McMaster University

SENATE MINUTES

Wednesday, March 8, 2017 at 3:30 p.m.
In the Council Room (111), Gilmour Hall

PRESENT: Dr. Patrick Deane (Chair), Ms Leah Allan, Dr. Catherine Anderson, Dr. Vishwanath Baba, Dr. Robert Baker, Dr. Sigal Balshine, Mr. Jack Boshart, Dr. Ana Campos, Dr. Philippa Carter, Dr. Narat Charupat, Dr. David Clark, Mr. Gary Collins, Dr. Ken Cruikshank, Dr. David Earn, Dr. Michele George, Mr. Mitchell Hajnal, Dr. Sheila Harms, Dr. Janice Hladki, Dr. Jerry Hurley, Dr. Graeme Luke, Ms Beth Manganelli Staite, Dr. John Medcof (Acting Dean of Business), Dr. Bruce Milliken, Mr. Sid Nath, Mr. Alexander Nielsen, Dr. Dorothy Pawluch, Dr. Robert Pelton, Dr. Christine Quail, Dr. Susan Sears Giroux, Dr. Spencer Smith, Ms Moira Taylor, Mr. Philip Tominac, Dr. Matt Valeriote, Ms Veronica van der Vliet, Dr. Brenda Vrkljan, Dr. Doug Welch, Dr. David Wilkinson, Ms Mary Williams, Ms Helen Ayre (Secretary of the Senate), Susan Welstead (Governance Advisor and Assistant University Secretary)

OBSERVERS: Dr. Lori Campbell, Ms Esme Davies, Dr. Susan Denburg, Ms Andrea Farquhar, Dr. Bonnie Freeman, Dr. Martin Horn, Dr. Jacy Lee, Ms Vivian Lewis, Dr. Anna Moro, Ms Melissa Pool, Ms Alex Recio-Greenwell, Dr. Jean Wilson

REGRETS RECEIVED: Mr. Roger Couldey, Dr. Meridith Griffin, Dr. Alison Holloway, Dr. Shafiqul Huque, Dr. Violetta Igneski, Dr. Suzanne Labarge, Dr. Paul O’Byrne, Dr. Ishwar Puri, Dr. Petra Rethmann, Dr. Ravi Selvaganapathy, Mr. Peter Tice, Dr. Len Waverman, Dr. J.P. Xu

A. OPEN SESSION

OPENING REMARKS

Dr. Deane reported that the University’s initial meeting with Dr. Bonnie Patterson, who is leading the next phase of the Strategic Mandate Agreement process, went well and included discussions of both undergraduate and graduate enrolment plans and projections.

Since then, the draft SMA template has been updated in response to feedback from universities, and although the updated draft template has been received, the University is still awaiting the McMaster-specific version, which apparently will be pre-populated with certain key data. Although the University has the opportunity to update the strategic areas of program strength and program growth named in the previous SMA, it was clear from the meeting with Dr. Patterson that there is no obligation to do so.

The University also has the opportunity to provide examples of institutional initiatives in a number of areas: research excellence and impact; innovation in teaching and learning
excellence; student experience; access and equity; and innovation, economic development and community engagement.

Dr. Deane reminded Senators that the key issue with this phase of the process was the establishment of enrolment targets, specifically the corridor midpoint, which will then determine the University’s available funding and overall enrolment targets. Essentially, the planned corridor model is enrolment-based funding with plus-or-minus 3 per cent on a five-year moving average. Since the University has seen growth in Level I admissions, as well as improved retention rates, and since there will be no additional funding beyond student tuition for enrolment above the agreed cap, the determination of the corridor midpoint is critical in terms of both funding and future enrolment strategies and projections.

The University has established an SMA Working Group led by the Provost, which has already been working on modeling the enrolment data and projections and reviewing the draft SMA template. The timeline to complete the negotiations and finalize the SMA is fairly short -- the province hopes to have them all completed by late spring / early summer -- but the University is committed to providing updates and opportunities for discussion where possible as the process unfolds.

A member asked if the enrolment caps referred to all students or Canadian students only.

Dr. Wilkinson explained that the Province would be issuing a block grant; there would not be a cap. McMaster was on a trajectory to increase its international student enrolment and was seeing increased demand from international students. The Ministry had also asked about the University’s strategy for this.

Dr. Wilkinson said McMaster’s international enrolment was at 10 per cent before the double cohort and dropped below 5 per cent during the double cohort. It had climbed back up to 7 per cent and would be increasing.

He added that it was important to note that an increased international enrolment means being able to meet the needs of that group in such areas as recruitment and student support. Some initiatives along these lines have already been set in motion.

Dr. Deane then noted that following Senate’s approval of the Okanagan Charter, “An International Charter for Health Promoting Universities and Colleges,” an initiative of the Canadian Health Promoting Universities and Colleges Network, the Board of Governors had also reviewed and approved the recommendation to adopt the Okanagan Charter at its meeting on March 2. McMaster had submitted the paperwork and was now a formal signatory to the Charter.

**I APPROVAL OF AGENDA – OPEN SESSION**

Dr. Deane confirmed that no requests had been received to move any items from the Consent to the Regular agenda of the Open Session.
It was duly moved and seconded,

"that the Senate approve the Open Session agenda for the meeting of March 8, 2017 and that items II and III be approved or received by Consent."

The motion was carried.

