Notice of Meeting
Tuesday, November 12, 2019
at 3:00pm – 4:30pm
306 Lumbers

Agenda

1. Call to Order and Approval of Agenda
2. Chair’s Remarks
3. Approval of Minutes of October 8, 2019
4. Business Arising
5. Inquiries and Communications
   • Senate Synopsis of meetings held on October 24, 2019.
6. Dean’s Report to Council
7. Associate Deans’ and Head of Bethune College Remarks
8. Reports from Science Representatives on Senate Committees
9. Reports from Standing Committees of Council
   9.1 Executive Committee
      9.1.1 Ratification for nominations on the Standing Committee of Council (item for action)
      9.1.2 Call for nominations - vacancies report on the Standing Committees of FSc Council (items for action)
   9.2 Curriculum Committee (Consent agenda items)
10. Other Business
   10.1 Graduate Program Committee
   10.2 Membership call: Human Participants Review Committee (HPRC)
   10.3 Faculty Budget consultation - Rhonda Lenton, President and Vice-Chancellor
      Lisa Philipps, Provost and Vice-President Academic Carol McAulay, Vice-President Finance & Administration
   10.4 United Way Campaign for 2019
COUNCIL OF THE FACULTY OF SCIENCE

Minutes
Tuesday, October 8, 2019
at 3:00pm – 4:30pm
306 Lumbers


Guests: H. McLellan & B. Sheeller

1. Call to Order and Approval of Agenda
   The Chair of Council, M. H. Armour called the meeting to order and the Agenda was adopted as presented.

2. Chair’s Remarks
   The Chair welcomed Council members to the meeting.

3. Approval of Minutes of September 10, 2019
   A motion was moved, seconded and carried to approve the Minutes.

She extended a special welcome to the student representatives to their first Council meeting.
4. Business Arising

There was no Business Arising.

5. Inquiries and Communications

Council noted the Senate Synopsis of meetings held on September 26, 2019.

6. Dean’s Report to Council

EJ Janse van Rensburg, the Interim Dean also welcomed student representatives to their first Council meeting.

He informed the meeting that the Provost’s Office was working with Deans and departments on our five year University Academic Plan (UAP). He added that individual faculties would also work on their respective five year priorities.

The Dean reported on the well-attended two Observatory events of the largest telescope on any Canadian university in Canada. The Faculty of Science received this donation from Allan I. Carswell. The VIP event unveiling the telescope took place on September 23rd and the York University community event was held on September 26th. The Public viewings were held on Wednesday evenings in October.

The Dean invited faculty members to attend the Science convocation to be held on October 18th. He encouraged them to join the procession and sit on the stage.

Janse van Rensburg informed Council that the university was still pursuing the Markham campus initiative. He stated that the university community would be provided with further updates in the near future.

The Dean reported that the York Science Fellows program had been suspected for now due to lack of funding. He, however, added that efforts were underway to explore ways of getting funding for the program.

He congratulated the following faculty members,

- C. Caputo (Chemistry) who received a $450,000 NSERC CRD grant with Inkbox to study molecules to improve semi-permanent tattoo technology. Professor Caputo also received the 2019 Petro-Canada Young Innovator Award.
- He congratulated E. Hessels (Physics & Astronomy) and his team who published a paper in the journal Science, they made a precise measurement of the size of the proton.

He announced the following media appearances by our faculty members,

- Eric Hessels (Physics & Astronomy) and his team had their research on the proton radius puzzle picked up by The Economist, Quanta Magazine, New Scientist, Ars Technica, The Register and more.
- Graduate student Malory Owen (Biology), in Christopher Lortie’s lab, was on CBC’s Quirks and Quarks talking about adapting to challenges in the field when doing research.
- Amro Zayed (Biology) was interviewed about his new $10M genomics project to develop a bee health diagnosis tool by CTV News, CBC news online, CBC Radio Canada International and CBC syndicate
- Bridget Stutchbury (Biology) was quoted about her research on insecticides and songbirds by CBC News
online, the Independent, the Telegraph, Smithsonian.com and more. The research co-authored by Bridget Stutchbury was published in the journal Science.

Dean Janse van Rensburg updated Council on the Science Communicators in Residence. He stated that B. D. Colen, Reporter, Editor and Photographer Residence, had arrived and would be with the faculty from September 3 to December 20, 2019 and January 6 to April 24, 2020. Patchen Barss, Science Journalist & Author Residence, will arrive on January 6 to March 13, 2020. He stated that Alison Motluk had resigned after accepting a permanent position at the Ontario Science Centre.

He announced the following upcoming events,

- October 18, 2019 at 10:30am: Faculty of Science Convocation with Education, Environmental Studies and Lassonde School of Engineering.
- October 17 to 19: The Mathematics of Vision Workshop at The Fields Institute Organizing committee: Christopher Bergevin & Joel Zylberberg (Physics & Astronomy).
- November 1 to 3: The 47th Ontario-Quebec Physical-Organic Mini-symposium (POMS) will take place be at York. POMS is one of North America's premier physical organic chemistry symposia.
- November 7: Professor Pierre Potvin The Periodic Table of the Elements: 150 Years and Still Growing
- November 18: Professor Derek Jackson The Five Senses of Holiday Chemistry

7. Associate Deans’ and Head of Bethune College Remarks

Associate Dean G. Audette reminded faculty members who had just returned from their sabbatical leave to submit their sabbatical reports by November 1st, as required by the collective agreement.

Associate Dean J. Steeves updated Council on the proposed formation of the Graduate Program Committee. She informed Council that she would provide them with an update in the near future.

J. Steeves, encouraged faculty members to utilize the services of Jacquelin De Faveri, the Research Officer. She added that Jacquelin was well equipped to help them build successful grants applications. Faculty members were reminded to submit their grant proposals forty eight hours in advance of the deadlines.

Alex Mills reminded Council members on the upcoming deadline on the call for the Academic Innovation Fund.

The Faculty of Environmental Studies has been re-designed to be a new Faculty that includes Geography. With this new Faculty and the Lassonde School of Engineering, the Environmental Science degree is being re-designed to include three streams. The Environmental Science program will be a joint offering of the three Faculties.
8. Reports from Science Representatives on Senate Committees

There were no reports.

9. Reports from Standing Committees of Council

9.1 Executive Committee

9.1.1 Ratification and Call for Nominations for Senate and Standing Committee of Council

A motion was moved, seconded and carried to ratify all nominations.

9.1.2 Vacancies report on the Standing Committees of FSc Council

The Chair of Council highlighted the outstanding vacancies and encouraged faculty to self nominate including encouraging their colleagues to participate on the committees.

9.2 Curriculum Committee (Consent agenda items)

The consent agenda items were deemed approved by Council.

10. Other Business

10.1 Grad across the Faculties: Local decision-making facility alongside FGS and Senate pan-university oversight

Council requested that Associate Dean Steeves put together a document and circulate to members to be discussed at the next Council meeting in November.

10.2. Presentation on the President's Council on Internationalization - Issue Paper Review by Vinitha Gengatharan, Executive Director, York International

V. Gengatharan made a short presentation to Council and answered a few questions from the floor. She asked faculty members to complete an online survey regarding a guide to internalization and global engagement.

Meeting adjourned.

M. H. Armour, Chair of Council

S. Siyakatshana, Assistant Secretary of Council
The Senate of York University

Synopsis

The 660th Meeting of Senate held on Thursday, October 24, 2019

Remarks

The Chair of Senate, Professor Franck van Breugel of the Lassonde School of Engineering, welcomed Senators to the meeting and, referencing the inspirational addresses by the honorary degree recipients at the Fall Convocation ceremonies, encouraged Senators to give thought to identifying nominees for honorary doctorates.

Comments made by President Lenton included the following:

- optimism that the outcome of the federal election will provide stability for higher education, especially in the areas in which investments were made in the 2019 budget: internationalization, experiential education, and infrastructure
- highlights from the President’s 2018-2019 Annual Report and the plans to continue advancing the priorities articulated in the University Academic Plan (UAP) 2015-2020 and identify items that could be carried over to the next UAP
- an update on the Strategic Mandate Agreement (SMA3) negotiations with the provincial government and a commitment to discuss new information with Senate as it becomes available
- the administration’s consideration of opportunities to support sustainability efforts at York
- an announcement of the 2019 Bryden Alumni Award recipients: Eva Marszewski, Robert Krembil, Suzanne Katsi’tsiarihshion Brant, and Kimberly Badal

The monthly “Kudos” report on the achievements of members of the York community can be accessed with other documentation for the meeting.

Inquiries and Communications

Senator Tourlakis, one of Senate’s nominees to the Board of Governors, spoke to the synopsis of the October meeting of the Board. The Board approval of a new business plan for the Markham Centre Campus generated a discussion of the strategy for the new campus in the context of existing academic and campus plans for Keele and Glendon.

Reports

Under the auspices of the Academic Policy, Planning and Research Committee, Provost Philipps presented the Autumn Report on Complement and Enrolment and the Faculty Complement Renewal Strategy.
The Senate of York University

Synopsis

Approvals

On the recommendation of its Executive Committee, Senate approved:

- the election of Tom Wesson (Schulich) to the Academic Standards, Curriculum and Pedagogy Committee, and Susan Drummond (Osgoode) to the Tenure and Promotions Appeals Committee
- revisions to the Senate Rules on conduct of proceedings and decorum (Subsection 6.6) and Senate’s nominees to the Board of Governors (Subsection 8.61), effective immediately
- the establishment of an interim Faculty Council for the Faculty of Urban and Environmental Change, for the period of 1 January 2020 to 31 August 2020, contingent upon the approval of the new Faculty by Senate and the Board of Governors

Senate approved the recommendation of its Academic Standards, Curriculum and Pedagogy Committee to close the MA program in Mathematics for Teachers, housed within the Graduate Program in Mathematics and Statistics, Faculty of Science, Faculty of Graduate Studies, effective FW 2020-2021.

Committee Information Reports

The Chairs of Senate committees briefly described their roles on behalf of Senate, how they conduct business and items Senate can expect to come to the floor from them during the year, as time constraints had precluded them from doing so at the inaugural meeting of 2019-2020.

Executive (Professor Alison Macpherson, Vice-Chair)

The Executive Committee gave Notice of Statutory Motion for the disestablishment of the Faculty Council, Faculty of Environmental Studies, effective 31 December 2019, contingent upon the approval of the new Faculty of Urban and Environmental Change by Senate and the Board of Governors.

