MEMORIAL UNIVERSITY OF NEWFOUNDLAND
SENATE

The regular meeting of Senate was held on April 19, 2016 at 4:00 p.m. in the Lecture Theatre in the Physical Education Building, Room 2001.

64.   PRESENT

Dr. N. Golfman (Acting Chair), Mr. G. Blackwood, Dr. M. Abrahams, Ms. B. Simmons (for Ms. S. Cleyle), Mr. B. Gardiner, Dr. D. Hardy Cox, Dr. C. Marra, Dr. F. Murrin, Dr. G. Naterer, Dr. L. Phillips, Dr. C. Reynolds, Ms. S. Singleton, Dr. S. Abhyankar, Dr. S. Carr, Mr. C. Couturier, Dr. G. George, Dr. J. Lokash, Dr. D. McKay, Dr. J. McLean, Ms. C. Molloy, Dr. M. Mulligan, Dr. A.C. Onodenalore, Mr. K. Rideout, Dr. J. Rourke, Mr. P. Ryan, Dr. K. Simonsen, Dr. C. Thorpe, Professor D. Walsh, Ms. T. Nielsen, Mr. M. Allen, Ms. B. Byrnes, Mr. M. O'Keefe, Ms. L. Robertson.

Chair of the Senate Committee on Undergraduate Studies (Standing Invitation)

Dr. Shannon Sullivan

Attending by Invitation for discussion of Item 8.A. Presentation to Senate by the Committee on Educational Technology:

Dr. Ed Brown, Chair Senate Committee on Educational Technology

65.   APOLOGIES FOR ABSENCE

Apologies were received from The President, Dr. I. Emke, Professor A. Fisher, Dr. D. Kelly, Dr. R. Marceau, Dr. C. Vardy, Dr. M. Wernerheim.

66.   MINUTES

It was moved by Dr. G. George, seconded by Dr. J. Lokash, and carried that the Minutes of the regular meeting held on February 16, 2016 be taken as read and confirmed.

67.   REPORT OF THE SENATE COMMITTEE ON HONORARY DEGREES AND CEREMONIAL

Senate moved into a closed session for this item of business in accordance with **Section IV.E.2. SENATE MEETINGS AND PROCEDURES** of the Handbook of Senate By-Laws and Procedures which reads:

Report of the Senate Committee on Honorary Degrees and Ceremonial (cont'd)

Matters of a confidential nature, including honorary degrees, shall be discussed in closed session; observers are not permitted to attend closed sessions.

67.1   Honorary Degree Nomination

The names of two candidates recommended by the Committee on Honorary Degrees and Ceremonial were presented to the Senate for awarding of a doctoral degree *honoris causa*. Members were given the opportunity to discuss the merit of each candidate before voting. Upon voting by a show of hands, the candidates were approved by at least a two-thirds majority vote.

67.2   Professor Emeritus Nominations

The names of six candidates recommended by the Committee on Honorary Degrees and Ceremonial were presented to the Senate for award of the title of Professor Emeritus for eventual consideration by the Board of Regents. Members were given the opportunity to discuss the merits of each of the candidates before voting. Upon voting by a show of hands, each candidate was approved by at least a two-thirds majority vote.

68.   CHANGE OF AGENDA

Item #7 Senate Committee on Course Evaluation Annual Report 2015 was removed from today's agenda as presenters were unavailable to attend.

CONSENT AGENDA

It was moved by Professor Walsh, seconded by Dr. Murrin, and carried that the consent agenda, comprising the items listed in 69 to 71 below, be approved as follows:

69.   REPORT OF THE SENATE COMMITTEE ON UNDERGRADUATE STUDIES

69.1   Grenfell Campus

Page 360, 2015-2016 Calendar, under the heading 12.31 Theatre, amend the calendar entry to read as follows:

"**1200 Concert Dance** is an overview of the basic techniques of Western concert dance such as jazz, ballet, and contemporary dance within their historical, cultural, and aesthetic contexts. The course

Grenfell Campus (cont'd)

develops basic body awareness and alignment and explores the basics of codified dance technique. This course is open to non-Theatre students.
AR: attendance is required
OR: 3 hours of studio per week
Abbreviated Course Title: Concert Dance

1250 Improvised Movement and Conditioning is an exploration of the basic development of healthy physical practice for movement training including conditioning and improvisation. Students will investigate body awareness, anatomy, self-expression, dynamic alignment, and the basic principles of creating movement-based performances. This course is open to non-Theatre students.
AR: attendance is required
OR: 3 hours of studio per week
Abbreviated Course Title: Improv Movement"

Page 353, 2015-2016 Calendar, under the heading 12.21 Mathematics and Statistics, amend the calendar entry as follows:

"**1052 Mathematics for Business** covers topics which include elementary algebra and functions, sets, elementary probability, matrices, systems of equations, and linear programming.
CR: Math 1050 and Math 1051
LC: 4
UL: Students who already have obtained credit for 6 or more Mathematics credit hours numbered 2000 or above are not permitted to register for this course, nor can they receive credit for it.
Abbreviated Course Title: Math for Business

1053 Classical Mathematics covers topics which include logic, permutations, combinations, mathematical systems, elementary number theory, and geometry.
CR: Math 1050 and Math 1051
LC: 4
UL: Students who already have obtained credit for 6 or more Mathematics credit hours numbered 2000 or above are not permitted to register for this course, nor can they receive credit for it.
Abbreviated Course Title: Classical Mathematics"

Page 353, 2015-2016 Calendar, under the heading 12.21 Mathematics and Statistics, amend the calendar entry as follows:

Grenfell Campus (cont'd)