CONSENT

II MINUTES

Motion:

that the minutes of the Open Session portion of the meeting held on February 8, 2017 be approved as circulated

Approved by Consent

III REPORT FROM THE COMMITTEE ON APPOINTMENTS (Appendix A)

a. Establishment of a Drafting Committee to Propose Revisions to SPS A1, “Recruitment and Selection of Faculty Members”

Senate received for information, by Consent, a report from the Committee on Appointments indicating that a drafting committee had been established to review a policy statement supplementary to the Tenure and Promotion Policy, SPS A1, which was concerned with the recruitment and selection of Faculty members.

REGULAR

IV BUSINESS ARISING

There was no business arising for Open Session.

V ENQUIRIES

There were no enquiries.

VI COMMUNICATIONS

There were no communications received since the last meeting that were not dealt with elsewhere on the agenda.
VII REPORTS FROM COUNCILS

a. Graduate Council (Appendix B)
   i. Closure of the Collaborative MA in Public Policy and Administration Program
   ii. New Program Calendar Copy for the PhD in Labour Studies
   iii. Change in Program Requirements for the PhD in French
   iv. Changes in the Calendar Copy for the Comprehensive Examination for the PhD Program in French
   v. Change in Course requirements for the PhD Program in French
   vi. Change in Program Requirements and Calendar Copy re the Language Requirement for the PhD in French
   vii. Change in Calendar Copy for the PhD Program in History

Senate received the above-listed reports for information.

A member asked whether there were any students in the Collaborative MA in Public Policy and Administration Program. Dr. Welch replied that there were not; the program had been inert for some time.

b. Undergraduate Council (Appendix C)

   i. Proposed Certificate Program in Big Data Analytics

Dr. Searls Giroux explained that Undergraduate Council had approved, for recommendation to Senate, the establishment of a Certificate in Big Data Analytics, to be offered by the Centre for Continuing Education in collaboration with the McMaster MacData Institute. The program content was based on common areas of knowledge and skills for data analysts as identified by the Institute for Operations Research and the Management Sciences, which provided the designation of Certified Analytics Professional. Successful completion of the Certificate Program would allow graduates to apply to write the examination for the professional designation.

It was duly moved and seconded,

"that the Senate approve the establishment of the Big Data Analytics Certificate Program, effective September 2017, as detailed in Appendix C."

The motion was carried.

   ii. New, Revised and Closed Certificate of Completion Programs
   iii. Awards and Bursaries
   iv. Curriculum Revisions for Inclusion in the 2017-18 Undergraduate Calendar
Senate received the above-listed reports for information.

VIII REPORT FROM THE UNIVERSITY PLANNING COMMITTEE (Appendix D)

a. Recommendation to Close the Collaborative MA in Public Policy and Administration Program

Dr. Wilkinson explained that the University Planning Committee was recommending the closure of the Master of Public Policy and Administration Program. This program was developed more than 25 years ago as a collaborative venture with the University of Guelph, but had ceased to function as originally intended due to the loss of core faculty members at both institutions. Neither department had been able to offer a common required course since 2014, and Guelph had not promoted the program nor accepted students since that time. Both institutions were now undertaking the process to close the program.

It was duly moved and seconded,

"that the Senate approve the closure of the Guelph-McMaster Collaborative MA in Public Policy and Administration, effective September 2017, as recommended by the University Planning Committee."

The motion was carried.

b. Recommendation to Relocate the Honours Medical Physics Program to the Department of Physics and Astronomy

Dr. Wilkinson explained that, at the request of the Faculty of Science, the University Planning Committee was recommending that administrative responsibility for the Honours Medical Physics Program be transferred from the School of Interdisciplinary Science to the Department of Physics and Astronomy until its scheduled closure. As noted in Appendix D, the Department of Medical Physics and Applied Radiation Sciences was closed as of December 31, 2015, and the existing undergraduate Medical Physics Program was moved into the School of Interdisciplinary Science.

The working group to consider the future of the Medical Physics Programs recommended that a new merged Medical and Biophysics program be established in the Department of Physics and Astronomy. The current Medical Physics Program will be closed, with the final admissions being September 2017. Those students taking the Medical Physics Program in its last few years will, therefore, be somewhat cut off from their peers in the Physics and Astronomy Department. The students requested that their program be transferred into Physics and Astronomy, and the Faculty is supportive of this request.

It was duly moved and seconded,

"that the Senate approve, effective immediately, moving the Honours Medical Physics Program from the School of Interdisciplinary Science to the Department
of Physics and Astronomy, as recommended by the University Planning Committee."

The motion was **carried.**

**IX OTHER BUSINESS**

There was no other business in Open Session.