The Executive Committee’s information items included the following:

- approval of the Faculty of Graduate Studies' nominee to Executive
- Senate committees’ priorities for 2019-2020

Academic Policy, Planning and Research (Professor Carl Ehrlich, Chair)

APPRC provided Notice of Statutory Motion for the following items and gathered input from Senators:
The Senate of York University

Synopsis

- Establishment of the Faculty of Urban and Environmental Change comprising the Faculty of Environmental Studies and the Department of Geography, LA&PS to commence operations 1 January 2020, with a full launch on 1 September 2020
- Disestablishment of the Faculty of Environmental Studies, effective 31 August 2020
- Transfer of the constituent academic programs and curricula from the Faculty of Environmental Studies to the new Faculty of Urban and Environmental Change, effective 1 September 2020
- Disestablishment of the Department of Geography, housed in the Faculty of Liberal Arts & Professional Studies, effective 31 August 2020
- Transfer of the constituent academic programs and curricula from the Department of Geography, Liberal Arts & Professional Studies to the new Faculty of Urban and Environmental Change, effective 1 September 2020

APPRC reported on the following information items:

- an update on the University Academic Plan renewal process, with an Open Forum to be held on 7 November from 9:30 to 11:45 am in the New/Second Student Centre and other forms of consultations to be launched in the coming weeks (details are available on the UAP renewal website)
- its review of the Provost’s reports on FW2019-2020 enrolments and faculty complement and the Faculty Complement Renewal Strategy
- confirmation of its priorities for 2019-2020
- committee input to the Provost and AVP Finance on the budget consultation
- an update on its membership for 2019-2020

Academic Standards, Curriculum and Pedagogy (Professor Kim Michasiw, Chair)

ASCP’s information items included:

- changes to English language proficiency requirements for the Master of Financial Accountability program, Graduate Program in Financial Accountability, School of Administrative Studies, LA&PS / Graduate studies
- a minor change to degree requirements for the BA program in Mathematics, Department of Mathematics, Glendon
- its reflections on the proposal for the establishment of the Faculty of Urban and Environmental Change
- sessional dates for three academic years, from SU' 2020 to FW'2022-2023
The Senate of York University

Synopsis

Appeals (Professor Suprakash Datta, Chair)

On behalf of the Committee, Professor Datta provided an overview of the Committee’s role and function and reported on the following information items:

- its approval of revisions to the Senate Appeals Committee procedures
- its approval of a recommendation to rescind a degree conferred on a student

Awards (Professor Jonathan Obar, Chair)

On behalf of the Committee, Professor Obar gave an overview of the Committee’s role and function and advised Senators that the call for nominations had been issued for the President’s Research Awards – the President’s Emerging Research Leadership Award, the President’s Research Impact Award, and the President’s Research Excellence Award. Details are available on the Awards Committee website.

Tenure and Promotions, Tenure and Promotions Appeals (Professor Thomas Baumgartner, Co-Chair)

Professor Baumgartner provided an overview of the Committee’s role and function on behalf of the Committee and Co-Chair.

Additional Information about this Meeting

Please refer to the full Senate agenda and supplementary material posted online with the October 24, 2019 meeting for details about these items.

http://secretariat.info.yorku.ca/senate/meeting-agendas-and-synopses/

November Meeting of Senate

Senate’s next meeting will be held at 3:00 p.m. on Thursday, November 28, 2019.
2019-2020 FSc Report on vacancies for Senate and FSc Standing Committees

Ratification of Nominations

**Academic Policy and Planning Committee**
Rakan Omar: Fall term
Rushi Patel: Winter

**Petitions Committee**
Aleeza Qayyum

**Appeals Committee**
Alita Gideon
Romina Noormohammadi

**Senate Review Committee Tenure & Promotion**
Francis Calingo: Fall term

**Committee on Teaching and Learning Committee**
Hyejung Kwon
2019-2020 FSc Report on vacancies for Senate and FSc Standing Committees

**Outstanding Vacancies**

<table>
<thead>
<tr>
<th>Committee</th>
<th>Membership Details</th>
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<tbody>
<tr>
<td>Senate</td>
<td>1 vacancy Member at Large</td>
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<tr>
<td>Committee on Research and Awards</td>
<td>1 vacancy member - STS department</td>
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<tr>
<td>Curriculum Committee</td>
<td>2 vacancies Members at Large</td>
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<tr>
<td>Student Representatives - few outstanding vacancies</td>
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<table>
<thead>
<tr>
<th>Committee</th>
<th>Rules of Faculty Council - membership</th>
<th>Meeting time / Membership</th>
<th>Term</th>
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<tbody>
<tr>
<td>Senate</td>
<td>According to the York University Secretariat based on the Senate Rules and Procedures governing the size and composition of Senate, the Faculty of Science shall have twelve members, including a minimum of two Chairs. According to The Rules of Council (Science), Faculty representation shall include the Director of Natural Science, three Department Chairs, and terms shall be for 2 vacancies Members at Large</td>
<td>As per Senate website</td>
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<tr>
<td>FSc Reps on Senate Committees</td>
<td>1 member from FSc</td>
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<td>Senate Executive</td>
<td>1 member from FSc</td>
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<tr>
<td>Academic Policy, Planning and Research Committee (APPRC)</td>
<td>1 member from FSc</td>
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<tr>
<td>Sub-Committee on Honorary Degrees &amp; Ceremonies</td>
<td>Designated</td>
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<tr>
<td>Executive Committee</td>
<td>The Executive Committee shall be chaired by the Chair of Council and include the Vice-Chair of Council, the Secretary of Council, and one member elected from each of Biology, Chemistry, Mathematics &amp; Statistics, Physics &amp; Astronomy, and Science and Technology Studies/Natural Science, the Dean of the Faculty of Science (ex officio), one student member of Council, and one of the staff members elected to Council.</td>
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<tr>
<td>Chair of Council</td>
<td>M. H. Armour</td>
<td>2019 - 2020</td>
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<td>Vice-Chair of Council</td>
<td>G. Scott</td>
<td>2019 - 2020</td>
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<tr>
<td>Dean, Ex officio</td>
<td>E. J. J. van Rensburg</td>
<td>Designated</td>
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<tr>
<td>Asst. Dean - SIM &amp; SEP</td>
<td>A. Mun</td>
<td>Designated</td>
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<tr>
<td>Office of the Dean, staff representative</td>
<td>M. Hough</td>
<td>2019 - 2020</td>
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<tr>
<td>Undergraduate Student Rep</td>
<td>VACANT</td>
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<tr>
<td>Biology</td>
<td>A. Millet</td>
<td>2019 - 2020</td>
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<td>Chemistry</td>
<td>S. Dyklov</td>
<td>2019 - 2020</td>
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<td>Math &amp; Stats</td>
<td>N. M. Kraus</td>
<td>2019 - 2020</td>
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<tr>
<td>Physics &amp; Astronomy</td>
<td>R. Lewis</td>
<td>2019 - 2020</td>
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<td>STS</td>
<td>R. M. Cofield</td>
<td>2019 - 2022</td>
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<tr>
<td>APPC</td>
<td>The Academic Policy and Planning Committee shall include the Dean or designate (ex officio), the Master of Norman Bethune College and one member elected from each of Biology, Chemistry, Mathematics &amp; Statistics, Physics &amp; Astronomy, and Science and Technology Studies/Natural Science, one student member of Council, and one of the staff members elected to Council.</td>
<td>APPC will normally meet the last Thursday of each month (September to April) from 9:00 am - 10:30 am</td>
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<tr>
<td>Associate Dean, Faculty Affairs, Ex officio</td>
<td>G. Audette</td>
<td>Designated</td>
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<tr>
<td>Head of Bethune College</td>
<td>T. M. Amundt</td>
<td>Designated</td>
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<tr>
<td>Undergraduate Student Rep</td>
<td>R. U. Panter (Fall) R. Patel (Winter)</td>
<td>2019 - 2020</td>
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<tr>
<td>Elected staff representative</td>
<td>M. H. Owusu</td>
<td>2019 - 2020</td>
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<tr>
<td>Biology, also representing STS</td>
<td>J. Clark</td>
<td>2019 - 2022</td>
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<tr>
<td>Chemistry</td>
<td>R. McLaren</td>
<td>2019 - 2022</td>
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<tr>
<td>Math &amp; Stats</td>
<td>J. Heffern</td>
<td>2019 - 2022</td>
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<tr>
<td>Physics &amp; Astronomy</td>
<td>J. E. Wirstig</td>
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<tr>
<td>STS</td>
<td>VACANT (represented by J. Clark)</td>
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<tr>
<td>Curriculum Committee</td>
<td>The Curriculum Committee shall include the Dean and an Associate Dean (ex officio), the Chair or nominee from each teaching Division or Department, three members elected by Council and two student members of Council.</td>
<td>The Curriculum Committee will normally meet every last Tuesday of each month (September to April) from 1:30 pm - 3:00 pm</td>
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<tr>
<td>Member at Large</td>
<td>J. Clark</td>
<td>2019 - 2022</td>
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<tr>
<td>Dean, Ex officio</td>
<td>E. J. J. van Rensburg</td>
<td>Designated</td>
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<tr>
<td>Associate Dean - Students, Ex officio</td>
<td>A. Mills</td>
<td>Designated</td>
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<tr>
<td>Undergraduate Student Rep (two vacancies)</td>
<td>VACANCIES</td>
<td>2019 - 2020</td>
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<tr>
<td>Biology</td>
<td>P. J. Conroy</td>
<td>2019 - 2023</td>
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<td>Chemistry</td>
<td>P. Potam</td>
<td>2019 - 2022</td>
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<tr>
<td>Math &amp; Stats</td>
<td>J. Grielig (Fall) W. Chen (Winter)</td>
<td>2019 - 2022</td>
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<tr>
<td>Physics &amp; Astronomy</td>
<td>P. Hall</td>
<td>2019 - 2022</td>
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<tr>
<td>STS</td>
<td>E. H. M. M.</td>
<td>2019 - 2022</td>
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<tr>
<td>CEAS</td>
<td>The Committee on Examinations and Academic Standards shall consist of an Associate Dean (ex officio), five members elected by Council from each of Biology, Chemistry, Mathematics &amp; Statistics, Physics &amp; Astronomy and Science and Technology Studies/Natural Science, and one student member of Council.</td>
<td>CEAS will normally meet every alternate Wed / Thurs from 1:00 - 3:00 pm year round.</td>
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<tr>
<td>Member at Large</td>
<td>VACANT</td>
<td>2019 - 2022</td>
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<tr>
<td>SRC T &amp; P Committee</td>
<td>The Committee on Tenure and Promotions shall consist of one currently tenured member from each of Biology, Chemistry, Mathematics &amp; Statistics, Physics &amp; Astronomy and Science and Technology Studies/Natural Science elected by Council, and one student member of Council. No member of the Committee shall be a member of any other Tenure and Promotions Committee at any time during their tenure on this committee. In addition to the above membership of the committee, Council shall elect an alternate member from each of the Units mandated above. The alternate member shall be the person polling the next highest number of votes to those elected to the committee from each Department. The alternate for the student member shall be selected by the Science Student Caucus from one of its Members at Large. An alternate can only vote in the event that first elected members are not in attendance.</td>
<td>Each panel meets once a month on Wednesday or Thursday from 2:30 pm - 4:00 pm</td>
<td>2019</td>
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<td>CoTL</td>
<td>Currently, the Committee on Teaching and Learning shall consist of a minimum of two Faculty members from each department, the Associate Dean – Students, one Librarian, one staff member, one undergraduate student, and two graduate students, in addition to other members invited as provided for by the Rules. Graduate students and staff nominees will indicate their interest in serving on the committee in writing to the committee, who will then approve by majority vote.</td>
<td>CoTL normally meets every third Thursday of each month (September to May) from 10:00 am - 11:30 am in LUM 305B</td>
<td>2019</td>
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**Outstanding Vacancies**

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**Committee**

<table>
<thead>
<tr>
<th>Associate Dean - Students, Ex officio</th>
<th>A. Mills</th>
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<tbody>
<tr>
<td>Undergraduate Student Rep</td>
<td>VACANCY</td>
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<tr>
<td>Undergraduate Student Rep</td>
<td>VACANCY</td>
</tr>
<tr>
<td>Biology</td>
<td>C. Jang/ALT B. Schwartz</td>
</tr>
<tr>
<td>Chemistry</td>
<td>J. Jackson (2020) / R. McLaren</td>
</tr>
<tr>
<td>Math &amp; Stats</td>
<td>M. Chen/ALT Y. Fu</td>
</tr>
<tr>
<td>Physics &amp; Astronomy</td>
<td>S. Tulin/ALT S. Jerzak</td>
</tr>
<tr>
<td>STS</td>
<td>A. Kazaryan/VACANCY</td>
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**Petitions**