"**12.21 Mathematics and Statistics**

At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, <u>1052, 1053,</u> 1080, 1081, 1090, 1150, 1151. <u>Students who have already obtained credit for 6 or more Mathematics credit hours numbered 2000 or above are not permitted to register for Mathematics 1052 or 1053, nor can they receive credit for either of these courses.</u>

~~**1050 Finite Mathematics I** covers topics which include sets, logic, permutations, combinations, and elementary probability.~~
~~CR: the former MATH 1150. With the exception of those already admitted at the time of registration in this course to a Bachelor of Education program that requires this course, students who already have obtained credit for 6 or more Mathematics credit hours numbered 2000 or above are not permitted to register for this course nor can they receive credit for it~~
~~LC: 4~~
~~PR: a combination of placement test and high school mathematics scores acceptable to the Department, or MATH 103F~~

~~**1051 Finite Mathematics II** covers topics which include elementary matrices, linear programming, elementary number theory, mathematical systems and geometry.~~
~~CR: the former MATH 1151. With the exception of those already admitted at the time of registration in this course to a Bachelor of Education program that requires this course, students who already have obtained credit for 6 or more Mathematics credit hours numbered 2000 or above are not permitted to register for this course nor can they receive credit for it.~~
~~LH: 1.5~~
~~PR: a combination of placement test and high school mathematics scores acceptable to the Department, or MATH 103F~~

2500 Statistics for Business and Arts Students is descriptive statistics (including histograms, stem-and-leaf plots and box plots), elementary probability, random variables, the binomial distribution, the normal distribution, sampling distribution, estimation and hypothesis testing including both one and two sample tests, paired comparisons, correlation and regression, related applications.
CR: STAT 2550, the former STAT 2510, Psychology 2910, Psychology 2925 and the former Psychology 2900
LH: 1.5

<u>Grenfell Campus (cont'd)</u>

PR: MATH 1000 <u>or MATH 1052</u> or 6 credit hours in first year courses in Mathematics or registration in at least semester 3 of a Bachelor of Nursing program or permission of the Head of Department."

As approved at the April 14, 2015, Senate meeting, under the heading <u>8.5 Bachelor of Business Administration</u>, amend the calendar entry to read as follows:

"**8.5 Bachelor of Business Administration**

8.5.2   The Curriculum
   1   The Bachelor of Business Administration requires a total of 120 credit hours. Candidates for graduation must achieve a grade point average of at least 2.5 and an average of at least 60% on those 120 credit hours.
      a. ECON 2010 and 2020
      b. Six credit hours in first year English
      c. MATH 1000 <u>or MATH 1052</u> and STAT 2500
      d. BUSN 1010, 1020, 2020, 2100, 2110, 2200, 2250, 2300, 2310, 3010, 3030, 3300, 3410, 3500, 3600, 4010, 4040, and 4070
      e. At least 15 credit hours but not more than 24 credit hours chosen from Table 2 Business Electives.
      f. At least 24 credit hours but not more than 33 credit hours, chosen from electives other than those listed in Table 2 Business Electives, to make up the total 120 credit hours required for the degree.

Table 1 Recommended Bachelor of Business Administration Curriculum

Year 1	Year 2
BUSN 1010	BUSN 2020
BUSN 1020	BUSN 2100
ECON 2010	BUSN 2110
ECON 2020	BUSN 2200
6 credit hours in first-year English (Students are strongly encouraged to take English 1110.)	BUSN 2250
	BUSN 2300
	BUSN 2310
MATH 1000 <u>or MATH 1052</u>	STAT 2500
9 credit hours in elective courses	6 credit hours in elective courses

Year 3	Year 4
BUSN 3010	BUSN 4010
BUSN 3030	BUSN 4040
BUSN 3300	BUSN 4070
BUSN 3410	21 credit hours in elective courses
BUSN 3500	
BUSN 3600	
12 credit hours in elective courses	

As approved at the April 14, 2015, Senate meeting, under the heading 8.8 Articulation Agreements with the College of the North Atlantic, amend the calendar entry to read as follows:

"**8.8 Articulation Agreements with the College of the North Atlantic**

8.8.6 Bachelor of Business Administration for Graduates of the Two-Year Business Administration (Accounting) Diploma Program

Students who have graduated from the two-year Business Administration (Accounting) diploma program offered by the College of the North Atlantic and who are seeking entry into the Grenfell Campus Bachelor of Business Administration (B.B.A.) program must have a minimum average of 65% in their diploma and will be awarded 60 credit hours of transfer credits applicable to the degree program.

Students will be required to complete an additional 60 credit hours for the Grenfell Campus B.B.A. as follows:

1. Business 2300, 2310, 3010, 3410, 3500, 3600, 4010, 4040 and 4070
2. Economics 2020
3. 3 credit hours in first year English
4. Mathematics 1000 or Mathematics 1052
5. 9 credit hours in elective courses from Table 2 Business Electives as stated in section 8.5.2 *The Curriculum*
6. 15 credit hours in elective courses other than those listed in Table 2 Business Electives.

Recommended Bachelor of Business Administration Curriculum for CNA Transfer students of 2-year Business Administration Diploma (Accounting)

Year 1	Year 2
BUSN 2300	BUSN 3010
BUSN 2310	BUSN 3410

BUSN 3500	BUSN 4010
BUSN 3600	BUSN 4040
ECON 2020	BUSN 4070
3 credit hours in first-year English (Students are strongly encouraged to take English 1110.)	15 credit hours other than those listed in Table 2 Business Electives
MATH 1000 or MATH 1052	
9 credit hours from Table 2 Business Electives	

8.8.7 Bachelor of Business Administration for Graduates of the Two-Year Business Administration (Human Resource Management) Diploma Program

Students who have graduated from the two-year Business Administration (Human Resource Management) diploma program offered by College of the North Atlantic and who are seeking entry into the Grenfell Campus Bachelor of Business Administration (B.B.A.) program must have a minimum average of 65% in their diploma—and will be awarded 60 credit hours of transfer credits applicable to the degree program.

