
BIOC15H3 Genetics
BIOC16H3 Evolutionary Genetics and Genomics
BIOC17H3 Microbiology: The Bacterial Cell
BIOC19H3 Animal Developmental Biology
BIOC21H3 Vertebrate Histology: Cells and Tissues
BIOC32H3 Human Physiology I
BIOC33H3 Human Physiology II: Lecture and Laboratory or BIOC34H3 Human Physiology II: Lecture
BIOC39H3 Immunology
BIOC58H3 Biological Consequences of Global Change
BIOC65H3 Environmental Toxicology
NROC61H3 Learning and Motivation
NROC64H3 Sensory and Motor Systems
NROC69H3 Synaptic Organisation and Physiology of the Brain

0.5 Credit of Additional D-Level Biology Courses
Choose From:
BIOD17H3 Seminars in Cellular Microbiology
BIOD19H3 Epigenetics in Health and Disease
BIOD26H3 Fungal Biology and Pathogenesis
BIOD29H3 Pathobiology of Human Disease
BIOD33H3 Comparative Animal Physiology
BIOD43H3 Animal Movement and Exercise
BIOD65H3 Pathologies of the Nervous System
BIOD95H3 Supervised Study in Biology (topic must be human-related and approved by the program supervisor)
NROD66H3 Drug Addiction
NROD67H3 Psychobiology of Aging
Specialist in Integrative Biology

Overview of Changes:
- Add BIOC10H3 to the “Cognate Biology Course” bin

Proposed Program Requirements:
SPECIALIST PROGRAM IN INTEGRATIVE BIOLOGY (SCIENCE)

Program Requirements
A. Required Courses

First Year
1.0 Credit of Introductory Biology Courses
BIOA01H3 Life on Earth: Unifying Principles
BIOA02H3 Life on Earth: Form, Function and Interactions

1.0 Credit in Chemistry
CHMA10H3 Introductory Chemistry I: Structure and Bonding
CHMA11H3 Introductory Chemistry II: Reactions and Mechanisms

1.0 Credit in Mathematics
MATA30H3 & MATA35H3 Calculus I for Biological and Physical Sciences & Calculus II for Biological Sciences

0.5 Credit in Physics
Choose from:
PHYA10H3 Introduction to Physics IA
PHYA11H3 Introduction to Physics IB

0.5 Credit in Computer Science
Choose from:
CSCA08H3 Introduction to Computer Programming
CSCA20H3 Computer Science for the Sciences
PSCB57H3 Introduction to Scientific Computing (this course could also be taken in second year)

Second Year
3.0 Credits of Biology Core Courses
BIOB10H3 Cell Biology
BIOB11H3 Molecular Aspects of Cellular and Genetic Processes
(BIOB30H3) Mammalian Physiology I or BIOB34H3 Animal Physiology
BIOB31H3 Plant Physiology
BIOB50H3 Ecology
BIOB51H3 Evolutionary Biology
### 0.5 Credit of Biology Core Labs
Choose from:
- **BIOB12H3** Cell and Molecular Biology Laboratory
- **BIOB32H3** Animal Physiology Laboratory
- **BIOB33H3** Human Development and Anatomy Laboratory
- **BIOB52H3** Ecology and Evolutionary Biology Laboratory

### 0.5 Credit in Statistics
Choose from:
- **STAB22H3** Statistics I
- **PSYB07H3** Data Analysis in Psychology

### Third Year
#### 1.5 Credits of Biology Foundation Courses
- **BIOC15H3** Genetics
- **BIOC17H3** Microbiology: The Bacterial Cell
- **BIOC54H3** Animal Behaviour

### Third/Fourth Year
#### 0.5 Credit of Advanced Courses in Physiology, Biochemistry and Neurobiology
Choose from:
- **BIOC12H3** Biochemistry I: Proteins and Enzymes
- **BIOC13H3** Biochemistry II: Bioenergetics and Metabolism
- **BIOC23H3** Practical Approaches to Biochemistry
- **BIOC32H3** Human Physiology I
- **BIOC33H3** Human Physiology II: Lecture and Laboratory
- **BIOC34H3** Human Physiology II: Lecture
- **BIOC39H3** Immunology
- **BIOC65H3** Environmental Toxicology
- **ANTC67H3** Foundations in Epidemiology
- **NROC34H3** Neuroethology
- **NROC61H3** Learning and Motivation
- **NROC64H3** Sensory and Motor Systems
- **PSYC31H3** Clinical Neuropsychology
- **BIOD27H3** Molecular Endocrinology
- **BIOD29H3** Pathobiology of Human Disease
- **BIOD43H3** Animal Movement and Exercise
- **BIOD65H3** Pathologies of the Nervous System
- **NROD67H3** Psychobiology of Aging