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<thead>
<tr>
<th>Associate Dean, Ex officio</th>
<th>A. Mills</th>
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<tbody>
<tr>
<td>Undergraduate Student Rep</td>
<td>A. Qayyum</td>
</tr>
<tr>
<td>Undergraduate Student Rep</td>
<td>VACANCY</td>
</tr>
<tr>
<td>Member at Large</td>
<td>F. Jang</td>
</tr>
<tr>
<td>Biology</td>
<td>A. Hillier</td>
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<tr>
<td>Chemistry</td>
<td>R. A. Pietra</td>
</tr>
<tr>
<td>Physics &amp; Astronomy</td>
<td>D. Harris (F), S. Rastgoo (W)</td>
</tr>
<tr>
<td>Math &amp; Stats</td>
<td>Y. Gao</td>
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<tr>
<td>STS</td>
<td>E. P. Domenikos</td>
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<tr>
<td>Member at Large</td>
<td>P. Poikun</td>
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**SRC T & P Committee**

<table>
<thead>
<tr>
<th>Associate Dean - Faculty, Ex officio</th>
<th>J. Sleeves</th>
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<tbody>
<tr>
<td>Undergraduate Student Rep</td>
<td>F. Calingo (Fall)</td>
</tr>
<tr>
<td>Biology</td>
<td>J. Clark / ALT - V. Saridakis</td>
</tr>
<tr>
<td>Chemistry</td>
<td>D. Wilson/ALT - V. Tsoukanova</td>
</tr>
<tr>
<td>Physics &amp; Astronomy</td>
<td>M. Georgiadis/ALT S. Mokary</td>
</tr>
<tr>
<td>Math &amp; Stats</td>
<td>A. Wong (Fall) S. Wang (Winter) ALT D. Liang</td>
</tr>
<tr>
<td>STS</td>
<td>D. Lungu/ALT Vacancy</td>
</tr>
</tbody>
</table>

**CoTL**

<table>
<thead>
<tr>
<th>Associate Dean - Students, Ex officio</th>
<th>A. Mills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student Representative</td>
<td>Snoziana Khishcheva</td>
</tr>
<tr>
<td>Graduate Student Representative</td>
<td>Amanda Liczner</td>
</tr>
<tr>
<td>Undergraduate Student Rep</td>
<td>H. Kwon</td>
</tr>
<tr>
<td>Disciplinary Librarian</td>
<td>Ho-Kyung Maimets</td>
</tr>
<tr>
<td>IT Representative</td>
<td>V. Gutcheva</td>
</tr>
<tr>
<td>Teaching Commons Rep</td>
<td>F. Su</td>
</tr>
<tr>
<td>Staff representative, Elected</td>
<td>D. Mossan</td>
</tr>
<tr>
<td>Biology</td>
<td>J. Kelly</td>
</tr>
<tr>
<td>Biology</td>
<td>S. Connor (to replace C. Bucking for 1yr)</td>
</tr>
<tr>
<td>Chemistry</td>
<td>H. Kooyoomjian</td>
</tr>
<tr>
<td>Chemistry</td>
<td>C. Lagoto</td>
</tr>
<tr>
<td>Physics &amp; Astronomy</td>
<td>E. Hyde (Fall, starting November 1st)</td>
</tr>
<tr>
<td>Physics &amp; Astronomy</td>
<td>N. Bolzogna (Winter)</td>
</tr>
<tr>
<td>Math &amp; Stats</td>
<td>A. Chow</td>
</tr>
<tr>
<td>Math &amp; Stats</td>
<td>W. Liu</td>
</tr>
<tr>
<td>STS</td>
<td>K. Watanoha</td>
</tr>
</tbody>
</table>

**Rules of Faculty Council - membership**

<table>
<thead>
<tr>
<th><strong>Committee</strong></th>
<th><strong>Meeting time / Membership</strong></th>
<th><strong>From</strong></th>
<th><strong>To</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC T &amp; P Committee</td>
<td>Each panel meets once a month on Wednesday or Thursday from 2:30 pm - 4:00 pm</td>
<td>2019</td>
<td>2020</td>
</tr>
<tr>
<td>CoTL</td>
<td>CoTL normally meets every third Thursday of each month (September to May) from 10:00 am - 11:30 am</td>
<td>2019</td>
<td>2020</td>
</tr>
</tbody>
</table>
# Outstanding Vacancies

### Senate
- 1 vacancy - Member at Large

### Committee on Research and Awards
- 1 vacancy member - STS department

### Curriculum Committee
- 2 vacancies - Members at Large

### Student Representatives - few outstanding vacancies

<table>
<thead>
<tr>
<th>Committee</th>
<th>Rules of Faculty Council - membership</th>
<th>Meeting time / Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Committee on Research &amp; Awards</strong></td>
<td>The Committee on Research and Awards shall consist of one member elected by Council from each of Biology, Chemistry, Mathematics and Statistics, Science and Technology Studies/Natural Science, and Physics and Astronomy, one student member of Council and an Associate Dean (ex officio) who will serve as the Chair.</td>
<td>The Research &amp; Awards Committee will meet when grants and awards need to be adjudicated.</td>
</tr>
<tr>
<td>Associate Dean - Research &amp; Graduate Education, ex officio</td>
<td>Jennifer Steeves</td>
<td>Designated</td>
</tr>
<tr>
<td>Undergraduate Student Rep</td>
<td>VACANCY</td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td>R. Kwong</td>
<td>2019 - 2020</td>
</tr>
<tr>
<td>Chemistry</td>
<td>S. Morin</td>
<td>2019 - 2022</td>
</tr>
<tr>
<td>Physics &amp; Astronomy</td>
<td>L. Donaldson</td>
<td>2017 - 2020</td>
</tr>
<tr>
<td>Math &amp; Stats</td>
<td>C. David</td>
<td>2019 - 2020</td>
</tr>
<tr>
<td>STS</td>
<td>Huaping Zhu</td>
<td>2019 - 2022</td>
</tr>
</tbody>
</table>

| **Appeals** | The Appeals Committee for the purpose of hearing student appeals shall consist of four elected faculty members from Science units, an Associate Dean (ex officio) and two student members of Council. A quorum shall consist of either (a) two faculty members and one student member or (b) three faculty members. | Meeting is held once a month and times are polled by the Committee Secretary. |
| Associate Dean - Research & Graduate Education, ex officio | Jennifer Steeves | Designated |
| Undergraduate Student Rep | A. Gideon | 2019 - 2020 |
| Undergraduate Student Rep | R. Noomohammadi | 2019 - 2020 |
| Member at Large | R. Fournier | 2019 - 2022 |
| Biology | L. Donaldson | 2017 - 2020 |
| Chemistry | M. Hempstead | 2017 - 2020 |
| Physics & Astronomy | W. van Wijngaarden | 2019 - 2020 |
| Math & Stats | A. Pietrowski | 2018 - 2022 |
| STS | M.H. Armour | 2018 - 2022 |
The Faculty of Science Curriculum Committee has reviewed proposals for changes to course information and degree requirements and recommends to the Executive Committee that the following changes be submitted to Council for approval.

Details regarding these proposals (and regarding other minor changes to Calendar/Repository course descriptions and prerequisites which were approved by the Committee but are not reported here) are included in the working papers of October 29, 2019, meeting of the Curriculum Committee, which are on file for your inspection in the Office of the Dean, with all members of the Curriculum Committee or by contacting the Secretary of the Committee at tinar@yorku.ca

1. Biology
   1.2 Change in pre-requisite: SC/BIOl 4510 3.0 “Cellular and Molecular Basis of Muscle Physiology” – Pg. 5

2. Chemistry
   2.2 Change in calendar description - updating General Education requirements: BSc. Chemistry (Bachelor, Honours, Specialized Honours), BSc. Pharmaceutical and Biological Chemistry stream (Specialized Honours), BSc. Biochemistry (Honours and specialized Honours) – Pg. 36
   2.3 Change in pre-requisite and calendar description: SC/ChE 3080 4.0 “Instrumental Methods of Analysis” – Pg. 41

3. NATS
   3.3 New course: SC/NATS 1512 3.0 “Environmental Pollution” – Pg. 42
   3.4 New course: SC/NATS 1516 3.0 “Water Pollution” Pg. 51
   3.5 Change in pre-requisite, calendar description and NCR: SC/NATS 1515 3.0 “Atmospheric Pollution” – Pg. 60

4. PHYSICS
   4.1 New course: SC/PHYS 4030 3.0 “Advanced Computational Methods for Scientists and Engineers” - Pg. 73
# Changes to Existing Course

**Faculty:**

**Department:** Biology  
**Date of Submission:** August 22, 2019

**Course Number:** 4510  
**Effective Session:** Fall 2020

**Course Title:** Cellular and Molecular Basis of Muscle Physiology

**Type of Change:**
- [x] in pre-requisite(s)/co-requisite(s)
- [ ] in course number/level
- [ ] in credit value
- [ ] in title (max. 40 characters for short title)
- [ ] in Calendar description (max. 40 words or 200 characters)
- [ ] other (please specify):

### Change From:
Prerequisite(s): AS/HH/SC/KINE 2011 3.00 or SC/Biol 3060 4.00 and SC/Biol 3070 4.00.

### To:
Prerequisite(s): AS/HH/SC/KINE 3012 3.00 or SC/Biol 3060 4.00 and SC/Biol 3070 4.00.
| Rationale: | SC/Biol 4510 is cross-listed with HH/Kine 4510. One of the course prerequisites is HH/KINE 2011 (Human Physiology I). However, students are not introduced to the fundamental properties of the cardiovascular system in this course. Cardiovascular physiology is taught in HH/KINE 3012 (Human Physiology II). The course material for BIOL 4510/KINE 4510 covers advanced topics in heart function and regulation, therefore it is essential for students to have a strong background knowledge in cardiovascular physiology. |

Note: For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department is required.

Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form in order to ensure that all the required information is included.

* Note: If there is a technology component to the course, a statement is required from ATS indicating whether resources are adequate to support the course. Courses converted from face-to-face to an on-line delivery mode should follow the instructions provided on page 4 of the New Course Proposal Form to provide revised ‘Course Design’ and ‘Method of Instruction’ information.
Non-Major Modification Program Changes

1. Programs:
   Chemistry
   Biochemistry

2. Degree Designation:
   BSc Chemistry
   Honours Major BSc Chemistry
   Specialized Honours BSc Chemistry
   Specialized Honours BSc Chemistry – Pharmaceutical & Biological Stream
   Honours Major BSc Biochemistry
   Specialized Honours BSc Biochemistry

3. Type of Modification: update of General Education requirements

4. Effective Date: FW20

5. State what the changes are
   update to Physics requirement to specifically include newer and equivalent course versions

6. Provide the rationale for the proposed changes that is rooted in the program learning outcomes.
   no effect on learning outcomes

7. Provide an updated mapping of the program requirements to the program learning outcomes to illustrate how the proposed requirements will support the achievement of program learning objectives.
   no change in mapping

8. If relevant, summarize the consultation undertaken with relevant academic units, including commentary on the impact of the proposed changes on other programs. Provide individual statements from the relevant program(s) confirming consultation and their support.
   As the Biochemistry degree programs are offered together with the Department of Biology, the Department of Biology has been consulted on these changes (see attached statement).