Students will be required to complete an additional 60 credit hours for the Grenfell Campus B.B.A. as follows:

1. Business 2110, 2310, 3010, 3410, 3500, 3600, 4010, 4040 and 4070
2. Economics 2020
3. 3 credit hours in first year English
4. Mathematics 1000 or Mathematics 1052
5. 9 credit hours in elective courses from Table 2 Business Electives as stated in section 8.5.2 *The Curriculum*
6. 15 credit hours in elective courses other than those listed in Table 2 Business Electives.

Recommended Bachelor of Business Administration Curriculum for CNA Transfer students of 2-year Business Administration Diploma
(Human Resource Management)

Year 1	Year 2
BUSN 2110	BUSN 3010
BUSN 2310	BUSN 3410
BUSN 3500	BUSN 4010
BUSN 3600	BUSN 4040
ECON 2020	BUSN 4070
3 credit hours in first-year English (Students are strongly	15 credit hours other than from Table 2 Business

encouraged to take English 1110.) MATH 1000 <u>or MATH 1052</u> 9 credit hours from Table 2 Business Electives	Electives

8.8.8 Bachelor of Business Administration for Graduates of the Two-Year Business Administration (Marketing) Diploma Program

Students who have graduated from the two-year Business Administration (Marketing) diploma program offered by the College of the North Atlantic and who are seeking entry into the Grenfell Campus Bachelor of Business Administration (B.B.A.) program must have a minimum average of 65% in their diploma and will be awarded 60 credit hours of transfer credits applicable to the degree program.

Students will be required to complete an additional 60 credit hours for the Grenfell Campus B.B.A. as follows:

    1.   Business 2110, 2300, 2310, 3010, 3410, 3500, 3600, 4010, 4040 and 4070
    2.   3 credit hours in first year English
    3.   Mathematics 1000 <u>or Mathematics 1052</u>
    4.   9 credit hours in elective courses from Table 2 Business Electives as stated in section 8.5.2 *The Curriculum*
    5.   15 credit hours in elective courses other than those listed in Table 2 Business Electives.

Recommended Bachelor of Business Administration Curriculum for CNA Transfer students of 2-year Business Administration Diploma (Marketing)

Year 1	Year 2
BUSN 2110	BUSN 3010
BUSN 2300	BUSN 3410
BUSN 2310	BUSN 4010
BUSN 3500	BUSN 4040
BUSN 3600	BUSN 4070
3 credit hours in first-year English (Students are strongly encouraged to take English 1110.) MATH 1000 <u>or MATH 1052</u> 9 credit hours from Table 2 Business Electives	15 credit hours other than those listed in Table 2 Business Electives

8.8.10 Bachelor of Business Administration for Graduates of the Three-Year Business Management (Accounting) Diploma Program

Grenfell Campus (cont'd)

Students who have graduated from the three-year Business Management diploma program (Accounting) offered by the College of the North Atlantic and who are seeking entry into the Grenfell Campus Bachelor of Business Administration (B.B.A.) program must have a minimal average of 65% in their diploma and will be awarded 75 credit hours of transfer credits applicable to the degree program.

Students will be required to complete an additional 45 credit hours for the Grenfell Campus B.B.A. as follows:

1.   Business 2310, 3010, 3500, 4010, 4040, 4070
2.   3 credit hours in first year English
3.   Mathematics 1000 or Mathematics 1052
4.   9 credit hours in elective courses chosen from Table 2 Business Electives as stated in section 8.5.2 *The Curriculum*
5.   12 credit hours in elective courses other than those listed in Table 2 Business Electives.

Recommended Bachelor of Business Administration Curriculum for CNA Transfer students of 3-year Business Management Diploma (Accounting)

	Fall Term	Winter Term	Spring Term
	BUSN 3500	BUSN 4040	BUSN 2310
	BUSN 4010	12 credit hours	BUSN 3010
	3 credit hours in first-year English	in elective courses. Refer to Section 8.8.10 above for elective course requirements.	BUSN 4070
	MATH 1000 or MATH 1052		6 credit hours in elective courses. Refer to Section 8.8.10 above for elective course requirements.
	3 credit hours in elective courses. Refer to Section 8.8.10 above for elective course requirements.		

8.8.11 Bachelor of Business Administration for Graduates of the Three-Year Business Management (HRM) Diploma Program

Students who have graduated from the three-year Business Management diploma program (HRM) offered by the College of the North Atlantic and who are seeking entry into the Grenfell Campus Bachelor of Business Administration (B.B.A.) program must have a minimal average of 65% in their diploma and will be awarded 75 credit hours of transfer credits applicable to the degree program.

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Grenfell Campus (cont'd)

Students will be required to complete an additional 45 credit hours for the Grenfell Campus B.B.A. as follows:

      1.   Business 2110, 2310, 3010, 3410, 3500, 4010, 4040, 4070
      2.   Economics 2020
      3.   3 credit hours in first year English
      4.   Mathematics 1000 or Mathematics 1052
      5.   12 credit hours in elective courses other than those listed in Table 2 Business Electives as stated in section 8.5.2 *The Curriculum*.