In **Closed Session, Senate:**

a. approved the Closed Session portion of the minutes of the meeting of February 8, 2017;

b. approved, on recommendation of the Committee on Appointments, the following appointments, re-appointments and extensions:

- the Provost and Vice-President (Academic) for the period July 1, 2017 to June 30, 2018, or until a new Provost and Vice-President (Academic) takes over the position, whichever comes first;
- an Acting Associate Dean for the School of Nursing, for the period July 1, 2017 to June 30, 2018;
- the Chair of the Department of Electrical and Computer Engineering for a five-year term, effective July 1, 2017;
- the Director of the Chanchlani Research Centre for a five-year term, effective July 1, 2017;
- the Acting Chair of the Department of Pediatrics until June 30, 2017;
- the Scotiabank Chair in Child Health Research for a five-year term, effective July 1, 2017;
- the David Braley and Nancy Gordon Chair in Family Medicine for a five-year term, effective July 1, 2017; and
- Faculty Adjudicators of the Academic Integrity Policy;

c. received from the Committee on Appointments, for information, a report on the appointment of an Area Chair of Accounting and Financial Management Services, Faculty of Business, for a three-year term, effective July 1, 2017;

d. approved, on recommendation of the Committee on Appointments, the compositions of the following selection committees:

**Associate Dean (Academic), Faculty of Science**

Dr. Bruce Milliken (Chair)  Acting Dean, Faculty of Science
Dr. Michelle MacDonald  Associate Professor, Biochemistry and Biomedical Sciences
Dr. Robin Cameron  Professor, Biology
Dr. Paul Harrison  Professor, Chemistry and Chemical Biology
Dr. Luc Bernier  Assistant Professor, Geography and Earth Sciences
Dr. Sarah Symons  Associate Professor, Interdisciplinary Science
Dr. Martin Gibala  Professor, Kinesiology
Dr. Nicholas Kevlahan  Professor, Mathematics and Statistics
Dr. Kari Dalnoki-Veress  Professor, Physics and Astronomy
Dr. Scott Watter  Associate Professor, Psychology, Neuroscience and Behaviour
Ms Rita Campbell  Senior Academic Advisor, Faculty of Science
Ms Patricia Kousoulas  Undergraduate Student, Life Sciences;

University Secretary

Dr. Patrick Deane (Chair)  President and Vice-Chancellor
Mr. Paul Douglas  Vice-Chair, Board of Governors
Dr. Ken Cruikshank  Dean, Faculty of Humanities
Mr. Sean Van Koughnett  Associate Vice-President (Students and Learning) and Dean of Students
Dr. Alison Holloway  Professor, Faculty of Health Sciences
Dr. Matt Valieriote  Professor, Faculty of Science
Ms Pilar Michaud  Director, Human Rights and Dispute Resolution
Ms Melissa Pool  University Registrar
Mr. Rodrigo Narro Perez  Graduate Student, Faculty of Science;

e. approved amendments to the Spring 2015 Undergraduate Graduands Report; and

f. received, for information, a list of acceptances from candidates who had been offered honorary degrees.
March 8, 2017
Appendix A

REPORT TO SENATE
FROM THE
COMMITTEE ON APPOINTMENTS

Open Session

Mandate and Membership

Drafting Committee to Review Supplementary Policy Statement A1
Recruitment and Selection of Faculty Members

In response to a request from the Joint Committee, the Committee on Appointments and the McMaster University Faculty Association have approved the establishment of a drafting committee to review Supplementary Policy Statement (SPS) A1.

The mandate of the drafting committee is:

To revise SPS A1 in ways that bring the policy up to date with known best practices in the recruitment of full-time faculty, particularly with respect to meeting or exceeding targets across equity seeking groups, as defined by tri-council agencies. Specifically, the policy will look to incorporate six essential elements in recruitment strategy, as determined by federal third-party funding agencies both in Canada and the United States, that are evidence-based and render search processes more effective, efficient and equitable.

In undertaking this task, the drafting committee will review known best practices to determine where the current policy aligns and where it is out of step with contemporary strategies for successful faculty recruitment, and will consider the following questions detailed in the referral from Joint Committee:

- Should the principles of ‘merit and equity’ articulated in Section I be broadened to reflect the fact that diversity exceeds those categories captured by ‘designated groups’?

- Which entity within the University should be responsible for monitoring equity plans?

- What changes should be introduced to ensure that the composition and training of search committees reflects best practice?

- What changes should be introduced to ensure that the definition and application of position descriptions and evaluation criteria accord with best practice?

...ii
- ii -

- Do the instructions regarding advertising, recruitment and interviewing need to be more explicit?

**Membership:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Janice Hladki</td>
<td>Associate Professor, School of the Arts</td>
</tr>
<tr>
<td>Dr. Marshall Beier</td>
<td>Professor, Political Science</td>
</tr>
<tr>
<td>Dr. Lisa Kaida</td>
<td>Assistant Professor, Sociology</td>
</tr>
<tr>
<td>Dr. Rob Whyte</td>
<td>Associate Professor, Anesthesia</td>
</tr>
<tr>
<td>Dr. Rick Monture</td>
<td>Associate Professor, English and Cultural Studies</td>
</tr>
<tr>
<td>Dr. Susan Searls Giroux</td>
<td>Professor, English and Cultural Studies, AVP (Faculty)</td>
</tr>
</tbody>
</table>

*Senate: For Information*

*March 8, 2017*
At its meetings on December 6th and February 21st, Graduate Council approved the following recommendations and now reports them to Senate for information:

1. Faculty of Social Sciences

Political Science
Cancellation of Collaborative M.A. in Public Policy and Administration
Graduate Council has recommended the closure of the Guelph-McMaster Collaborative M.A. in Public Policy and Administration program to the University Planning Committee, effective September 2017.

Labour Studies
New Program Calendar Copy (Ph.D.)
The program submitted the calendar copy for their new program, starting in September 2017, outlining program information, admission requirements, and degree requirements.