9. Describe any resource implications and how they are being addressed (e.g., through a reallocation of existing resources). If new/additional resources are required, provide a statement from the relevant Dean(s)/Principal confirming resources will be in place to implement the changes.
   none
10. Provide a summary of how students currently enrolled in the program will be accommodated.

Current students will be able to use the newer Physics courses to meet their General Education and Science Breadth degree requirements.

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

(see next page)
Bachelor Program
A. General education:
   □ [...]  
   □ foundational science: SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00 (not necessarily in year one).
   [...]  

Honours Programs
SPECIALIZED HONOURS PROGRAM
A. General education:
   □ [...]  
   □ foundational science: SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00 (not necessarily in year one).
   [...]  

SPECIALIZED HONOURS PROGRAM STREAM IN PHARMACEUTICAL AND BIOLOGICAL CHEMISTRY
 [...]  
A. General education:
   □ [...]  
   □ foundational science: SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00 (not necessarily in year one).
   [...]  

Change to
Bachelor Program
A. General education:
   □ [...]  
   □ foundational science: one of SC/PHYS 1410 6.00; SC/PHYS 1420 6.00; SC/PHYS 1010 6.00; SC/ISCI 1310 6.00; SC/PHYS 1411 3.00 and SC/PHYS 1412 3.00; SC/PHYS 1421 3.00 and SC/PHYS 1422 3.00; SC/PHYS 1011 3.00 and SC/PHYS 1012 3.00; SC/ISCI 1301 3.00 and SC/ISCI 1302 3.00 (not necessarily in year one).
   [...]  

Honours Programs
SPECIALIZED HONOURS PROGRAM
A. General education:
   □ [...]  
   □ foundational science: one of SC/PHYS 1410 6.00; SC/PHYS 1420 6.00; SC/PHYS 1010 6.00; SC/ISCI 1310 6.00; SC/PHYS 1411 3.00 and SC/PHYS 1412 3.00; SC/PHYS 1421 3.00 and SC/PHYS 1422 3.00; SC/PHYS 1011 3.00 and SC/PHYS 1012 3.00; SC/ISCI 1301 3.00 and SC/ISCI 1302 3.00 (not necessarily in year one).
   [...]  

SPECIALIZED HONOURS PROGRAM STREAM IN PHARMACEUTICAL AND BIOLOGICAL CHEMISTRY
 [...]  
A. General education:
   □ [...]  
   □ foundational science: one of SC/PHYS 1410 6.00; SC/PHYS 1420 6.00; SC/PHYS 1010 6.00; SC/ISCI 1310 6.00; SC/PHYS 1411 3.00 and SC/PHYS 1412 3.00; SC/PHYS 1421 3.00 and SC/PHYS 1422 3.00; SC/PHYS 1011 3.00 and SC/PHYS 1012 3.00; SC/ISCI 1301 3.00 and SC/ISCI 1302 3.00 (not necessarily in year one).
HONOURS MAJOR PROGRAM
A. General education:
   □ […]
   □ foundational science: SC/PHYS 1410 6.00
   or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00 (not necessarily in year one).
   […]

May 11, 2017
Biochemistry
Change from

Honours Programs

SPECIALIZED HONOURS PROGRAM
A. General education:
   □ […]
   □ foundational science: SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00
   […]

HONOURS MAJOR PROGRAM
A. General education:
   □ […]
   □ foundational science: SC/PHYS 1410 6.00 or SC/PHYS 1420 6.00 or SC/PHYS 1010 6.00
   […]

Change to

Honours Programs

SPECIALIZED HONOURS PROGRAM
A. General education:
   □ […]
   □ foundational science: one of SC/PHYS 1410 6.00; SC/PHYS 1420 6.00; SC/PHYS 1010 6.00; SC/ISCI 1310 6.00; SC/PHYS 1411 3.00 and SC/PHYS 1412 3.00; SC/PHYS 1421 3.00 and SC/PHYS 1422 3.00; SC/PHYS 1011 3.00 and SC/PHYS 1012 3.00; SC/ISCI 1301 3.00 and SC/ISCI 1302 3.00
   […]

HONOURS MAJOR PROGRAM
A. General education:
   □ […]
   □ foundational science: one of SC/PHYS 1410 6.00; SC/PHYS 1420 6.00; SC/PHYS 1010 6.00; SC/ISCI 1310 6.00; SC/PHYS 1411 3.00 and SC/PHYS 1412 3.00; SC/PHYS 1421 3.00 and SC/PHYS 1422 3.00; SC/PHYS 1011 3.00 and SC/PHYS 1012 3.00; SC/ISCI 1301 3.00 and SC/ISCI 1302 3.00
   […]

May 11, 2017
## Changes to Existing Course

**Faculty:** SC  
**Department:** CHEM  
**Date of Submission:**  
**Course Number:** 3080  
**Effective Session:** FW20  
**Course Title:** Instrumental Methods of Analysis  

### Type of Change:

<table>
<thead>
<tr>
<th>Change Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>in pre-requisite(s)/co-requisite(s)</td>
<td>in cross-listing</td>
</tr>
<tr>
<td>in course number/level</td>
<td>in degree credit exclusion(s)</td>
</tr>
<tr>
<td>in credit value</td>
<td>regularize course (from Special Topics)</td>
</tr>
<tr>
<td>in title (max. 40 characters for short title)</td>
<td>in course format/mode of delivery *</td>
</tr>
<tr>
<td>in Calendar description (max. 40 words or 200)</td>
<td>retire/expire course</td>
</tr>
<tr>
<td>other (please specify):</td>
<td></td>
</tr>
</tbody>
</table>

### Change From:

The theory and application of a variety of modern instrumental methods. Topics include basic electronics, signal processing, electroanalytical methods, optical spectroscopy, atomic absorption and emission spectroscopy, chromatography and mass spectrometry. This course covers applications relevant to modern chemical analysis. Three lecture hours, three laboratory hours. One term. Four credits. Prerequisites: SC/CHEM 2080 4.00; SC/PHYS 1010 6.00 or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.0. Course Credit Exclusions: SC/SENE 2081 3.00 and SC/SENE 2082 3.00

### To:

The theory and application of a variety of common modern quantitative instrumental methods. Topics include calibrations; basic electronics; signal processing; optical systems; atomic and molecular absorption and emission spectrosopies; gas, liquid, and ion chromatography; and electroanalytical techniques. This course covers applications to modern chemical analysis of samples relevant to industry, medicine, environment, and others. Three lecture hours, three laboratory hours. One term. Four credits. Prerequisites: SC/CHEM 2080 4.00; SC/PHYS 1010 6.00 or SC/PHYS 1410 6.00 or SC/PHYS 1420 6.0 or SC/PHYS 1012 3.00 or SC/PHYS 1412 3.00 or SC/PHYS 1422 3.00 or SC/ISCI 1310 6.0 or SC/ISCI 1302 3.00. Course Credit Exclusions: SC/SENE 2081 3.00 and SC/SENE 2082 3.00

### Rationale:

1. Minor changes to the description to better match what is now taught.
2. Update to the prerequisites to include new versions of the PHYS courses.

---

*Note: For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department is required.

Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form in order to ensure that all the required information is included.

* Note: If there is a technology component to the course, a statement is required from ATS indicating whether resources are adequate to support the course. Courses converted from face-to-face to an on-line delivery mode should follow the instructions provided on page 4 of the New Course Proposal Form to provide revised ‘Course Design’ and ‘Method of Instruction’ information.
Faculty:  
Indicate all relevant Faculty(ies)  

Science  

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

Division of Natural Science, Department of Science and Technology Studies  

Date of Submission:  
September 24, 2019  

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

NATS 1512  
Var:  
Academic Credit Weight:  
Indicate both the fee, and MTCU weight if different from academic weight (e.g. AC=6, FEE=8, MET=6)  

3  

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

Environmental Pollution  

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

Environmental Pollution  

With every new course proposal it is the Department’s responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments is necessary to determine degree credit exclusions and/or cross-listed courses.
Human activities, such as washing clothes, driving vehicles, cooking food and using electricity, can be important contributors to pollution on and around the planet Earth. During this course students examine important areas of pollution with a focus on Air Pollution, Water Pollution and Soil/Land Pollution. Students are introduced to many sources of pollution, transport and fate of common pollutants as well as modern-day pollution phenomena, such as urban smog. New government policies and remediation techniques that can be used to minimize the damaging effects of pollution will be discussed.

This course is a pre-requisite for NATS1515: Atmospheric Pollution and NATS1516: Water Pollution.

Prerequisites: None

Co-requisites: None

NCR: No credit will be retained for any student who has passed or is taking SC/CHEM 1000 3.00 or SC/CHEM 1001 3.00. Not open to any students enrolled in a Chemistry program.
Expanded Course Description:

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

**Topics**

The course introduces students to aspects of pollution that occurs in Earth’s biosphere: Air Pollution, Water Pollution and Soil/Land Pollution. Each of the three modules include a discussion of the main contributors to the pollution phenomena, ecosystem and human health impacts as well as remediation techniques currently being implemented. A brief introduction of what will be investigated is provided below:

1. **Air Pollution**
   -a review of common air pollutants (such as ground-level ozone, particulate matter, acids, etc.) and greenhouse gases (namely carbon dioxide and methane)
   -an investigation of their source, fate/transport in the atmosphere and their removal
   -a brief introduction into phenomena such as photochemical smog, global warming/climate change and stratospheric ozone depletion

2. **Water Pollution**
   -a review of common water pollutants, both conventional and priority (such as agricultural-based pollutants, detergents, etc.)
   -discussion of the source and impact of thermal pollution
   -review of plastic pollution and the Great Garbage Patch
   -discussion of the drinking water treatment process
   -a review of the impact of water pollution on ecosystems and humans that rely on the water for survival

3. **Soil/Land Pollution**
   -a review of a number of soil/land pollution sources will be discussed, such as:
     - Solid human waste (such as garbage waste, sewage waste, etc.)
     - Electronic waste
     - Mining pollution
     - Radioactive pollution

**Learning Outcomes:**

Upon successful completion of this course students should be able to:

- Identify the significant air quality contaminants and greenhouse gases that contribute to air pollution globally; explain their source, transport, lifetime and fate in the atmosphere
- Describe major atmospheric pollution phenomena, such as photochemical smog, and the impacts on human and ecosystem health
- Identify major water pollutants (such as plastic pollutants); explain their source, transport, and fate in the hydrosphere
• Demonstrate a deeper awareness of soil pollution through the completion of a case study analysis

• Identify major soil/land pollutants; explain their source, transport, and fate

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

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

Lectures: (3 lecture hours/week = 36 hours)
Face-to-face lectures serve to introduce students to course concepts, clarify and expand on text readings, and also offer students opportunities to work with course concepts through clicker questions, in-class discussion groups, and in-class case studies.

Office hours: (2 office hours/week = 24 hours)
Face-to-face office hours serve to provide opportunities for students to ask questions, clarify course concepts or review assignments/midterms.

Online Help Sessions: (approx. 1 hour/week, non-mandatory)
Online help sessions serve to clarify concepts covered in lecture and are student directed (i.e. students will outline which concepts they require clarification on and those will be discussed in the help session). Online help sessions are held using Adobe Connect software and the audio/video is recorded and posted on Moodle for review throughout the entire semester. Help session attendance is not mandatory.