Recommended Bachelor of Business Administration Curriculum for CNA Transfer students of 3-year Business Management Diploma (HRM)

Fall Term	Winter Term	Spring Term
BUSN 3500	BUSN 2110	BUSN 2310
BUSN 4010	BUSN 3410	BUSN 3010
Economics 2020	BUSN 4040	BUSN 4070
3 credit hours in first-year English	6 credit hours in elective courses. Refer to Section 8.8.11 above for elective course requirements.	6 credit hours in elective courses. Refer to Section 8.8.11 above for elective course requirements.
MATH 1000 or MATH 1052		

8.8.12 Bachelor of Business Administration for Graduates of the Three-Year Business Management (Marketing) Diploma Program

Students who have graduated from the three-year Business Management diploma program (Marketing) offered by the College of the North Atlantic and who are seeking entry into the Grenfell Campus Bachelor of Business Administration (B.B.A.) program must have a minimal average of 65% in their diploma and will be awarded 75 credit hours of transfer credits applicable to the degree program.

Students will be required to complete an additional 45 credit hours for the Grenfell Campus B.B.A. as follows:

      1.   Business 2110, 2310, 3010, 3410, 3500, 4010, 4040, 4070
      2.   3 credit hours in first year English
      3.   Mathematics 1000 or Mathematics 1052
      4.   3 credit hours in an elective course chosen from Table 2 Business Electives as stated in section 8.5.2 *The Curriculum*

Grenfell Campus (cont'd)

5.   12 credit hours in elective courses other than those listed in Table 2 Business Electives.

Recommended Bachelor of Business Administration Curriculum for CNA Transfer students of 3-year Business Management Diploma (Marketing)

Fall Term	Winter Term	Spring Term
BUSN 3500	BUSN 2110	BUSN 2310
BUSN 4010	BUSN 3410	BUSN 3010
3 credit hours in first-year English	BUSN 4040	BUSN 4070
MATH 1000 <u>or</u> <u>MATH 1052</u>	6 credit hours in elective courses. Refer to Section 8.8.12 above for elective course requirements.	6 credit hours in elective courses. Refer to Section 8.8.12 above for elective course requirements.
3 credit hours in elective courses. Refer to Section 8.8.12 above for elective course requirements.		

Page 497, 2015-2016 Calendar, under the heading <u>9.1.1 Regulations</u>, amend the calendar entry as follows:

"**9.8.1 Regulations**

1. At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, <u>1052, 1053,</u> the former 1080, the former 1081, 1090, the former 1150 and 1151.
    …"

Page 527, 2015-2016 Calendar, under the heading <u>10.8.3 Mathematics Courses</u>, amend the calendar entry as follows:

"**1050 Finite Mathematics I** covers topics which include sets, logic, permutations, combinations and elementary probability.
CR: MATH 1052 and MATH 1053
LC: 4
PR: a combination of placement test and high school mathematics scores acceptable to the department or MATH 103F
UL: At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, <u>1052, 1053,</u> the former 1080, the former 1081, 1090, the former 1150 and 1151. With the exception of

Grenfell Campus (cont'd)

those already admitted at the time of registration in this course to a Bachelor of Education program that requires this course, students who already have obtained credit for 6 or more Mathematics credit hours numbered 2000 or above are not permitted to register for this course nor can they receive credit for it.

1051 Finite Mathematics II covers topics which include elementary matrices, linear programming, elementary number theory, mathematical systems, and geometry.
CR: MATH 1052 and MATH 1053
LC: 4
PR: a combination of placement test and high school mathematics scores acceptable to the department or MATH 103F
UL: At most 9 credit hours in Mathematics will be given for courses completed from the following list subject to normal credit restrictions: Mathematics 1000, 1031, 1050, 1051, 1052, 1053, the former 1080, the former 1081, 1090, the former 1150 and 1151. With the exception of those already admitted at the time of registration in this course to a Bachelor of Education program that requires this course, students who already have obtained credit for 6 or more Mathematics credit hours numbered 2000 or above are not permitted to register for this course nor can they receive credit for it."

Page 311, 2015-2016 Calendar, under the heading 7.2.3 Bachelor of Arts with Major in Humanities, amend the calendar entry as follows:

"**7.2.3 Bachelor of Arts with Major in Humanities**

…

Table 5 Bachelor of Arts with Major in Humanities

Required Courses	Elective Courses
…	…
The Major consists of 42 45 credit hours as follows: a. 33 36 credit hours (Humanities 1001, 1002, 2000, 2001, 2002, 2010, 3001, 3002, 3010, 4001, 4010, 4950). b. EITHER 3 credit hours in other Humanities courses plus 6 credit hours in a language other than English, OR 9 credit hours in other Humanities courses.	…

Grenfell Campus (cont'd)

Page 352, 2015-2016 Calendar, under the heading <u>12.20 Humanities</u>, amend the calendar entry as follows:

"**12.20 Humanities**

2000 Texts that Changed the World II is a continuation of Humanities 1002. It focuses primarily on political thought from the renaissance through modern eras and examines how developments in the understanding of what it means to be human inform the social and political world. The course is a designated writing (W) course."

Page 308, 2015-2016 Calendar, under the heading <u>7.1.4 Designated Writing Courses (W)</u>, amend the calendar entry as follows:

"**7.1.4 Designated Writing Courses (W)**

…

Table 1 Designated Writing Courses (W)

...	Humanities: 1001, 1002, <u>2000</u>, 2001, 2002, 2010, 3001, 3002, 3010, 3020, 3021, 4001, 4010, 4950
...	...