#### 0.5 Credit of Advanced Courses in Ecology and Conservation
Choose from:
- **BIOC50H3** Macroevolution
- **BIOC51H3** Tropical Biodiversity Field Course
- **BIOC52H3** Ecology Field Course
- **BIOC58H3** Biological Consequences of Global Change
- **BIOC59H3** Advanced Population Ecology
0.5 Credit of Advanced Courses in Genes and Development
Choose from:
BIOC10H3 Cell Biology: Intracellular Compartments and Protein Sorting
BIOC14H3 Genes, Environment and Behaviour
BIOC16H3 Evolutionary Genetics and Genomics
BIOC19H3 Animal Developmental Biology
BIOC31H3 Plant Development
BIOC19H3 Epigenetics in Health and Disease
BIOC23H3 Special Topics in Cell Biology
BIOC25H3 Genomics
BIOC21H3 Advanced Molecular Biology Laboratory
BIOC22H3 Molecular Biology of the Stress Response

0.5 Credit of Advanced Courses in Organismal Biology
Choose from:
BIOC21H3 Vertebrate Histology: Cells and Tissues
(BGYC22H3) Vertebrate Histology: Organs
ANTD22H3 Theory and Methodology of Primatology
ANTC68H3 Deconstructing Epidemics
EESC30H3 Microbial Biogeochemistry
BIOC37H3 Comparative Plant Form and Function
BIOC38H3 Plants and Society
BIOC17H3 Seminars in Cellular Microbiology
BIOC26H3 Fungal Biology and Pathogenesis
BIOC33H3 Comparative Animal Physiology
BIOC37H3 Biology of Plant Stress
BIOC45H3 Animal Communication
BIOC48H3 Ornithology and Herpetology
BIOC53H3 Special Topics in Behavioural Ecology

3.0 Credits of Additional C- or D-Level Biology Courses
Choose from:
Any BIO (or formerly BGY) C- or D-level courses offered by the department.
Note: this includes the Biology Team Research, Supervised Studies and Directed Research courses (BIOC99H3, BIOD95H3, BIOD98Y3 and BIOD99Y3).
Note: NROC34H3 (Neuroethology), EESC04H3 (Biodiversity and Biogeography) and EESC30H3 (Microbial Biogeochemistry) may also be used toward fulfilling this requirement, if not already used toward fulfilling one of the other requirements above.
B. Routes to Specialization (optional)
A key advantage of the specialist program in Integrative Biology is the ability for students to readily specialize in areas of particular interest. Please note that students are not required to follow any of these suggested routes. They are provided for guidance only.

- For students with a particular interest in "The Impact of Environment and Climate Change on the Biology of Ecosystems", you should consider including some or all of the following courses in your program: BIOB52H3 (Ecology and Evolutionary Biology Lab), BIOC52H3 (Ecology Field Course), BIOC58H3 (Biological Consequences of Global Change), BIOC59H3 (Advanced Population Ecology), BIOC61H3 (Community Ecology and Environmental Biology) and BIOC67H3 (Inter-University Biology Field Course).

- For students with a particular interest in "The Conservation and Biodiversity of Organisms", you should consider including some or all of the following courses in your program: BIOC51H3 (Tropical Biodiversity Field Course), BIOC62H3 (Role of Zoos in Conservation), BIOC63H3 (Conservation Biology), BIOD48H3 (Ornithology and Herpetology), BIOD52H3 (Special Topics in Biodiversity and Systematics), BIOD60H3 (Spatial Ecology) & BIOD66H3 (Causes and Consequences of Biodiversity).

- For students with a particular interest in "Animal Physiology", you should consider including some or all of the following courses in your program: BIOB32H3 (Animal Physiology Laboratory), BIOC32H3 (Human Physiology I), BIOC33H3 or BIOC34H3 (Human Physiology II), BIOD29H3 (Pathobiology of Human Disease), BIOD33H3 (Comparative Animal Physiology), & BIOD43H3 (Animal Movement and Exercise).

- For students with a particular interest in "Ecophysiology", you should consider including some or all of the following courses in your program: BIOC65H3 (Environmental Toxicology), EESC30H3 (Microbial Biogeochemistry), BIOD33H3 (Comparative Animal Physiology) & BIOD37H3 (Biology of Plant Stress).