1. 1 offering of 1 section, in the fall term (as it will serve as a prerequisite for NATS1515: Atmospheric Pollution and NATS1516: Water Pollution, which will both run in the winter term)
2. This course could be taught by faculty from the Department of Chemistry or members in the Division of Natural Science with a PhD in Chemistry.
3. Stephanie Domenikos is expected to teach this course in the coming year.
4. Students will meet with the course director for 3 hours per week of face-to-face lecture contact, for a total of 36 per course. The course director will be available for weekly office hours, online for help sessions and by phone or email.
Students will need an additional 3-5 hours per week to do the readings, and assignments, for a total of 7-9 hours per week.
**Evaluation:**

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

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

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

<table>
<thead>
<tr>
<th>Activity Grade: 5 % (e.g. iClicker questions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1: 10 % (Focus on Air Pollution, e.g. Assessment report for the Ontario Ministry of Environment and Climate Change)</td>
</tr>
<tr>
<td>Project 2: 10 % (Focus on Water Pollution, e.g. Critiquing a media article via a blog post)</td>
</tr>
<tr>
<td>Project 3: 10% (Focus on Soil/Land Pollution, e.g. Case study analysis of the Athabasca Oil Sands)</td>
</tr>
<tr>
<td>Midterm 1: 15%</td>
</tr>
<tr>
<td>Midterm 2: 15%</td>
</tr>
<tr>
<td>Final Exam (in exam period): 35%</td>
</tr>
</tbody>
</table>

**Bibliography:**

**A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES**

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

Also please list any online resources.

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

**LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.**

Required:

A selection of chapters (not necessarily in the listed order) will be drawn from the following text, which is available as an eBook through Cambridge University Press. Students will not be required to read chapters in their entirety.


Chapter 1 – Understanding pollution
Chapter 2 – Reducing risk, reducing pollution
Chapter 3 – Chemical toxicity
Chapter 5 – Air pollution
Chapter 7 – Global climate change
Chapter 8 – Stratospheric ozone depletion
Chapter 9 – Water pollution
Chapter 10 – Drinking-water pollution
Chapter 11 – Solid waste
Chapter 12 – Hazardous waste
Chapter 13 – Energy
Chapter 17 – Pollution at home
Chapter 18 – Zero waste, zero emissions
Chapter 19 – Chemistry: some basic concepts
This course would require the regular facilities provided by York for its NATS courses: classroom space for 200, with computer, monitor and projector for PowerPoint presentations, lecture recording, online video presentations, and a classroom response system, as well as access to a Moodle course.

Teaching assistants will be needed to assist with marking projects and short answer questions on the midterm and exam.
Course Rationale:
The following points should be addressed in the rationale:

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

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

The expected enrolment in the course.

This course meets the requirements of York’s general education offerings in science, by introducing non-science students to the content and practice of Science. In this course, students will learn specific information regarding the pollution that is occurring in the Earth’s biosphere through a Chemistry lens. For example, they will be able to explain how a molecule of nitrogen dioxide, once emitted from the exhaust of a vehicle, will transport into the atmosphere, react with other molecules and produce ground-level ozone, a criteria air contaminant and a greenhouse gas. Students will engage in activities, both in-class and at home through projects, that will require them to go through the scientific process of developing a hypothesis, observing and analyzing a set of data and inferring conclusions. In addition, this course provides students with the opportunity to better comprehend the impact that society is having on the Earth’s biosphere, which may promote civic engagement for the protection of Earth’s natural ecosystems.

In order to continue to offer students flexibility in meeting their general education requirements in science, the Division of Natural Science has sought to increase the number of 3 credit courses. There are currently no NATS courses that focus on environmental pollution. Furthermore, this course will serve as a prerequisite to NATS1515: Atmospheric Pollution and NATS1516: Water Pollution (a new course proposal), courses which expand on the topics introduced in NATS1512: Environmental Pollution and provide students an opportunity to select a specific area of environmental pollution they are interested in exploring further.

The expected enrolment is 200 students. The course could accommodate a larger class size, and could also be adapted for a fully online offering.
Faculty and Department Approval for Cross-listings:

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

Dept:

Signature (Authorizing cross-listing) – Department – Date

Dept:

Signature (Authorizing cross-listing) – Department – Date

Dept:

Signature (Authorizing cross-listing) – Department – Date

Accessible format can be provided upon request.
I have reviewed the course proposal and bibliography for NATS 1512 – Environmental Pollution and can state that the York University Libraries have the required resources to support this undergraduate level course.

Please be aware that the library offers the following services to help students with their research:

- A librarian can go to the classroom or tutorial and introduce students to the various resources available at the library including electronic journals, e-books, and databases.
- A librarian is also available for individual consultations with students to help them find the materials they need for their research.
- A librarian can be available as a user on the course Moodle page to answer student questions using the Forum discussion, provide links to resources in the course, and post handouts presented in face-to-face instruction.

The following book listed in the course bibliography is owned by the library:


If you would like a hard copy of this book placed on reserve at the library for students’ use, please place a reserve request by visiting reserves.library.yorku.ca. For more information about course reserves, please visit: http://www.library.yorku.ca/web/ask-services/facultyinstructor-support/places-items-on-reserve/.

If the course will provide additional readings to students on Moodle, copyright compliance instruction may be requested through York University’s Copyright Support Office: http://copyright.info.yorku.ca.

The following electronic resources licensed by the library may be of help to the students in this course:

- **Web of Science** is a multidisciplinary citation database that indexes over 12,000 of the highest impact journals worldwide in the sciences, social sciences and humanities.
- **Environment Complete** offers deep coverage in applicable areas of agriculture, ecosystem ecology, energy, renewable energy sources, natural resources, marine & freshwater science, geography, pollution & waste management, environmental technology, environmental law, public policy, social impacts, urban planning, and more.

A more complete listing of resources is available at the following Research Guide:

- Natural Science: http://researchguides.library.yorku.ca/nats

Please note that the Steacie Library has extensive collections of books and reference materials that are relevant to this course.

In summary, I state that we are well positioned to support this course. If you have any questions, please do not hesitate to contact me.
Sincerely,

Minglu Wang, Research Data Management / Science Librarian
Steacie Science & Engineering Library
416-736-2100 x40075
mingluwa@yorku.ca
**committee on academic standards, curriculum and pedagogy**

**template**

**new course proposal form**

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<tbody>
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<tr>
<td>Indicate both the fee, and MTCU weight if different from academic weight (e.g. AC=6, FEE=8, MET=6)</td>
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</table>

*With every new course proposal it is the Department’s responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments is necessary to determine degree credit exclusions and/or cross-listed courses.*
Although water is a necessity for human life, there are many populations in the world who do not have access to a clean water source. Human activities, such as washing clothing, applying fertilizer to agricultural crops, and operating powerplants can all be important sources of pollution to Earth’s aquatic systems. During this course, students explore the major contributors to water pollution globally (e.g. pesticide pollution, thermal pollution), explain their source and transport through the Earth’s systems and examine their impact on aquatic ecosystems. Students also investigate the control of water pollution as well as the treatment of waste water prior to human consumption. New government policies and technologies that can be used to minimize the damaging effects of water pollution will be discussed.

Prerequisites: NATS1512: Environmental Pollution

Co-requisites: None

NCR: No credit will be retained for any student who has passed or is taking SC/CHEM 1000 3.00 or SC/CHEM 1001 3.00. Not open to any students enrolled in a Chemistry program.
Expanded Course Description:

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

Topics
The course introduces students to aspects of pollution that occurs in the Earth’s hydrosphere. Topics include a discussion of the main contributors to the pollution phenomena, ecosystem and human health impacts as well as remediation techniques currently being implemented. A brief introduction of what will be investigated is provided below:

Water Pollution
1. **Structure, properties and uses of water**
   - A review of the chemical structure of water
   - An introduction of the physical and chemical properties of water
   - Global use of fresh and salt water

2. **Hydrological Cycle and water resources**
   - An investigation of major reservoirs and transport mechanisms in Earth’s Hydrological cycle

3. **Origin and Transport of Water Pollutants**
   - An introduction to the major sources of water pollutants, namely:
     - Pesticide pollution
     - Plastic pollution
     - Heavy metal pollution
     - Thermal pollution
     - Radioactive pollution
     - Fisheries and water pollution
     - Oil pollution
     - Organic pollution
     - Polychlorinated biphenyls and other toxic organics
     - Water-borne pathogens
   - An introduction into the impacts of pollutants on aquatic ecosystems, such as biomagnification, bioaccumulation and eutrophication
   - Transport and fate of pollutants in an aquatic ecosystem
   - Monitoring and control of pollutants

4. **Waste Water Treatment and Management**
   - An introduction into general methods of the treatment of waste water and removal of pollutants through chemical treatments, phytoremediation, ion-exchange, soil-aquifer and biological treatments

5. **Water Pollution Control**
   - An investigation of how water pollution is alleviated and controlled, through methods such as removal of nitrogen compounds, sludge processing and water harvesting
6. Global warming and climate change
   • An investigation of the connection between water pollution and global warming/climate change

Learning Outcomes:
Upon successful completion of this course students should be able to:
   • Describe the chemical structure of water and how it impacts its physical and chemical properties (such as its various states and boiling temperature)
   • Identify the reservoirs and transport of water in the hydrosphere
   • Identify the significant contributors to water pollution globally (for example: polychlorinated biphenyls (PCBs) and radioactive elements), explain their source, transport and fate in the hydrological cycle
   • Demonstrate a deeper awareness of water pollution globally through the completion of in-class case studies
   • Describe various methods employed to treat waste water prior to human consumption
   • Analyze the connection between water pollution and global climate change
**Course Design:**
Indicate how the course design supports students in achieving the learning objectives. For example, in the absence of scheduled contact hours what role does student-to-student and/or student-to-instructor communication play, and how is it encouraged?

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

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

**Instruction:**

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

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**Lectures:**
(3 lecture hours/week = 36 hours)
Face-to-face lectures serve to introduce students to course concepts, clarify and expand on text readings, and also offer students opportunities to work with course concepts through clicker questions, in-class discussion groups, and in-class case studies.

**Office hours:**
(2 office hours/week = 24 hours)
Office hours serve to provide face-to-face opportunities for students to ask questions or clarify course concepts.

**Online Help Sessions:**
(approx. 1 hour/week, non-mandatory)
Online help sessions serve to clarify concepts covered in lecture and are student directed (i.e. students will outline which concepts they require clarification on and those will be discussed in the help session). Online help sessions are held using Adobe Connect software and the audio/video is recorded and posted on Moodle for review throughout the entire semester. Help session attendance is not mandatory.

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1. 1 offering of 1 section, in the winter term (as it requires NATS1512: Environmental Pollution as a prerequisite, which will run in the fall term)
2. This course could be taught by faculty from the Department of Chemistry or members of the Division of Natural Science with a PhD in Chemistry.
3. Stephanie Domenikos is expected to teach this course in the coming year.
4. Students will meet with the course director for 3 hours per week of face-to-face lecture contact, for a total of 36 per course. The course director will be available for weekly office hours, online for help sessions and by phone or email.

Students will need an additional 3-5 hours per week to do the readings and assignments, for a total of 7-9 hours per week.
Evaluation:
A detailed percentage breakdown of the basis of evaluation in the proposed course must be provided.
If the course is to be integrated, the additional requirements for graduate students are to be listed.
If the course is amenable to technologically mediated forms of delivery please identify how the integrity of learning evaluation will be maintained. (e.g. will "on-site" examinations be required, etc.)