…"

69.2   <u>Department of Physics</u>

Page 531, 2015-2016 Calendar, under the heading <u>10.10 Physics and Physical Oceanography</u>, amend the calendar entry as follows:

"**10.10 Physics and Physical Oceanography**

2151 Stellar Astronomy and Astrophysics ~~covers atomic structure and spectra. The sun: radiation, energetics, magnetic field. Stars: distance, velocity, size, atmospheres, interiors. Variable stars, multiple stars, clusters and stellar associations. Stellar evolution, interstellar matter, structure of the Milky Way Galaxy. Exterior galaxies, quasi-stellar objects, pulsars. Cosmology.~~ introduces concepts in modern astronomy including: the celestial sphere, eclipses, parallax, and Kepler's laws; radiation; the Sun; spectroscopy; telescopes, resolution, and detectors; magnitudes, spectral classifications, and the Hertzsprung-Russell diagram; the interstellar medium, star formation, stellar evolution, nucleosynthesis, white dwarfs, neutron stars, pulsars, nebulae, supernovae, black holes, and gamma-ray bursts; galaxies, dark matter, and active galactic nuclei; cosmology, the cosmic microwave background, inflation and dark energy; and the search for extraterrestrial intelligence.
PR: 6 credit hours in Mathematics courses at the first year level

Department of Physics (cont'd)

3150 Astrophysics I ~~is a review of macroscopic and microscopic physics. The sun: luminosity, mass, spectrum, photosphere, corona, interior. Principles of stellar structure; radiative and convective transport of energy. The virial theorem. Thermonuclear fusion; temperature dependence; the solar neutrino problem. Nucleosynthesis; the curve of binding energy; the synthesis of heavy elements. White dwarfs, neutron stars, and black holes; degenerate electron and neutron gases; Chandrasekhar's Limit. Population I and Population II stars; the Hertzsprung Russell diagram; relationships among luminosity, mass, and effective temperature for main sequence dwarfs. Evolution of post main sequence stars.~~ covers macroscopic and microscopic physics related to stellar structure, energy production, and evolution. This includes stellar observables, gravity and other forces, the Virial Theorem, light and matter in stars, stellar spectra and classification, Hertzsprung-Russell diagrams and properties of main sequence dwarf stars, radiation in the stellar atmosphere, structural relationships and stellar models, energy sources and energy transport in stars, star formation and stellar evolution, nucleosynthesis, variable stars, Chandrasekhar's limit, and degenerate remnants.
PR: PHYS 2053, 2750 (or 2056), and 2820
CR: PHYS 3160

3151 Astrophysics II ~~covers stellar spectra and classification of stars. Hertzsprung-Russell diagram; equations of stellar structure for a star in equilibrium; temperature and density dependencies of nuclear processes. Formation and classification of binary stars; mass and energy transfer in binary star systems; semidetached binaries; cataclysmic variables, pulsars, etc. Galaxies and galactic structure; active galactic nuclei; cosmological redshift. Cosmology.~~ deals with galactic and cosmological scale astrophysics. Topics include: galaxies including Hubble classification, dark matter, and structure of the Milky Way Galaxy; globular and open star clusters; compact objects including compact binary systems, novas and supernovas, pulsars and magnetars, X-ray binaries; black holes, active galactic nuclei, quasars, the Lyman forest, and the Gunn-Peterson trough; and cosmology including the cosmic microwave background, the FLRW metric, the Friedmann equations, cosmological expansion, and dark energy.
PR: PHYS 3150 and 3220
CR:PHYS 3160

2300 Introductory Physical Oceanography (same as Ocean Sciences 2300) ~~will~~ provide~~s~~ an introduction to ~~the physical ocean. Ocean characteristics studied will include: the properties of seawater; key features of ocean circulation; wind forcing in the ocean; tides and shoreline processes as well as ocean coupling with the atmosphere, geosphere and cryosphere (ice); and new approaches to ocean sampling~~

Department of Physics (cont'd)

and numerical modelling. The course will take an integrated earth systems approach to the study of upwelling zones, open ocean ecosystems and climate change. general oceanography with a primary focus on physical oceanography. Topics include how oceans form and evolve on a planetary scale. Ocean characteristics studied include: the properties of seawater; elementary dynamics of fluids on the rotating Earth; ocean circulation; wind-forcing in the ocean; tides and waves. Contemporary methods used in oceanographic study are covered including satellite oceanography. Interactions that occur between physical and chemical processes and biological activity are reviewed.
CR: Environmental Science 2371, Ocean Sciences 2300
PR: six credit hours in any two first-year courses in Physics

3300 Intermediate Physical Oceanography deals with the physics of the processes in the ocean, providing an integrating view of the whole field of oceanography. The importance of physical processes to other aspects of oceanography is treated. provides a physics-based introduction to both dynamical and descriptive physical oceanography. Topics include properties of seawater, geostrophy, conservation equations, wind-forced dynamics, large-scale ocean circulation and waves and tides. A survey of analytical, observational, numerical, and laboratory approaches is presented.
PR: PHYS 2053 and MATH 2000 or registration in Academic Term 5 of the Ocean and Naval Architectural Engineering Program.

3340 Principles of Environmental Physics will explore the basic physical principles of light, heat, energy and sound in the natural environment. Several key aspects of physics in the environment will be covered including climate and the physical evolution of the planet and the present role of the atmosphere and ocean spectroscopy in the atmosphere and measurement and observation of the atmosphere; principles of energy generation and pollution transport in the atmosphere and ocean. applies basic physical principles to the environment of the Earth with a focus on problem solving and developing physical understanding. Key topics to be covered include the climate system and climate change, energy production and use, and the role of science in guiding public decision-making.
PR: Mathematics 2000 and PHYS 2053

4300 Advanced Physical Oceanography covers fundamental properties of seawater and techniques of oceanographic measurement. The dynamical equations of oceanography are derived and solutions explored by comparison with oceanic observations. Properties of waves in rotating and non-rotating fluids. Linear and non-linear wave theory are developed. dynamical physical oceanography. The equations of motion in oceanography are derived and analysed. Topics include