2. Faculty of Humanities

French
Change in Program Requirements (Ph.D.)
The program proposed the addition of a learning portfolio milestone requirement which involves a number of activities (options include but are not limited to participation in professional workshops organized by the department, participation in activities at the Sherman Centre for Digital Scholarship, presentation of a paper at the a department colloquium or conference series) that a student could use to complete this requirement. The change is intended to help streamline a student’s progress through the degree.

Comprehensive Exam Changes (Ph.D.)
The program added additional detail to their comprehensive examination calendar copy to clarify what is required of students as the language was previously unclear. The language will now reflect that there
is a written exam followed by the oral defence. The program also changed the composition of their exams. The first area of concentration used to be literary and theoretical in nature and the second interdisciplinary. Now the first will be literary, requiring a deep knowledge of primary sources, critical analysis methods and critical questions relevant to the field and the second area of concentration will be either theoretical (students will be asked to demonstrate knowledge of theoretical frameworks relevant to their research) or interdisciplinary (students will be asked to demonstrate the affiliations between literature and other fields relevant to their research).

Change in Course Requirements (Ph.D.)
The program has added a provision to clarify what happens if a doctoral student (either from the French Masters program at McMaster or another institution) has taken French 705 or the equivalent. If permission is granted students will take either: another course offered by the department, a reading course offered by the department or a course offered by another department if it's relevant to the student's research.

Change in Program Requirements and Calendar Copy – Language Requirement (Ph.D.)
The program proposed a change to allow additional options for students to complete their language requirement. Previously the program had asked students to successfully pass a proficiency examination in a language other than French or English. Students will now be asked to complete a language proficiency examination in a language other than English or French or to substitute with the successful completion of a 6-unit undergraduate language course at an intermediate or advanced level or successful completion of EDU 750/751. This change is intended to bring them in line with the requirements of other French departments in Ontario as well as to address occasional difficulties in administering the translation component. The program also added additional detail to clarify what the translation would consist of.

History
Change in Calendar Copy (Ph.D.)
The program proposed a change in their calendar copy to remove some redundant language around their requirements for a thesis in the program as well as an outdated reference to the OGS.
REPORT TO SENATE
FROM
UNDERGRADUATE COUNCIL

I New Certificate Program - Big Data Analytics Certificate (Attached)
At its meeting of February 28, 2017, the Undergraduate Council approved, for recommendation to Senate, the establishment of the Big Data Analytics Certificate program. The program, which is a collaboration between McMaster’s MacData Institute and the Centre for Continuing Education, covers common areas of knowledge and skills for data analysts as identified by the Institute for Operations Research and the Management Sciences (INFORMS), which provides the designation of Certified Analytics Professional (CAP).

The Undergraduate Council now recommends,

that Senate approve the establishment of the Big Data Analytics Certificate program, effective September 2017, as recommended by the Centre for Continuing Education and set out in the attached.

For Information:

II New, Revised and Closed Certificate of Completion Programs

i. Establishment of the Certificate of Completion in Foundations in Canadian Health
At its meeting of February 28, 2017, the Undergraduate Council received information about the establishment of a new Certificate of Completion in Foundations in Canadian Health. The program combines three existing courses that are part of the Health Information Management and Health Informatics programs.

ii. Establishment of the Strategic Leaders Certificate of Completion Program
At the same meeting, the Undergraduate Council received information about the establishment of a new Strategic Leaders Certificate of Completion program. The new program will cover topics such as leadership development, communications, community engagement, creativity and innovation, change management, employee engagement, and creating healthy workplaces.

iii. Personal Leadership Certificate of Completion Program – Name Change

iv. Emerging Leaders Certificate of Completion Program – Name Change
Also at the same meeting, the Undergraduate Council received information about name changes for two custom certificate of completion programs. The Personal Leadership Certificate of Completion Program is now called the Personal Leaders Certificate of
Completion Program. The Emerging Leaders Certificate of Completion Program is now called the Knowledge Leaders Certificate of Completion Program.

v. **Closure of Web Analytics Certificate of Completion**
   Also at the same meeting, the Undergraduate Council received information about the closure of the *Web Analytics Certificate of Completion* program, effective immediately. The program is being replaced by the *Digital Marketing Certificate* program, which was launched in September 2016.

### III Awards and Bursaries

At its meeting of February 28, 2017, the Undergraduate Council approved: i) terms of award for seven new awards; ii) changes to four terms of award; iii) eleven new bursaries, iv) name changes to two awards, and v) changes to the value of six awards. Undergraduate Council also approved the addition of a statement to the Student Financial Aid and Scholarships section of the *2017-2018 Undergraduate Calendar* to indicate that the *Undergraduate Awards Policy* is currently under review.

**i. Terms of Award for New Awards**
- The Tax Executives Institute Scholarship
- The Nikola Tesla Educational Corporation Scholarship
- The Professor David Thompson Scholarship
- The Terence James Kennett Academic Grant
- The Mickelsen-Gould Family Academic Grant
- The Jaisal Chauhan Research Book Award
- The Dr. Henry Chaim Witelson Memorial Prize in Ophthalmology

**ii. Changes to Terms of Award**
- The Moffat Family Prize
- The Jeanne and Peter Nolan Award
- The Tony and Lucy Pickard Scholarship
- The Michael Kamin Hart Memorial Fund

**iii. New Bursaries**
- The David Cook Canadian Literature Bursary
- The Henderson Family Bursary
- The Ledwith Family Bursary
- The Robert H. and Lillian Scullion Bursary
- The McMaster Nursing Alumni Class Bursary Fund
- The Robert and Ruth Miller Entrance Bursary
- The Rolls' Family Bursary
- The Whitley Family Bursary
- The Drs. Andrew and Annette McCallum Medical Bursary
- The Shoalts Family Bursary
- The Dr. Victoria Lee Bursary for Indigenous MD Students
iv. **Award Name Changes**
At its meeting of February 28, 2017, the Undergraduate Council received, for information, two award name changes.

v. **Award Value Changes**
At the same meeting, the Awards Committee received, for information, six award value changes.