Activity Grade: 5 % (e.g. iClicker questions)
Project 1: 10 % (e.g. Personal water use calculator)
Project 2: 10 % (e.g. Wikipedia page development)
Case study analyses: 10 % (5 x 2 % each) (e.g. Investigating water pollution in the Baltic Sea)
Midterm 1: 15%
Midterm 2: 15%
Final Exam (in exam period): 35%

Bibliography:
A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES
The Library has requested that the reading list contain complete bibliographical information, such as full name of author, title, year of publication, etc., and that you distinguish between required and suggested readings. A statement is required from the bibliographer responsible for the discipline to indicate whether resources are adequate to support the course.
Also please list any online resources.
If the course is to be integrated (graduate/undergraduate), a list of the additional readings to be required of graduate students must be included. If no additional readings are to be required, a rationale should be supplied.
LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.

Required:
A selection of chapters (not necessarily in the listed order) will be drawn from the following text, which is available as an eBook through John Wiley & Sons Ltd. Students will not be required to read chapters in their entirety.
Chapter 1 – Fundamental Concepts
Chapter 3 – Physical factors affecting production
Chapter 4 – Cultural eutrophication case studies
Chapter 5 – Nonpoint source pollution
Chapter 6 – Sewage treatment
Chapter 7 – Pathogens in natural waters
Chapter 8 – Toxicology
Chapter 9 – Industrial pollution
Chapter 10 – Pesticides and persistent organic pollutants
Chapter 11 – Thermal pollution and power plants
Chapter 12 – Metals
Chapter 13 – Oil pollution
Chapter 14 – Radioactivity
Chapter 15 – Acid deposition and ocean acidification
Chapter 16 – Groundwater pollution
Chapter 17 – Plastics in the sea
Other Resources:

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

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

This course would require the regular facilities provided by York for its NATS courses: classroom space for 200, with computer, monitor and projector for PowerPoint presentations, lecture recording, online video presentations, and a classroom response system, as well as access to a Moodle course.

Teaching assistants will be needed to assist with marking projects and short answer questions on the midterm and exam.
Course Rationale:
The following points should be addressed in the rationale:

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

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

The expected enrolment in the course.

This course meets the requirements of York’s general education offerings in science, by introducing non-science students to the content and practice of Science. In this course, students will learn specific information regarding the pollution that is occurring in the Earth’s hydrosphere through a Chemistry lens. For example, students will be able to explain how a phosphate molecule, once emitted from the residential home after washing clothing with a detergent, will transport through various reservoirs in the hydrosphere and eventually end up in an aquatic ecosystem, promoting cultural eutrophication. Students will engage in activities, both in-class and at home through projects, that will require them to go through the scientific process of developing a hypothesis, observing and analyzing a set of data and inferring conclusions. In addition, this course provides students with the opportunity to better comprehend the impact that society is having on the Earth’s hydrosphere, which may promote civic engagement for the protection of Earth’s natural aquatic ecosystems.

In order to continue to offer students flexibility in meeting their general education requirements in science, the Division of Natural Science has sought to increase the number of 3 credit courses. There are currently no NATS courses that focus solely on water pollution although NATS1512: Environmental Pollution (a new course proposal, which would be a prerequisite to NATS1516) introduces the topic briefly. Since students are required to take the prerequisite course NATS1512, they will already be familiar with taking a science course and the scientific process. NATS1516 complements NATS1515: Atmospheric Pollution and allows students the opportunity to explore pollution in another area of the Earth’s system.

The expected enrolment is 200 students. The course could accommodate a larger class size, and could also be adapted for a fully online offering.
Faculty and Department Approval for Cross-listings:

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

Accessible format can be provided upon request.
I have reviewed the course proposal and bibliography for NATS 1516 – Water Pollution and can state that the York University Libraries have the required resources to support this undergraduate level course.

Please be aware that the library offers the following services to help students with their research:

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- A librarian can be available as a user on the course Moodle page to answer student questions using the Forum discussion, provide links to resources in the course, and post handouts presented in face-to-face instruction.

The following book listed in the course bibliography is in order by the library:


If you would like a hard copy of this book placed on reserve at the library for students’ use, please place a reserve request by visiting reserves.library.yorku.ca. For more information about course reserves, please visit: http://www.library.yorku.ca/web/ask-services/facultyinstructor-support/places-items-on-reserve/.

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A more complete listing of resources is available at the following Research Guide:

- Natural Science: http://researchguides.library.yorku.ca/nats

Please note that the Steacie Library has extensive collections of books and reference materials that are relevant to this course.

In summary, I state that we are well positioned to support this course. If you have any questions, please do not hesitate to contact me.

Sincerely,
### Changes to Existing Course

**Faculty:**

**Department:** STS/NATS  
**Date of Submission:** October 2, 2019

**Course Number:** NATS 1515  
**Effective Session:** 2020/2021

**Course Title:** Atmospheric Pollution

**Type of Change:**

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**Change From:**

**Pre-requisites:** None

**Course Description:** The course commences with the evolution of the Earth's atmosphere from its creation and moves to its development to the present throughout several stages. The cyclical climate change of Earth has been due to changes in orbital obliquity, eccentricity and precession (related to the change of Earth's rotation axis, distance from the sun and rotation rate respectively). The course proceeds to examine the history of atmospheric pollution from natural causes such as volcanoes, natural fires, desert dust, etc., to pollution caused by humans prior to the industrial revolution arising from the burning of wood and the clearing of land. Subsequently, modern day pollution due to the burning of fossil fuels and production of other anthropogenic harmful chemicals will be discussed. Different forms of pollution such as manifested as smog and acid rain are discussed and past successes in dealing with these types of pollution are recounted. The course concludes with topics on new policies and technologies that can be considered to ameliorate the deleterious effects of atmospheric pollution, such as the usage of green energy (solar, wind, fuel cell, geo-thermal, biomass, etc.).

**Course Credit Exclusions:** SC/NATS 1840 6.00, SC/NATS 1750 6.00. NCR Note: No credit will be retained if this course is taken after successful completion of SC/CHED 1000 3.00 or SC/CHED 1001 3.00. Not open to any students enrolled in the Chemistry program.

---

**To:**

**Pre-requisites:** NATS1512: Environmental Pollution

**Course Description:** Everyday human activities, such as driving vehicles, cooking food and using electricity, can all be important sources of pollution to Earth’s atmosphere. During this course, students explore the major contributors to atmospheric pollution globally, explain their source and transport through the Earth’s systems, and examine their impact on human and environmental health. Modern day local pollution phenomena, such as smog and acid rain, as well as global-scale concerns, such as the Antarctic Ozone Hole and climate change, are explored in detail. New government policies and green technologies that are used to minimize the damaging effects of atmospheric pollution are discussed.

**Course Credit Exclusions:** SC/NATS 1840 6.00, SC/NATS 1750 6.00. No credit will be retained for any student who has passed or is taking SC/CHED 1000 3.00 or SC/CHED 1001 3.00. Not open to any students enrolled in a Chemistry program.
Rationale:

- Updating pre-requisite to address the now required pre-requisite course.
- Updating NCR notes to address evolving student enrolment.
- Updating the course description to one that is more open allows flexibility in specific topics addressed so that current events which are contextually relevant may be easily included to support the course curriculum and Learning Outcomes. The new description is also in line with the associated pre-requisite course (NATS1512: Environmental Pollution) and related Water Pollution course (NATS 1516).

Note: For course proposals involving cross-listings, integrations and degree credit exclusions, approval from all of the relevant Faculties/department is required.

Note: Since one change (such as a change in year level or credit value) may result in several other changes (e.g., to the course description, evaluation, instruction, bibliography, etc.), please submit as many details as possible. If there are several changes, please feel free to use a New Course Proposal Form in order to ensure that all the required information is included.

* Note: If there is a technology component to the course, a statement is required from ATS indicating whether resources are adequate to support the course. Courses converted from face-to-face to an on-line delivery mode should follow the instructions provided on page 4 of the New Course Proposal Form to provide revised ‘Course Design’ and ‘Method of Instruction’ information.
**COMMITTEE ON ACADEMIC STANDARDS, CURRICULUM AND PEDAGOGY**
**TEMPLATE**

**NEW COURSE PROPOSAL FORM**

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<tr>
<td>Short Title:</td>
<td>Advanced Computational Methods</td>
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With every new course proposal it is the Department's responsibility to ensure that new courses do not overlap with existing courses in other units. If similarities exist, consultation with the respective departments is necessary to determine degree credit exclusions and/or cross-listed courses.
Computational approaches are developed to introduce, demonstrate, and reinforce advanced core conceptual topics in physics. Topics include advanced data analysis and computational modeling techniques (e.g., signal processing, Monte Carlo simulations, numerical integration of ordinary and partial differential equations, etc.) as well as visualization strategies. Basic tenets and elements of "Data Science" and machine learning (e.g., Deep Learning) are introduced so that students gain exposure to, and an appreciation of, how large-scale computation is rapidly evolving and affecting a broad range of scientific methodologies.

Pre-Requisites: PHYS 2030 3.0 or equivalent. MATH 2271 3.0 or equivalent. 6 credits from PHYS/BPHS 3*** (PHYS 3090 in particular is encouraged).

Not applicable.
Expanded Course Description:

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

Intended primarily for PHYS and BPHS majors, this 4th year course is designed to provide students with computational programming knowledge and experience in the context of canonical and advanced topics in physics. The course is designed to both introduce the "black box" (e.g., commercial software programs, software toolboxes, and statistical packages) as an important part of the computational toolbox needed to study and solve advanced problems in physics, but also to spurn the notion of the "black box" to ensure that students are comfortable and confident in determining the limitations as well as the advantages of any "black box" they choose to use.

For initial offerings, the course will be MATLAB-centric, consistent with the prerequisite PHYS 2030 and its prerequisite EECS 1541. MATLAB is well documented, is commonly used throughout academic and industrial environments, and proficiency in it is commonly mentioned as a minimum or “desirable” qualification in job ads. To broaden exposure to different languages, additional coding frameworks will also be introduced (e.g., Python syntax, SQL). Furthermore, students will be encouraged to utilize a different programming language (e.g., Python, C, etc.), for the project component of the course.

Learning Objectives

1. Demonstrate proficiency in programming so to strengthen key computational skills that physicists need/use
2. Reinforce core conceptual topics in physics via programmable simulations
3. Employ advanced data analysis and computational modeling techniques (e.g., signal processing, Monte Carlo simulations, numerical integration of ordinary and partial differential equations, etc.), primarily in the context of advanced physics problems
4. Deploy quantitative visualization strategies (i.e., make large amounts of data accessible to visual interpretation)
5. Implement central tenets of “Data Science” and machine learning (e.g., “Deep Learning”) in several examples
6. Develop and carry out a hypothesis-driven computational project consisting of a proposal, written report, and presentation

Potential Topics

This list highlights salient course topics. Specific examples to employ for each are instructor-dependent, to allow flexibility and innovation.

1. Advanced Ordinary Differential Equations (ODEs)
2. Partial Differential Equations (PDEs)
3. Advanced Monte Carlo methods
4. Advanced spectral analysis
5. Neural networks & machine learning
6. Introduction to another language/system
7. Advanced statistical and data analysis methods
This course is a mix of instructor-led sessions and a student-centric project. Instructor-led sessions may include, but are not limited to, lectures incorporating computational demonstrations, collaborative in-class activities, and supervised coding tutorials and practice sessions. The option exists to book some of the instructor-led sessions in the Gauss computer lab (Ross S 110) to facilitate supervised coding.

The first ½ to 2/3 of the course would be chiefly didactic (i.e., lecture-based) in nature so to make sure the topics get covered. The rest of the course would then be a mix between lecture and student-led discussion/presentation of topics related to their projects, and the projects themselves. The project assignment will have milestones (e.g., early “mini project”) with staggered (and graded) deadlines to ensure that work on it is conducted throughout a significant portion of the semester. Motivation for topics will be introduced early in the course to help students generate excitement and start planning. Further, feedback would be provided (e.g., critical input to help refine initial drafts of a project proposal/hypothesis).