Department of Physics (cont'd)

geostrophy, conservation equations, linear and non-linear wave theory, and open ocean and shelf circulation dynamics.
PR: PHYS 3300 and 3820 ~~or waiver approved by the instructor~~

4340 Modelling in Environmental Physics covers the basic principles underlying environmental modelling. ~~will be developed and techniques for modelling presented and applied. Techniques for numerical modelling will be developed and simple numerical models will be developed for use in terrestrial, atmospheric and oceanic environments. Free and forced systems will be discussed and the transition to chaos and some aspects of chaotic dynamics.~~ Techniques for numerical modelling are introduced with applications to simulation of terrestrial, atmospheric and oceanic environments. Concepts and principles of free and forced dynamical systems are introduced and applied to the analysis and interpretation of simplified climate and environment model simulations.   Includes some discussion of dynamics and transition to chaos in environmental systems, uncertainty in their simulations and predictability of future environmental and climate changes.
PR: PHYS 3820 and PHYS 3340

3900 ~~**Physics Laboratory I** is a selection of experiments based primarily on material covered in the third year courses.~~ Experimental Physics I develops experimental, analytical, and communications skills through extended experiments in fields of physics including optics, magnetism, fluids, spectroscopy, materials characterization, and modern physics. Students select from a range of experiments that illustrate concepts encountered in previous courses to apply existing knowledge and problem solving skills, while other experiments introduce more advanced techniques and phenomena.
PR: at least two of PHYS 2053, 2820, 2055, and PHYS 2750 ~~(or 2056)~~
LH: 6
LC: 0
CR: PHYS 4880

4900 ~~**Physics Laboratory II** is a selection of experiments at the senior level~~. Experimental Physics II builds on the skills developed in Experimental Physics I through advanced and open-ended experiments in fields of physics including optics, magnetism, fluids, spectroscopy, materials characterization, and modern physics.
LH: 6
LC: 0
PR: PHYS 3900

3000 Physics of Device Materials is ~~structures of crystalline and amorphous solids. Excitations and transport in metals, semiconductors, and dielectrics; electronic band structures. Physics of multi-material~~

Department of Physics (cont'd)

~~devices including photodiodes, solid state lasers, and field effect transistors.~~ an introduction to the physics of materials, particularly group IV and III-V semiconductors, used in common technological devices. It covers fundamental concepts including structures of crystalline solids, quantum mechanics and statistical mechanics of charge carriers, equilibrium charge carrier concentrations, carrier transport and excess carrier phenomena. These concepts are applied to multi-material devices including pn and metal semiconductor junctions, metal-oxide-semiconductor field-effect transistors, photovoltaic devices, light-emitting diodes, and solid-state lasers.
PR: PHYS ~~2055~~ 1051 ~~or registration in Academic Term 3 of the Electrical Engineering Program~~

4000 Introduction to Solid State Physics ~~covers crystal structure and binding, phonons and lattice vibrations, thermal properties of solids. Electrons in solids, energy bands, semi-conductors, superconductivity, dielectric properties. Magnetic properties of solids.~~ focuses on the relation between structure and physical properties in crystalline materials. An introduction to crystal structure addresses symmetry and reciprocal space. Phonons and lattice vibrations are linked with thermal properties of solids. Electrons in solids, including energy bands and semiconductors, lead to discussions of transport in solids.
PR: PHYS 3400 and PHYS 3750 ~~or waiver approved by the instructor~~

Page 531, 2015-2016 Calendar, under the heading 10.9 Ocean Sciences, amend the calendar entry as follows:

"**2300 Introductory Physical Oceanography** (same as Physics 2300) ~~will~~ provides an introduction to ~~the physical ocean. Ocean characteristics studied will include: the properties of seawater; key features of ocean circulation; wind forcing in the ocean; tides and shoreline processes as well as ocean coupling with the atmosphere, geosphere and cryosphere (ice); and new approaches to ocean sampling and numerical modelling. The course will take an integrated earth systems approach to the study of upwelling zones, open ocean ecosystems and climate change.~~ general oceanography with a primary focus on physical oceanography. Topics include how oceans form and evolve on a planetary scale. Ocean characteristics studied include: the properties of seawater; elementary dynamics of fluids on the rotating Earth; ocean circulation; wind-forcing in the ocean; tides and waves. Contemporary methods used in oceanographic study are covered including satellite oceanography. Interactions that occur between physical and chemical processes and biological activity are reviewed.
CR: Environmental Science 2371, Physics 2300
PR: six credit hours in any ~~two~~ first-year courses in Physics"

69.3   Departments of Biochemistry and Biology

Page 471, 2015-2016 Calendar, under the heading 5.1.3 Biochemistry and Cell Biology Joint Honours, amend the calendar entry to read as follows:

"**5.1.3 Biochemistry and Cell Biology Joint Honours**

~~Students must have at least an overall average of 65% in English 1080 and 1110 (or equivalent), Mathematics 1000 and 1001, Biology 1001 and 1002, Chemistry 1050 and 1051 (or 1200 and 1001), Physics 1050 (or 1020), and 1051 (or 1021).~~

~~The following courses, including prerequisites where applicable, will be required.~~

~~1. Biochemistry 2101, 3105, 3106, 3107, 3108, either 4210 or 4211, 12 credit hours chosen from 4002, 4101, 4102, 4103, 4104, 4105, 4200, 4201, 4230-4249.~~

~~2. Biology 2060, 2250, 2600, 2900, 3050 and 9 credit hours chosen from 3500, 3530, 3620, 4000, 4200, 4241. In addition, further Biology courses at the 2000, 3000, or 4000 level must be selected by the student to make up a minimum of 42 credit hours in Biology including Biology 1001 and 1002 but not including Biology 499A or 499B.~~