- For students with a particular interest in "Infection and Disease" or "clinically-oriented topics", you should consider including some or all of the following courses in your program: ANTC67H3 (Foundations in Epidemiology) or ANTC68H3 (Deconstructing Epidemics), BIOB33H3 (Human Development and Anatomy), BIOC21H3 (Vertebrate Histology: Cells and Tissues), BIOC33H3 or BIOC34H3 (Human Physiology II), BIOC39H3 (Immunology), BIOD17H3 (Seminars in Cellular Microbiology), BIOD25H3 (Genomics), BIOD26H3 (Fungal Biology and Pathogenesis), BIOD29H3 (Pathobiology of Human Disease) & BIOD65H3 (Pathologies of the Nervous System).

- For students with a particular interest in "Plant and Microbial Biology", you should consider including some or all of the following courses in your program: BIOC31H3 (Molecular Aspects of Plant Development), EESC30H3 (Microbial Biogeochemistry), BIOD17H3 (Seminars in Cellular Microbiology) and BIOD37H3 (Biology of Plant Stress).

- For students with a particular interest in "Behavioural Biology" you should consider including some or all of the following courses in your program: NROC34H3 (Neuroethology), BIOD53H3 (Special Topics in Behavioural Ecology), BIOD45H3 (Animal Communication) & NROC61H3 (Learning and Motivation).

- For students with a particular interest in "Behavioural Genetics", you should consider including some or all of the following courses in your program: BIOC16H3 (Evolutionary Genetics and Genomics), NROC34H3 (Neuroethology), BIOD53H3 (Special Topics in Behavioural Ecology), BIOD23H3 (Special Topics in Cell Biology), BIOD25H3 (Genomics), BIOD21H3 (Advanced Molecular Biology Laboratory), BIOD22H3 (Molecular Biology of the Stress Response) and BIOD45H3 (Animal Communication).
• For students with a particular interest in "The Evolution of Development" (a.k.a. "evo/devo"), you should consider including some or all of the following courses in your program: BIOC12H3 (Biochemistry I: Proteins and Enzymes), BIOC13H3 (Biochemistry II: Bioenergetics and Metabolism), BIOC16H3 (Evolutionary Genetics and Genomics), BIOC19H3 (Animal Developmental Biology), BIOC23H3 (Practical Approaches to Biochemistry), BIOC31H3 (Molecular Aspects of Plant Development), BIOC33H3 (Human Physiology II: Lecture and Laboratory) or BIOC34H3 (Human Physiology II: Lecture), BIOD21H3 (Advanced Molecular Biology Laboratory), BIOD22H3 (Molecular Biology of the Stress Response), BIOD23H3 (Special Topics in Cell Biology), & BIOD25H3 (Genomics).

C. Complementary Elective Courses (optional)
When selecting electives, students may wish to consider the following courses that may be complementary to their program. However, keep in mind that minimum breadth requirements must be met to complete a degree.  
ANTC11H3 Culture, Science and Biotechnology: Redefining the "Natural" Order of Things  
ANTC17H3 Human Origins: New Discoveries  
ANTC23H3 Primates in Africa  
ANTC41H3 Environmental Stress, Culture and Human Adaptability  
ANTC47H3 Human and Primate Comparative Osteology  
ANTC48H3 Advanced Topics in Human Osteology  
ANTC61H3 Medical Anthropology: Illness and Healing in Cultural Perspective  
ANTC62H3 Medical Anthropology: Biological and Demographic Perspectives  
ANTD16H3 Biomedical Anthropology  
ANTD17H3 Medical Osteology, Public Health Perspectives on Human Skeletal Health  
ANTD25H3 Medical Primatology: Public Health Perspectives on Zoonotic Diseases  
CHMC47H3 Bio-Org Chem  
EEB16H3 Feeding Humans - The Cost to the Planet  
HISC03H3 History of Animals and People  
HLTC03H3 Politics of Canadian Health Studies  
IEEC03H3 History of Animals and People  
(IEEC04H3) Defining the Human II  
NROC61H3 Learning and Motivation  
NROC63H3 Neuroscience Laboratory  
NROC64H3 Sensory and Motor Systems  
NROC69H3 Synaptic Organization and Physiology of the Brain  
NROD63H3 Advanced Neuroscience Laboratory  
PHLB09H3 Biomedical Ethics  
POLC53H3 Canadian Environmental Politics  
PSYC62H3 Drugs and the Brain  
PSYD26H3 Genes, Brain and the Development of Mind  
STAC52H3 Experimental Design  

Academic Committee. 22 January 2013.
Specialist in Paramedicine

Overview of Changes:

- Replace BIOC33H3 with BIOC34H3 in 2.0 Credits of Foundational Biology Courses requirement

Proposed Program Requirements:

SPECIALIST (JOINT) PROGRAM IN PARAMEDICINE (SCIENCE)

Program Requirements

Note: In order to remain in the program, students must typically maintain a cumulative grade point average of at least 2.0. Students whose cumulative GPA falls below 2.0 should consult the program supervisor to discuss their options. Please note, space in some Centennial College courses is limited. Students who must repeat one of these courses and whose CGPA has fallen below 2.0 will be allowed to register in these courses only if space permits.