Example projects could include:

**Astrophysics**: Identifying candidate clusters of galaxies in existing imaging by designing an SQL ‘matched filter’ utilizing galaxy positions, brightnesses, colours, morphologies, etc., and comparing the number of candidates as a function of cosmic time (corrected for selection effects) to model expectations.

**Biophysics**: Simulate an ensemble of 2-D random walkers with varying degrees of biases and/or constraints (e.g., spring forces) to characterize different manifestations of anomalous diffusion. Compare computational results back to empirical data (e.g., from an online data repository) to assess biophysical connections (e.g., active swimming).

**Physics**: Numerically integrate the van der Pol oscillator to demonstrate different salient principles (e.g., Hopf bifurcations, transitions into chaotic behavior). Relate such to physical mechanical analogs as well as analytic solutions.
**Instruction:**

1. Planned frequency of offering and number of sections anticipated (every year, alternate years, etc.).

2. Number of department members currently competent to teach the course.

3. Instructor(s) likely to teach the course in the coming year.

4. An indication of the number of contact hours (defined in terms of hours, weeks, etc.) involved, in order to indicate whether an effective length of term is being maintained OR in the absence of scheduled contact hours a detailed breakdown of the estimated time students are likely to spend engaged in learning activities required by the course.

**Evaluation:**

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

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

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

The course would have three major graded components: homework (i.e., problem sets throughout the course, but mostly in the first ~2/3 of the course), a written midterm (taking place ~2/3 of the way through the semester), and the project (which will have several graded components with staggered deadlines).

- Homework (e.g., weekly assignments): 30%
- Midterm Exam: 35%
- Project: 35%

1. One section expected in the Fall of each year.

2. Chris Bergevin, Elaina Hyde, Randy Lewis, Joel Zylberberg.


4. Three in-class 'lecture' hours per week. As noted under Course Design above, some of these 'lecture' hours could be scheduled in a computer lab room to facilitate supervised coding instruction.
Bibliography:

A READING LIST MUST BE INCLUDED FOR ALL NEW COURSES

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

Also please list any online resources.

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

LIBRARY SUPPORT STATEMENT MUST BE INCLUDED.

Library Support Statement

Appended to the end of this document, c/o Minglu Wang.

References

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

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

No new lab space is required for this course. Students will use their own computers or campus computing labs [e.g., Advanced Multimedia Lab (AML)/Gauss Lab in Ross, maintained by the Department of Mathematics and Statistics]. For those requiring more advanced computational power (e.g., project dealing with deep learning), additional resources and options will be explored in conjunction with FSc’s Director of Information Technology. Note that as of August 2018, York has acquired a site license for Matlab (and all toolboxes), meaning that students/faculty can readily download and use the software on their computers.

The Department of Physics and Astronomy has hired 2 new teaching-stream faculty in the last several years, and currently has 24.5 FTE members. In addition, beyond the computational expertise of existing faculty (including but not limited to C. Bergevin, R. Lewis), several new faculty hires (E. Hyde, J. Zylberberg) as of 2019 have expertise in computational methods relevant to those proposed here. This is the first new upper-level course proposed in the Department since 2008, apart from two Biophysics courses which are intended for a subset of our majors. This course will draw from students specializing in Physics, Astrophysics, and Biophysics.

Course Rationale:
The following points should be addressed in the rationale:

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

**Contribution to program learning objectives:**
This course brings additional opportunities for developing computational expertise to the full range of physics and biophysics students beyond their 3rd year. Such skillsets contribute to existing courses as well as being valuable to matriculating students (i.e., strong computational abilities are common sought-after qualifications in employers in academia, industry, and government).

**Relationship to existing offerings at York:**
There is a strong desire among our students for additional elective options in the fall term of their final year. Furthermore, students have expressed desire for additional computation-centric courses besides PHYS 2030: Computational Methods for Scientists and Engineers.

**Relationship to similar offerings at other universities:**
Comparable institutions/programs (e.g., McMaster) typically provide one to two computational courses for undergraduate physics and biophysics majors. For upper-level computational courses in the physical sciences (especially those dealing with the identified software suites), Alex Stewart (FSc Educational Development Specialist) compiled the following list of analogous courses to PHYS 4030:
University of Toronto: PHY407 Computational Physics (12L/36P) → “Students will be introduced to computational techniques used in a range of physics research areas. By considering select physics topics, students will learn computational methods for function analysis, ODEs, PDEs, eigenvalue problems, non-linear equations and Monte Carlo techniques.”

Ryerson University: PCS350 Computational Methods in Medical Physics (24L/24P) → “This course covers the basics of scientific programming and introduces the student to common computational methods with examples from medical and biological physics. It will cover topics such as random number generation, Monte Carlo methods, random walks, numerical solutions to ordinary and partial differential equations for initial-value and boundary-value problems, modeling/parameter fitting of real systems, and cellular automata.”

University of Waterloo: PHYS 236/239 Computational Physics I/II (32L/16P) → “Introduction to scientific computer programming techniques as applied to problem solving in physics, with examples from first year mechanics. Procedural programs, control structures, functions, and data storage. Numerical differentiation, integration, and solution of linear equation systems. Data analysis and visualization. Object-oriented programming applied to physical problems in astrophysics, electromagnetism, classical and quantum mechanics. Solution methods for differential equations and Monte Carlo techniques.”


**Expected enrolment:**
20-30/year

**Potential topics:**
This list expands upon the proposed course topics by providing several specific examples. However, as noted prior, which specific examples to employ would be instructor-dependent, to allow flexibility.

1. Advanced Ordinary Differential Equations (ODEs)
   - Duffing oscillator: Nonlinear dynamics, bifurcation analysis
   - Van der Pol oscillator: Limit cycles and Hopf bifurcations
   - Coupled oscillators
   - Stochastic differential equations (e.g., noise-driven harmonic oscillator)
   - Planetary motion via the 3-body problem
   - Visualization and charge movement in an electric and/or magnetic field
2. Partial Differential Equations (PDEs)
   - Basics of numerical integration
   - Connections back to Green’s functions
   - Wave equation
   - Diffusion equation
   - Diffusion-reaction equation --> pattern formation
   - Hartree–Fock method
   - Partial wave analysis

3. Advanced Monte Carlo methods
   - connections to thermodynamics and statistical mechanics (e.g., entropy, diffusion and mean-squared distance, etc..)
   - 2D/3D random walkers with/without bounds and/or bias and/or self-avoidance--> macroscopic limit (e.g., entropy, mean square deviation)
   - percolation clusters
   - Ising model
   - Markov Chain Monte Carlo

4. Advanced spectral analysis
   - Review of (1-D) Fourier analysis
   - 2-D Fourier analysis
   - Convolutions
   - Image analysis and applications (e.g., denoising, "computer vision")

5. Neural networks & machine learning
   - Review of linear systems theory (e.g., convolutional methods for filtering, eigenvalues)
   - Historical aspects (e.g., perceptrons)
   - "Learning"-based coding approaches for classification tasks
   - Notion of “layers”, and optimization & loss functions

6. Introduction to another language/system
   - Raspberry Pi and/or Arduino programming environment, including data acquisition (DAQ) examples
   - Python and/or SQL
   - Jupyter notebooks

7. Advanced statistical and data analysis methods
   - Data Science Methodology
   - Review of linear and nonlinear regression, as well as non-parametric approaches for “curve fitting”
   - Principal component analysis
   - Poisson statistics
   - Nonlinear time series analysis
   - Image analysis
   - Compressive sampling/sensing
   - Basics of Bayesian statistics (e.g., priors, evidence, posteriors)
Faculty and Department Approval for Cross-listings:

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

<table>
<thead>
<tr>
<th>Dept:</th>
<th>Signature (Authorizing cross-listing)</th>
<th>Department</th>
<th>Date</th>
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</tbody>
</table>

Accessible format can be provided upon request.
PHYS 4030: Advanced Computational Methods for Scientists and Engineers
Library holdings currently support undergraduate and graduate-level courses in physics and astronomy as well as physics and astronomy research.

Course Bibliography
The library owns the following textbooks. If you would like to place them on reserve for this course, please visit http://www.library.yorku.ca/web/ask-services/facultyinstructor-support/places-items-on-reserve/.


Electronic Resources
- Subscription-based resources such as INSPEC via Engineering Village, Web of Science, Scopus, and others.

E-Books Packages

E-Journal Packages
Journal articles, books, and other library resources that are not part of York University Libraries’ collection may be borrowed through interlibrary loan via RACER. RACER registration and requesting is available from: http://www.library.yorku.ca/web/ask-services/borrow-renew-return/racer-interlibrary-loan/.

Collection development in the library is ongoing and is based on a commitment to developing library resources that are in alignment with the University’s curricular and research activities. Additional books in this field will be added to the library collection as they are published. Please forward any requests for purchase to the Physics & Astronomy Subject Librarian Minglu Wang (mingluwa@yorku.ca) or submit your purchase request by using the form at http://www.library.yorku.ca/web/suggestion-for-purchase-form/.

Library Research Support
Librarians provide research support in the following ways:

- One-on-one research consultations. Please contact the Physics & Astronomy Subject Librarian Minglu Wang (mingluwa@yorku.ca) for an appointment.
- Custom workshops tailored to a course. Possible topics include but are not limited to:
  - Understanding the scholarly communication cycle.
  - Developing a strategy for searching databases such as INSPEC, Web of Science, Scopus, and others using keywords and controlled vocabulary.
  - Managing references using citation management software such as Mendeley or Zotero.
- A Physics and an Astronomy subject guide has been created and is maintained by subject librarians. Resources and links will be added upon request:
  - http://researchguides.library.yorku.ca/physics
  - http://researchguides.library.yorku.ca/astronomy

In summary, the library is well-situated to support this course.

Sincerely,

Minglu Wang
Research Data Management Librarian / Science Librarian
102J Steacie Science and Engineering Library
136 Campus Walk, Keele Campus, York University
North York, ON M3J 1P3
Tel: (416)736-2100 ext 40075
From: Cheryl Underhill <underhil@yorku.ca>
Sent: October 2, 2019 8:57 AM
To: Almira Mun <almira@yorku.ca>
Subject: RE: Graduate coordinating & approval mechanism for FSc

Hi Almira,

We’re hanging in there at the start of another busy governance year. Hope you and your colleagues are well too.

Glad to help you navigate this initiative. In sum, the new sub-committee needs to be added in your Faculty Council Rules – its composition and mandate - and the revised Rules approved by Council and reviewed by Senate Executive. Note Executive reviews (not approves) to ensure their compliance with recognized principles and practices. In case it’s a helpful reference, attached is the proposal from the Faculty of Health for its recent addition of a graduate structure to its Council. It would probably be a good step to share the planned changes with FGS, offering them an opportunity to comment or flag any questions about it. I would think you could do that through Wesley Moir, the FGS Academic Affairs Officer.

Does that help to get you going – happy to chat further if you would like.

Cheryl Underhill
Interim University Secretary
University Secretariat
York University
1050 Kaneff Tower
416 736-2100 Ext 30335

From: Almira Mun
Sent: Monday, September 30, 2019 12:07 PM
To: Cheryl Underhill <underhil@yorku.ca>
Subject: FW: Graduate coordinating & approval mechanism for FSc

Hi Cheryl,
I hope this message finds you well. We have finally come up with a mechanism for sharing information regarding our graduate programs at Science. As you can see from below, the GPDs and Associate Dean have struck a subcommittee.