**IV Curriculum Revisions for Inclusion in the 2017-18 Undergraduate Calendar**
At the same meeting, Undergraduate Council approved curriculum revisions in the Faculty of Business, the Faculty of Engineering, the Faculty of Science, and the Faculty of Social Sciences, for inclusion in the *2017-2018 Undergraduate Calendar*.

Documents detailing items for information are available for review on the Undergraduate Council Meeting Materials Page [http://www.mcmaster.ca/univsec/agendas/agendaUGC.cfm](http://www.mcmaster.ca/univsec/agendas/agendaUGC.cfm)

**Senate: March 8, 2017**
Centre for Continuing Education
Program Approval

A. Department & Program Information (Complete all fields):

<table>
<thead>
<tr>
<th>Academic Designation:</th>
<th>Certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Name:</td>
<td>Big Data Analytics</td>
</tr>
<tr>
<td>Name of Representative:</td>
<td>Nancy McQuigge, Program Manager</td>
</tr>
<tr>
<td>Proposed Date/Term of Program Start:</td>
<td>Fall 2017 (September 2017)</td>
</tr>
<tr>
<td>Date of Submission:</td>
<td>February 14, 2017</td>
</tr>
</tbody>
</table>

B. Faculty Statement (Required):

Refer to attached letter of support from Associate Dean, Dr. Emad Mohamed, DeGroote School of Business.

C. Academic Merit (Complete all fields; write "not applicable" as needed):

i. Program Overview:

The Big Data Analytics certificate program will consist of six, three 3-unit courses (18 units). Program content is based on common areas of knowledge and skills for data analysts as identified by the Institute for Operations Research and the Management Sciences (INFORMS) which provides the designation of Certified Analytics Professional (CAP). The program is a joint effort between, McMaster’s MacData Institute and the Centre for Continuing Education. Upon successful completion of the required six courses, participants will receive the McMaster University Certificate in Big Data Analytics. Students are given a three-year period to complete all required components of the certificate program. This requirement is based on the fast-paced and evolving technologies used in the field of work.

Program learning objectives and specific course outcomes align with INFORMS seven knowledge domains: i) Business problem framing; ii) Analytics problem framing; iii) Data; iv) Methodology; v) Model Building; vi) Deployment, and vii) Model lifecycle management. Each course will bridge theory and practical experience through a combination of experiential learning (i.e. case
studies, data laboratory activities, discussions, and presentations) and traditional teaching methods. In particular, students will complete a capstone project as the final course in the program, which provides the opportunity to apply the data analytical methods, techniques and strategies to a real-world situation/case. Emerging trends, theories and practices will be incorporated to coursework to ensure that program content is current and relevant.

Development subject matter experts and program instructors will be researchers and practitioners in the field and will emphasize the knowledge and skills required for employment in the fields of Big Data, Data Analytics and Predictive Analytics.

The program will be delivered in a face-to-face format. Instructors will facilitate the in-class program at the Centre for Continuing Education’s (CCE) location in Hamilton, with the option to schedule courses at a suitable satellite location (s) as deemed appropriate. Given the complexity of the program content, the instructors, data lab-coaches and an online tutor will support learners academically.

Two pre-requisite courses will be offered for individuals without recognized academic courses in the areas of the statistics and introductory computer programming. These pre-requisite courses will be 3.0 units in value and designed to be delivered online.

Completion of the two pre-requisite courses is not required to receive the Certificate in Big Data Analytics.

| ii. Learning Objectives: | The Big Data Analytics program provides an opportunity for individuals seeking to enter into the field of big data, data analytics and predictive analytics to enhance their knowledge and skills required for employment and professional certification.

Program objectives are based primarily on INFORMS’ seven knowledge domains. Specifically, successful participants will be able to:

- Identify a business problem and determine if, and how, an analytics solution is applicable; |
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
|  | • Translate a business problem into an analytics problem;  
|  | • Propose, and refine, analytical solutions to business problems;  
|  | • Collect, analyze, interpret, and share data;  
|  | • Identify relationships in data;  
|  | • Select problem solving techniques and software tools to test analytical solutions;  
|  | • Employ common industry software tools;  
|  | • Identify, test, and evaluate model structures to apply to solve a business problem;  
|  | • Estimate the management of the model life cycle in terms of short, long term benefits to a business  

The following objectives will be threaded within each course:  
Students will be able to:  
• Demonstrate an awareness of ethical practices and professional standards applicable to the field of data analytics;  
• Exemplify the skills, attitudes and behaviours required to work and collaborate with people and develop personal management skills;  
• Employ effective communication practices  

| iii. Meeting Learning Objectives: | The Big Data Analytics program will use a series of courses to achieve the stated program objectives. Individual course objectives are mapped to the overall program objectives. The delivery format and teaching methods are structured to have a maximum effect on achieving the learning objectives.  