~~3. Either Medicine 310A/B, or Biology 3401 plus one of Biology 3402, 4245 or 4404.~~

~~4. Chemistry 2100, 2301, 2400, 2401; either 3410 or 3411.~~

~~5. Statistics 2550 or equivalent.~~

~~6. An Honours Dissertation (Biology 499A/499B or Biochemistry 499A/499B).~~

~~7. Other courses to complete the prescribed minimum of 135 credit hours in courses for the Joint Honours Degree.~~

~~Note: Students may count only one of the two courses, Biochemistry 4105 or Biology 4200, for credit in this program.~~

~~The topic of the Honours dissertation must be chosen with the approval of both Departments. A faculty member of either Department may act as supervisor.~~

~~Seventy-eight credit hours in Biology, Biochemistry and Chemistry courses beyond the first-year level from those listed in the program shall contribute to those in which a grade of "B" or an average of 75 or higher is required. Medicine 310A/B counts as Biochemistry for these seventy-eight credit hours.~~

The following courses are required:

1. Biology 1001, 1002, Chemistry 1050, 1051 (or 1200 and 1001), English 1080 and 1110 (or equivalent), Mathematics 1000, 1001, Physics 1020 or 1050, Physics 1021 or 1051, Statistics 2550;

Departments of Biochemistry and Biology (cont'd)

2. Biochemistry 2101, 3105, 3106, Chemistry 2301, Chemistry 2400, 2401;

3. Either Biochemistry 3107 and 3108 or Medicine 310A/B;

4. An additional 12 credit hours to be selected from Biochemistry 4002, 4101, 4102, 4103, 4104, 4105, 4200, 4201, 4210 or 4211; 4230-4249;

5. Biology 2060, 2250, 2600, 2900, 3530, 4241, plus one of Biology 3401, 3402, 4245 or 4404;

6. 12 credit hours from the following: Biology 3050, 3052 (or Biochemistry 3052), 3401, 3402, 3500, 3620, 3950, 3951, 4010, 4040, 4050, 4200 (or Biochemistry 4105), 4245, 4250, 4251, 4255, 4404, 4550, 4605, 4607;

7. Biochemistry 499A/B or Biology 499A/B;

8. Electives to make up 120 credit hours.

Note: Students may count only one of the two courses, Biochemistry 4105 or Biology 4200, for credit in this program.
Seventy-five credit hours in Biology, Biochemistry and Chemistry courses beyond the first-year level from those listed in the program shall contribute to those in which a grade of "B" or an average of 75 or higher is required. Medicine 310A/B counts as Biochemistry for these seventy-five credit hours."

Page 482, 2015-2016 Calendar, under the heading 9.1 Biochemistry, amend the calendar entry to read as follows:

"**9.1 Biochemistry**

www.mun.ca/biochem
The following undergraduate programs are available in the Department:
1. Biochemistry and Cell Biology/~~Microbiology~~ Joint Honours
…"

70.   REPORT OF THE ACADEMIC COUNCIL OF THE SCHOOL OF GRADUATE STUDIES

70.1   Doctoral Internship Option

Page 688, 2015-2016 Calendar, under the heading 32.20 Interdisciplinary, amend the calendar entry to read as follows:

Doctoral Internship Option (cont'd)

"**32.20.5 Doctoral internship**

The School of Graduate Studies allows doctoral students, ID Ph.D. students, to undertake internships of work. Students approved to undertake an internship will be required to register for the Doctoral Internship course (INTE 6000). Students will be expected to obtain their own internships (with the help of supervisors when possible) and must have completed their comprehensive exams prior to starting their internships.

Internships must be approved by the supervisor, Director of the ID Ph.D. program, and Head of the academic unit (in cases where INTE 6000 is approved for a doctoral student outside of the ID Ph.D. program). In cases where approval is granted, students must add INTE 6000 to their program of study and register using a Course Change form.

The doctoral internships shall normally be one semester in duration and consist of a minimum of 420 hours of paid or unpaid work. Students undertaking the internship shall submit a concise report to their supervisors at the end of the semester while on internship. The report and performance in the internship shall be graded as pass/fail by the supervisor upon consultation with the on-site work supervisor. If a student fails to achieve a final grade of pass, and provided the student has not failed to achieve a grade of B or better in any other program course, the student may request to repeat the internship or replace with a substitute course. Only one such repeat or substitution will be permitted in a student's program. Students who drop an internship without permission, fail to honour an agreement to work with a host employer, or who conduct themselves in a manner as to cause their discharge from the internship position will normally be awarded a failed grade for the internship.

32.20.6 Courses

A selection of the following graduate courses will be offered to meet the requirements of candidates, as far as the resources of the Department will allow.

6000 Doctoral Internship"

71.   REPORTS OF SENATE COMMITTEES

Written reports were received for the information of Senators from the following Senate Committees:

Reports of Senate Committees (cont'd)

-        Academic Unit Planning Committee
-        Senate Committee on Undergraduate Studies
-        Senate Committee on Course Evaluations
-        Executive Committee of Senate
-        Committee on Honorary Degrees and Ceremonial
-        Grenfell Committee on Special Admissions
-        Senate Committee on Academic Appeals
-        Senate Committee on Undergraduate Scholarships, Bursaries and Awards
-        University Committee on Admissions

REGULAR AGENDA

72.   REPORT OF THE SENATE COMMITTEE ON UNDERGRADUATE STUDIES

72.1   Certificate in Library Studies

It was moved by Ms. D. Walsh, seconded by Dr. W. Schipper, and carried that on page 82, 2015-2016 Calendar, under the heading 7.4 Program Regulations, amend the calendar entry to read as follows:

"**7.4 Program Regulations**
~~For information on the **Certificate in Library Studies** contact Mrs. Lorraine Busby, University Librarian by e-mail at lbusby@mun.ca or by telephone to (709) 864-3862.~~
~~For information on the **Certificate in Business Administration** see the **Faculty of Business Administration** section. For information on the **Certificate in Criminology** and the **Certificate in Public Policy** see the **Faculty of Arts** section.~~
7.4.1 Certificate in Library Studies
~~This program is currently under review and not available for admission. The Certificate in Library Studies is for persons working in a library who wish to be more accomplished providers of library services. The program will benefit personnel in school, public, university, medical, legal, and special interest libraries.~~
7.4.1.1 Regulations for the Certificate in Library Studies
~~To be eligible for the Certificate in Library Studies a student must complete the following:~~
~~1. Business 2000 or Business 2010; Library Studies 1601, 1602, 1603, 1606, 1609; and~~
~~2. four courses chosen from Library Studies 1604, 1605, 1610, 1611, 2606, 3600, 3601-3609.~~

Certificate in Library Studies (cont'd)

~~In some cases, a student may substitute one elective course that has relevance to his/her area of speciality and the field of library studies. A student may submit his/her request in writing for consideration.~~"

73. Presentation by Senate Standing Committee

Continuation of presentations of Senate Standing Committees to Senate.

73.1 Committee on Educational Technology

The Provost invited Dr. Ed Brown and Ms. Christine Molloy to give a presentation on behalf of the Committee on Educational Technology.

Dr. Brown thanked Senate for the opportunity to give a presentation as a response to requests from the Ad hoc Committee on Senate Reform.

Most recently the Committee realized that their Terms of Reference had become limiting and inadequate, which prompted a review and proposal for new Terms of Reference. These new terms have since been adopted.

There are currently two ongoing projects that the Committee is working on:

- Comprehensive inventory of Teaching Technology
- Proposal for Innovation in Teaching using Technology award

In the past the Committee has been available across the campus and has consulted with various groups on issues of technology incorporation, software licensing, and email and wireless infrastructure.

Dr. Brown noted that there has been discussion among some of the Committee members about the usefulness of the Committee. He stated that the Committee operates mostly consultatively, on an ad hoc basis.

In response to the suggestion from the Ad hoc Committee on Senate Reform that the Teaching and Learning Committee absorb the duties of the Committee on Educational Technology, both Dr. Brown and Ms. Molloy agreed that the workload would be too great and that the Terms of Reference of these two committees do not share the same priorities. They felt that matters of technology need to be addressed by a focussed and specified body.

Ms. Molloy commented on the need to make adjustments within the structure, priorities and composition of the Committee. She highlighted

Committee on Educational Technology (cont'd)

in particular the need to address the Committee's communication plan with the rest of the University. There needs to be a clearly scheduled discourse between the Committee and appropriate stakeholders within the University community. Ms. Molloy also mentioned the need for the Chair of the Committee to be less definitive. The Chair is, by virtue of her position, the Director of DELTS, and is too busy to effectively manage this Committee.

Senators commented that it seemed like there was a need for this committee but currently there may be a few things holding it back. Overall, most Senators agreed that the Teaching and Learning Committee could be a good point of contact for the Educational Technology Committee and if it is not absorbed completely it would benefit from becoming a sub-committee of the Teaching and Learning Committee. There was, however, some concern regarding the level of extra work and the potential need to increase the size of the Teaching and Learning Committee.

74. Committee on Honorary Degrees and Ceremonial – Membership and Terms of Reference

Ms. Singleton, Secretary, Senate Committee on Honorary Degrees and Ceremonial, advised that the Committee on Honorary Degrees and Ceremonial considered its Membership and Terms of Reference as part of the ad hoc Committee on Senate Reform's review of the effectiveness of current Senate Standing Committees and the potential usefulness of additional Standing Committees.

It was agreed to amend clause 1.(f) to read "(f) One graduate student appointed by the Graduate Student Union".

It was agreed to amend clause 2.(c) to read "(c) To receive suggestions and recommend to the Senate nominations for the title of Professor Emeritus for eventual approval by the Board of Regents."

The Membership and Terms of Reference will now read as follows:

"1.   Membership
   (a)   President, Chair
   (b)   The Chancellor
   (c)   Secretary of Senate
   (d)   Public Orator
   (e)   Three undergraduate students, one appointed by the Memorial University Students' Union, one by the Marine Institute Students' Union, and one by the Grenfell Campus Student Union.

Committee on Honorary Degrees and Ceremonial – Membership and
Terms of Reference (cont'd)

     (f)   One graduate student appointed by the Graduate Student
             Union
     (g)   An appropriate number of academic staff members

2.   Terms of Reference
     (a)   To make recommendations to the Senate on the
            awarding of Honorary Degrees.
     (b)   To make recommendations to the Senate on the holding
            of Convocations, and on Academic Dress and
            Ceremonial.
     (c)   To receive suggestions and recommend to the Senate
            nominations for the title of Professor Emeritus for
            eventual approval by the Board of Regents."

It was moved by Ms. Singleton, seconded by Mr. Couturier, and carried
that the membership and terms of reference be approved.

75.   REMARKS FROM THE CHAIR - QUESTIONS/COMMENTS FROM
       SENATORS

The Vice-President reminded Senators of the impending weather report
and the University's plan of action should a morning closure be needed
the following day.

76.   ADJOURNMENT

The meeting adjourned at 4:50 p.m.

_____   _____
CHAIRMAN   SECRETARY