Please note that 20 credits are required to complete a degree. In the case of the Joint Paramedicine Specialist Program these 20 credits include the 18 required credits and 2 elective credits. Students should ensure that they are familiar with the UTSC Degree Requirements.

Program Requirements (Note: suggested course sequences follow below)

1.0 Credit of Introductory Biology Courses

BIOA01H3 Life on Earth: Unifying Principles
BIOA02H3 Life on Earth: Form, Function and Interactions

2.0 Credits of Core Biology Courses

BIOB10H3 Cell Biology
BIOB11H3 Molecular Aspects of Genetic Processes
(BIOB30H3) Mammalian Physiology I or BIOB34H3 Animal Physiology
BIOB33H3 Human Development and Anatomy

2.0 Credits of Foundational Biology Courses

BIOC15H3 Genetics
BIOC17H3 Microbiology: The Bacterial Cell
BIOC21H3 Vertebrate Histology: Cells and Tissues or BIOC32H3 Human Physiology I
BIOC33H3 Human Physiology II: Lecture and Laboratory
BIOC34H Human Physiology II: Lecture

1.0 Credit of Advanced Biology Courses

Choose From:

BIOD17H3 Seminars in Cellular Microbiology
BIOD33H3 Comparative Animal Physiology
BIOD65H3 Pathologies of the Nervous System
BIOD26H3 Fungal Biology and Pathogenesis
BIOD43H3 Animal Movement and Exercise
1.0 Credit of Introductory Chemistry Courses
CHMA10H3 Introductory Chemistry I: Structure and Bonding
CHMA11H3 Introductory Chemistry II: Reactions and Mechanisms

1.0 Credit of Introductory Psychology Courses
PSYA01H3 Introductory Psychology: Part I
PSYA02H3 Introductory Psychology: Part II

1.0 Credit of B-Level Psychology Courses
PSYB20H3 Introduction to Developmental Psychology
PSYB32H3 Abnormal Psychology

1.0 Credit of Statistics/Data Analysis Courses
STAB22H3 Statistics I
or
PSYB07H3 Data Analysis in Psychology
PSYC08H3 Advanced Data Analysis in Psychology
Note: Students who do not take PSYB07H3 must complete an upgrade module prior to taking PSYC08H3.

7.0 Credits of Paramedicine Courses
*PMDB22H3 Pre-Hospital Care 1: Theory and Lab
*PMDB25H3 Therapeutic Approaches to Behaviour in Crisis
*PMDB30H3 Alterations of Human Body Function I
*PMDB32Y3 Pre-Hospital Care 2: Theory, Lab and Clinical
*PMDB36H3 Pharmacology for Allied Health Pre-requisite
*PMDB41H3 Professional Issues, Research and Leadership
*PMDC40H3 Alterations in Human Body Function II
*PMDC42Y3 Pre-Hospital Care 3: Theory, Lab and Field
*PMDC43H3 Medical Directed Therapeutics and Paramedic Responsibilities
*PMDC54Y3 Pre-Hospital Care 4: Theory, Lab and Field
*PMDC56H3 Primary Care Practice Integration and Decision Making
*A grade of 60% is required in these courses both to pass the course and to maintain standing in the program. All PMD courses are taught at Centennial College. Note, some PMD courses require that 60% be achieved in all components of the course (i.e., lecture component, practical component, and clinical-placement component).

1.0 Credit of C-Level Anthropology Courses
ANTC67H3 Foundations in Epidemiology
ANTC68H3 Deconstructing Epidemics
2. CONSENT AGENDA COURSE CHANGES:

- BIOA02H3  Life on Earth: Form, Function and Interaction  
  o Delete Prerequisite
- BIOC12H3  Biochemistry I: Proteins & Enzymes  
  o Revise Exclusion
- BIOC13H3  Biochemistry II: Bioenergetics & Metabolism  
  o Revise Exclusion
- BIOD19H3  Epigenetics in Health and Disease  
  o Revise Pre-requisites
- IMCB01H3  Microbiology Basics  
  o Delete Exclusion
- IMCB02H3  Microbial Techniques  
  o Delete Exclusion
- IMCC03H3  Biochemistry and Applications II  
  o Delete Exclusion