| iv. Program Admission Requirements: | In compliance with the Certificates and Diploma, admission policy from Undergraduate Council, students who wish to enter the Certificate in Big Data Analytics should meet the following requirements based on their education and work experience:  
1) Equivalent academic experience, such as a university degree/college diploma with relevant coursework in mathematics, computer science, science, engineering, or business with a minimum cumulative GPA of C-, or better;  
2) OR, relevant professional experience (a minimum of 3 years), or related professional certification in the field of data analytics;  
3) OR, be a mature student as defined in the Undergraduate Calendar of McMaster University; or be deemed an exceptional
case by the Centre for Continuing Education. Prospective students must contact the Program Manager for consultation and evaluation of past education and professional experience.

Program Pre-requisites:
In order to ensure that learners have the basic capabilities necessary to be successful in the program’s academic courses, it is recommended that learners have the following pre-requisite knowledge, skills, or course completion:

- Knowledge and skills in statistics, and mathematical literacy;
- Knowledge of programming language (such as C or Java) and/or scripting language (such as Matlab or Python)
- Proficiency with computer program applications, such as Excel and Access
- English Language Proficiency requirements: Completion of TOEFL exam with minimum acceptable score of IBT: 86 overall with a minimum score of 20 on each of the four components (Reading, Writing, Speaking, Listening), valid for 2 years

CCE will determine if a formal application or other tool will be put in place to assist with the assessment of students’ pre-requisite knowledge.

| v. Program Pre-requisites (if applicable): | Prior to the start of the first course, students will be required to attend class with the requisite laptop computer and software programs. Technology specifications will be provided to students, and will be posted to CCE’s program webpages. |
| vi. Program Completion Requirements: | Students must complete all 6 courses (5 core courses + capstone project course; 18 units) in order to qualify for the Certificate in Big Data Analytics. |
| viii. Program Delivery Format: | All program courses will be delivered in-class. The final capstone course will permit students to work independently on their project with an expectation of attending scheduled meetings with an instructor, or project mentor as well as small group tutorials. In-class delivery activities will include instructor lecture and/or presentations, group discussions, and practical application activities. Courses will be scheduled for 3-hour duration, with 1.5
| ix. Student Evaluations (Grading Process): | Each course will include several evaluation components. The evaluations will consist of assignments, case studies, presentations, laboratory application activities, individual or group projects, class participation, or a combination thereof. Where appropriate, evaluations will be structured to evaluate participants’ level of competency in achieving overall learning objectives. |
| x. Course Evaluation: | For each course, students will complete an evaluation to assess content, delivery, materials, method of evaluation and instruction. |
| xi. Course Instruction: | Instructors for courses will be selected from a pool of qualified external professionals. In compliance with McMaster’s Senate and Undergraduate Council Guidelines for Certificates and Diplomas, selection will be based on academic background and/or experience within the field. Instructors must have a Master’s Degree (or equivalent) and significant professional experience and teaching within the field. |
| xii. Credit Towards Degree Programme Studies: | The academic credit courses included in a certificate programme can be used for credit towards degree programme studies in accordance with the normal academic rules specified by the Faculty offering the degree. |
| xiii. Program Advanced Standing: | Upon enrolment to the program, a student may receive up to a maximum of 6 units of advanced credit. The courses used for such credit must be equivalent to the McMaster courses that they replace; specifically,  
  - Courses must have an 80% content/curricula overlap and a similar number of equivalent to classroom hours;  
  - Courses must be listed on an official transcript from an accredited academic institution with a grade; and,  
  - Courses must be taken within the last 3 years |

**D. Statement of Financial Viability:**

I have reviewed the business case and financial projections which includes enrolment projections and costs. Sources of revenue for this program include tuition and supplementary fees (MAPS). Expenses are typical and include significant up front development and marketing costs, as well as typical ongoing delivery costs (such as payment of facilitators, honoraria for other guest facilitators, materials, advertising and administration).

*Lorraine Carter, Director, Centre for Continuing Education, January 2017*
E. Statement of Administrative Responsibilities:

The human and systems infrastructure to support the following functions exists within CCE. Costs will be fully covered by tuition, with the exception of the first year of the program, when the start-up will be subsidized by CCE.

Responsibilities for the programs are as follows:

- Budget development and monetary responsibilities
- Program and Course Development
- Course Registrations/Administration
- Supervision of Instructors to ensure University policies and practices are adhered to; course are taught according to program requirements and standards
- Marketing and Promotions

The DeGroote School of Business

The DeGroote School of Business will act as academic liaison and is charged with the responsibility of on-going academic review and assessment of curriculum. In return for services rendered, the DeGroote School of Business will receive an annual stipend at the end of each fiscal year during which the program records a surplus.

F. Listing of Courses (complete the chart to provide suggested course title, required/elective, number of academic units, proposed hours, and estimated term offering):

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Required/Elective</th>
<th>Academic Units</th>
<th>Proposed Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Analytics &amp; Modelling</td>
<td>Required</td>
<td>3.0 units</td>
<td>Fall 2017</td>
</tr>
<tr>
<td>Big Data Analytics</td>
<td>Required</td>
<td>3.0 units</td>
<td>Fall 2017</td>
</tr>
<tr>
<td>Data Management</td>
<td>Required</td>
<td>3.0 units</td>
<td>Winter 2018</td>
</tr>
<tr>
<td>Predictive Modelling &amp; Data Mining</td>
<td>Required</td>
<td>3.0 units</td>
<td>Winter 2018</td>
</tr>
<tr>
<td>Big Data Programming</td>
<td>Required</td>
<td>3.0 units</td>
<td>Spring 2018</td>
</tr>
<tr>
<td>Big Data Analytics Capstone Course</td>
<td>Required</td>
<td>3.0 units</td>
<td>Spring 2018</td>
</tr>
</tbody>
</table>

Notes: Courses may be taken in any order; however, the following order is recommended:

- Data Analytics & Modelling should be the first course completed;
- Data Analytics & Modelling, and Big Data Analytics may be taken at the same time;
- Data Management and Predictive Modelling & Data Mining should be taken before Big Data Programming;
- Students may enrol in the Capstone course while completing their fifth and final course.
Course Descriptions:

Pre-requisite courses:

I) Foundations of Computer Programming (3 units)

This course introduces students to the fundamentals of structured programming and problem solving using C. The C programming language will be used to introduce problem analysis, algorithm design, and program implementation. Understanding and using C provides students with the foundation for other programming languages such as C++. Programming experience is not required; however, proficiency with computer operating systems is required.

II) Statistics (3 units)

Understanding the fundamentals of statistical methods and analysis is a necessary skill for individuals in a variety of employment sectors. This course provides students with the opportunity to understand and apply statistical concepts to practical problems. Topics include the organization and graphing of data, probability models, distributions, intervals, hypothesis testing, statistical process control, and more.

Pre-requisite(s): Algebra and computational skills

Certificate Required Courses:

I) Data Analytics & Modelling (3 units)

The course focusses on the fundamental principles of big data, data analytics and data modelling. Students will learn how big data analytics has evolved to impact various industries and business sectors. The course will present the analytics life cycle in context of planning to solve a business problem. Emphasis will be placed on framing the problem, proposing an analytics solution, communicating with stakeholders, and establishing an analytics focussed project plan.

Topics in the course are selected to meet the following INFORMS outcomes:

- Obtain or receive problem statement and usability requirements
- Identify stakeholders
- Determine whether the problem is amenable to an analytics solution
- Refine the problem statement and delineate constraints
- Define an initial set of business benefits
- Obtain stakeholder agreement on the problem statement

II) Big Data Analytics (3 units)

Building on the fundamental principles of data analytics, the course content progresses to identifying and using common analytics tools to process big data.
Students will work on the identification of model structure, the processes to run, evaluate and calibrate model and data structures using applicable industry standards and software tools.

Topics in the course are selected to meet the following INFORMS outcomes:
- Use data analytics tools and technologies such as Hadoop, SQL, etc.
- Identify available problem solving approaches (methods)
- Select software tools
- Test approaches (methods)
- Select approaches (methods)

III) Data Management (3 units)
The course explores the importance of data management in term of the acquisition, storage, sharing, validation and accessibility of data for solving a business problem.

An examination of Database Management Systems, database architectures, and the administrative processes that guide the data life cycle will be a focus of the course.

Topics in the course are selected to meet the following INFORMS outcomes:
- Identify and prioritize data needs and sources
- Acquire data
- Harmonize, rescale, clean and share data
- Identify relationships in the data
- Document and report findings (e.g. insights, results, business performance)
- Refine the business and analytics problem statements

IV) Predictive Modelling & Data Mining (3 units)
The course will introduce predictive modelling techniques as well as related statistical and visualization tools for data mining. The course will cover common machine learning techniques that are focused on predictive outcomes. Students will learn how to evaluate the performance of the prediction models and how to improve them through time.

Topics in the course are selected to meet the following INFORMS outcomes:
- Statistical model building
- Identify model structures
- Run and evaluate the models
- Calibrate models and data
- Integrate the models
- Document and communicate findings (including assumptions, limitations, and constraints)
V) Big Data Programming (3 units)
Developing solutions for extracting and analysing big data sets using Hadoop and Spark is the focus of the course. Students will build upon the knowledge and skills of earlier program courses to analyze large-scale network data and to problem solve potential solutions.

Topics in the course are selected to meet the following INFORMS outcomes:

- Identify and prioritize data needs and sources
- Acquire data
- Harmonize, rescale, clean and share data
- Identify relationships in the data
- Identify model structures
- Run and evaluate the models
- Calibrate models and data
- Integrate the models

VI) Big Data Analytics Capstone Course (3 units)
The course provides students with a real world business problem/project in order to apply analytics models, methodologies and tools learned in the program. Faculty mentors will work with students to ensure the capstone project reflects, and encompasses, best practices for big data analytics and project management.

Topics in the course are selected to meet the following INFORMS outcomes:

- Identify and prioritize data needs and sources
- Identify available problem solving approaches (methods)
- Select software tools
- Identify relationships in the data
- Develop a proposed set of drivers and relationships to outputs
- State the set of assumptions related to the problem
- Define key metrics of success
- Document and report findings (e.g. insights, results, business performance)
- Perform business validation of the model
- Deliver report with findings
DATE: February 2, 2017

TO: Certificate and Diploma Committee, Undergraduate Council and Senate

FROM: Dr. Emad Mohammad, Associate Dean (Academic), DeGroote School of Business

RE: Proposal for Certificate in Big Data Analytics, Centre for Continuing Education

I have reviewed the Big Data Analytics program submission presented by the Centre for Continuing Education (CCE). I have determined that it meets all the criteria set out by the Undergraduate Council in its guidelines for certificates and diplomas and we, therefore, endorse this submission with the support of the DeGroote School of Business.

I have had the proposal reviewed by Dr. Elkafi Hassini, Professor, DeGroote School of Business. His conclusion is that the objectives of the proposed program are viable, that the courses included in it will fulfill the stated objectives and meet Undergraduate Council’s criteria for the designation of “Certificate” and “Diploma”. I concur with this assessment.

The DeGroote School of Business is pleased to have a high quality program such as the Big Data Analytics to meet the needs of people wanting to work in this field. We support this CCE program as their academic affiliates, providing both the initial submission review and overview of ongoing curriculum issues. Additionally, we have provided CCE with the guidelines needed by their students for possible use of the advanced standing rules for students entering our degree programs using credit from completion of this program.

Sincerely,

[Signature]
Dr. Emad Mohammad, B.A., M.B.A., Ph.D.

Cc: Lorraine Carter, Director, Centre for Continuing Education
Dr. Elkafi Hassini, Professor, DeGroote School of Business
i. Closure of the Collaborative M.A in Public Policy and Administration

At its meeting on February 15, 2017, the University Planning Committee approved a proposal from Graduate Council to close the Guelph-McMaster Collaborative M.A. in Public Policy and Administration. This program was created more than 25 years ago but has ceased to function due to retirement/non-replacement of core faculty members at McMaster and University of Guelph. Since September 2014, neither of the collaborating departments has been able to offer a common required course. The Political Science department at the University of Guelph has not promoted the program and not accepted students since September 2014. Both departments are now taking steps to close the program formally. This change will be effective September 2017.

The University Planning Committee now recommends,

that Senate approve the closure of the Guelph-McMaster Collaborative M.A. in Public Policy and Administration, effective September 1, 2017.

ii. Moving the Honours Medical Physics Program from the School of Interdisciplinary Science to the Department of Physics and Astronomy

On February 15, 2017, the University Planning Committee approved a recommendation from the Faculty of Science to move the Honours Medical Physics Program from the School of Interdisciplinary Science to the Department of Physics and Astronomy. The proposal was approved by Undergraduate Council on January 31, 2017. Details of the proposal are contained in attachment I of the circulated report.

The University Planning Committee now recommends,

that Senate approve moving the Honours Medical Physics Program from the School of Interdisciplinary Science to the Department of Physics and Astronomy, as outlined in attachment I.
Michael Farquharson  
Associate Dean (Academic)  
Faculty of Science  

TO: University Planning Committee  

FROM: Michael Farquharson, Associate Dean (Academic) Faculty of Science  

DATE: February 1st 2017  

RE: Moving the Honors Medical Physics Program (and CO-OP) from the School of Interdisciplinary Science to the Department of Physics and Astronomy

I am hereby requesting that the University Planning Committee approve and refer to Senate the move of the Honours Medical Physics program (and CO-OP program) from the School of Interdisciplinary Science to the Department of Physics and Astronomy.

Background:  
The department of Medical Physics and Applied Radiation Sciences (MPARS) was closed at the end of December 2015. The School of Interdisciplinary Science (SIS) was opened January 1st 2016. The existing undergraduate Medical Physics Program(s) are now administered though SIS. As part of this process, a working group was struck by the Dean to consider the future of the Medical Physics program(s). The working group recommended that the Honours Medical Physics program merge with the existing Biophysics program which is currently administered by the Department of Physics & Astronomy, to form the Honors Medical and Biological Physics program. This merged program will be administered by the Department of Physics & Astronomy. These changes were approved by Undergraduate Council (UGC) December 16th 2016 and Senate on January 11th 2017. Also approved was the closure of the existing Medical Physics program with the final year of enrollment being Fall 2017. This was approved by UPC on December 21st 2016 and Senate January 11th 2017.

As a result of this, the students remaining in the Honours Medical Physics program are due to complete their program through SIS. However, during the Fall, 2016 term, representatives for the Medical Physics Student Society met with the Director of SIS to discuss the transition of Honours Medical Physics (including CO-OP) to the Department of Physics and Astronomy. They are aware of the proposed changes to existing programs and the expectation that starting in September 2017 students will enroll in the merged Honours Medical and Biological Physics program administered by the Department of Physics and Astronomy. At a student society meeting in November, the student representatives shared with their constituents the list of support available for students in Physics and Astronomy and subsequently passed a
motion requesting that the students currently enrolled in the Medical Physics program be provided with access to these student supports as soon as possible.

At the students’ request, and pending appropriate support and approval, we now propose to move the existing Medical Physics (and CO-OP) program to the Department of Physics and Astronomy, and most importantly, to initiate the provision of these supports to the associated students. This proposal has the support of the Chair of the Department of Physics and Astronomy, the Director of SIS, the Medical Physics student body and the Dean of Science. This proposal was approved by UGC on January 31st 2017.

Budget implications for this proposal will require revenue generated by the Medical Physics program/students be transferred from SIS to the Department of Physics and Astronomy. This has been approved by the Dean.