“It was decided at today’s GPD’s meeting, that a sub-committee consisting of the AD – Research & Graduate Education and all FSc GPD’s will be the graduate coordinating & approval mechanism for FSc.”

We currently don’t have any language in our Faculty Council document for this. I assume that we can introduce the committee to our Science Council and vote on it to ‘come into existence’. Would that be the right way to go? Do we then also need to submit anything to the Senate to make it official? Or to do anything with the Faculty of Graduate Studies?

Can you give me some direction as to what to do with this committee, if anything at all?

Thanks, Almira
1. ITEM FOR ACTION

Proposal to create a Graduate Committee as a Standing Committee of Faculty of Health Council

**Rationale:** At present, governance of graduate programs is the prerogative of the Faculty of Graduate Studies Council, reporting to Senate. The adoption of the Shared Accountability and Resource Planning (SHARP) budget model means that Faculties have more overt responsibility for graduate education. They are carefully considering the alignment and integration of graduate and undergraduate programming, the best supports for students registered in program anchored within each Faculty, and what forms the future of graduate governance might take.

The establishment of a Graduate Committee of Faculty of Health Council is a proactive approach to sustaining the excellent graduate programming that is currently being delivered, and to ensuring a rewarding student experience for students at the graduate level. It is expected that the mandate of the committee would be reviewed, and changes proposed to Faculty of Health Council, as the FGS mandate evolves.

It is essential that graduate programming be meaningfully integrated within overall Faculty planning around curriculum, enrolment targets, and research intensification.

### 23. STANDING COMMITTEES

Standing committee duties shall be defined by Council from time to time. Standing committees will report at least annually to Council.

- a. Executive and Planning Committee
- b. Curriculum Committee
- c. Committee on Examinations and Academic Standards
- d. Committee on Research and Awards
- e. Petitions Committee
- f. Committee on Tenure and Promotions

#### 31b. Curriculum Committee

The Curriculum Committee shall

#### 31b. Undergraduate Curriculum Committee

The **Undergraduate** Curriculum shall
The Curriculum Committee will review and report as appropriate to Council on the academic implications of the curriculum policy of all units responsible for instruction, that is, schools, departments, programs, and of the Faculty as a whole. The Committee will encourage the development of interdisciplinary and inter-Faculty programs. It will collaborate with the Committee on Examinations and Academic Standards on issues of joint concern.

<table>
<thead>
<tr>
<th>Review and recommend to Council approval or other appropriate action in relation to the Faculty’s regulations and practices as required relating to degree requirements for all years of study and all programs and Faculty-level legislation including:</th>
</tr>
</thead>
</table>
| 1. New or changes to certificates  
2. New or changes to programs of study, and  
3. Other matters relating to academic policy and planning |

The Committee shall receive and review quality assurance, cyclical program, and other reviews; review and act on behalf of Council with regard to proposals for new or changes in requirements of existing programs and certificates, courses and programs at all levels including content and patterns of study. The Curriculum Committee will receive undergraduate curricular submissions from the schools and department, and will report to Council on these matters according to Senate reporting requirements. It will forward proposals to Senate as appropriate, and report such actions to Council for information.

The Committee will review and report as appropriate to Council on the academic implications of the undergraduate curriculum policy of all units responsible for instruction, that is, schools, departments, undergraduate programs, and of the Faculty as a whole. Reports provided to this committee may be subject to redaction for the purpose of removing personal, confidential and/or identifying information. It will collaborate with the Committee on Examinations and Academic Standards on issues of joint concern.
An Associate Dean (ex officio) shall be a member.

31d. Committee on Research and Awards

The Committee on Research and Awards shall make recommendations and provide advice to Council on policy matters related to research and creative scholarship. It will promote and celebrate research and creative scholarship at the Faculty level. It will adjudicate Faculty level competitions and programs and adjudicate student research awards as applicable.

An Associate Dean (ex officio) shall serve as chair.

An Associate Dean (ex officio) shall be a member.

31d. Committee on Research and Awards

The Committee on Research and Awards shall make recommendations and provide advice to Council on policy matters related to research and creative scholarship. It will promote and celebrate research and creative scholarship at the Faculty level. It will adjudicate Faculty level competitions and programs and adjudicate undergraduate student research awards as applicable.

An Associate Dean (ex officio) shall serve as chair.

31g. Graduate Committee

The Graduate Committee shall review and recommend to Council approval or other appropriate action relating to degree requirements for all years of study and all graduate programs including proposals to:

- Establish or close degree programs and diplomas
- Revise requirements for a degree program or diploma
- Establish, revise or close courses
- Revise program, degree or Faculty regulations
- Address other matters relating to graduate policy and planning

The Committee shall receive and review quality assurance, cyclical program, and other reviews.

The Graduate Committee will receive graduate curricular submissions from the programs and will report to Council on these matters according to Senate reporting requirements.
Proposal to amend the Rules and Procedures of Faculty Council.

Rationale: to provide clarity regarding student membership for Faculty Council.

2. MEMBERSHIP

The following may attend and participate in all meetings of Council and shall have the right to vote:

a. The Dean, full time members of the faculty, contract faculty for the term during which they hold a teaching appointment and emeritus faculty (retirees) for the term during which they hold a teaching, administrative or supervisory position.

b. Ten student members registered in the Faculty of Health. This number will include the Faculty of Health student senators (ex officio) and at least one student from each of the academic units elected annually by the students.
in the Faculty of Health.

c. Two members of the non-academic staff. These two members may not be from the same unit and will be elected by the non-academic staff to serve a one year term.
d. The University Librarian (ex officio) or designate and the Health Librarian (ex officio).
e. The Chair of Senate (ex officio) and the Secretary of Senate (ex officio).
f. The President of the University (ex officio) and the Vice-President Academic (ex officio).

The Council may issue invitations for either the full academic year or for a particular meeting to individuals who are not members of Council. Such individuals shall be entitled to participate in the meeting(s) of Council to which they have been invited but shall not have the right to vote.

24. STANDING COMMITTEE MEMBERSHIP AND TERM OF OFFICE

Unless otherwise specified, standing committee membership shall include, one member elected from each of the Faculty’s schools/department, and two students. Terms of office shall normally be two years in duration.

Members may be re-elected in subsequent years.

Student members on standing committees may be appointed from

by the students in the Faculty of Health. (Refer to Section 33 regarding the process for selecting students for Council membership)
c. Four graduate student members registered in the Faculty of Health. (Refer to Section 33 regarding the process for selecting students for Council membership)
d. Two members of the non-academic staff. These two members may not be from the same unit and will be elected by the non-academic staff to serve a one year term.
e. The Dean of Libraries (ex officio) or designate and the Health Librarian (ex officio).
f. The Chair of Senate (ex officio) and the Secretary of Senate (ex officio).
g. The President of the University (ex officio) and the Vice-President Academic (ex officio).
committees shall be appointed from among the eight elected student members to Council. Their number shall be augmented by an additional eight students, selected on the basis of expressions of interest to serve on standing committees, in response to Faculty of Health governance volunteer opportunities for students.

Student members on standing committees shall serve one year terms and may be re-elected or reappointed in subsequent years.

Among the student Council members. Students not serving on Council may also be appointed to standing committees based on expressions of interest.

Student members on standing committees shall serve one year terms and may be re-elected or reappointed in subsequent years.

**33. SELECTION OF STUDENTS FOR COUNCIL MEMBERSHIP**

**Undergraduate Student Council Membership – 10 members**

a. 2 student senators – elected by a Faculty of Health student body vote annually in March to start the following September.

b. 5 members, one each selected by members of the following Faculty of Health affiliated student clubs – KAHSSO, UPSA, SAHMPI, GHSA, NSAY

c. Faculty of Health Student Caucus Chair
d. Faculty of Health Student Caucus Vice Chair
e. Faculty of Health Student Caucus Director of Finance

**Graduate Student Council Membership – 4 members**

Four members, one each selected by the graduate programs in the following areas: Kinesiology and Health Sciences; Psychology; Health Studies; and Nursing.
Graduate Education Committee

Mandate
To provide broad review and commendation to Council via the Academic Policy and Planning Committee of all proposals received from Graduate Programs with respect to:

- New Course Proposals
- Course Change Proposals
- Minor Changes to Program/Graduate Diploma Academic Requirements
- Major Modifications to Program/Graduate Diploma Academic Requirements
- New Graduate Fields
- New Graduate Diplomas
- New Graduate Degree Programs

Membership
The Graduate Education Committee shall consist of the Associate Dean – Research & Graduate Education (ex officio), Graduate Program Director (or designate who must be a member of the graduate program) of each Graduate Program in the Faculty of Science and two graduate student members from any Graduate Program within the Faculty of Science.

The Chair of the Committee is selected by the voting members of the Committee for a one-year term.
Dear Colleagues,

The Human Participants Review Committee – Ethics Review Board (HPRC-REB) is seeking multiple volunteers to sit for on the sub-committees for 3 year terms. In general, committee members will be expected to review protocols and submit comments via the online system every 3 weeks and attend an annual in-person meeting. Training will be provided to new members. This is a critically important committee and in order to facilitate timely and informed ethics reviews of the human research protocols here at York, we hope that we can representation from all faculties that conduct human research. If you have any questions or are interested in sitting on the committee, please feel free to contact myself (jennkuk@yorku.ca) or Alison Collins (acollins@yorku.ca).

Thank you for your consideration,

Jen Kuk
Chair of the Human Participants Review Committee

--

Jennifer L. Kuk
Associate Professor
York University
School of Kinesiology and Health Science
Sherman Health Science Research Centre, Room 2002
Toronto, ON, Canada, M3J 1P3

Phone: (416) 736-2100 x20080
Fax: (416) 736-5774
Email: jennkuk@yorku.ca
Agenda

- 2018-19 Budget Consultations
- Investments in Academic Mission
- Provincial Announcements
- Enrolment
- Multi-year Budget
- Other Capital Priorities
- Lands for Learning
- Service Transformation
- SHARP Review
Review of 2018-19 Budget Consultations
Budget Consultations

• University conducted comprehensive budget consultations for the first time in the fall of 2018

• Over 19 consultation sessions with 883 participants – Faculty Councils, Student groups, Union leadership, Town Halls, Board of Governors

• Consultations provided valuable input into the development of the 2019-20 budget and related strategic investments

• Budget consultations will continue to be conducted and will be integral to the budget development process
Budget Consultations – what we heard

interdisciplinary

deferred maintenance

graduate
## Deferred Maintenance

<table>
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<th></th>
<th>Glendon</th>
<th>Keele</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td><strong>Academic</strong></td>
<td>$12.1</td>
<td>$302.1</td>
<td>$314.2</td>
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<tr>
<td><strong>Infrastructure</strong></td>
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<td>24.6</td>
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<td><strong>Subtotal</strong></td>
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<td>325.7</td>
<td>338.8</td>
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<tr>
<td><strong>Ancillary</strong></td>
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<td>19.1</td>
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<td><strong>Residence</strong></td>
<td>15.9</td>
<td>142.9</td>
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<td><strong>Subtotal</strong></td>
<td>25.9</td>
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<td><strong>Total</strong></td>
<td>$39.0</td>
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Deferred Maintenance (millions)
As presented to Land and Property Committee
February 2019
Revenue Allocations

Revenue Allocations 2019-20

- Faculties & Schools: 66%
- Shared Services: 25%
- General Institutional (GI): 7%
- University Fund: 2%
Strategic Investments – Deferred Maintenance

(in millions)

<table>
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<tr>
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<th>2019-20</th>
<th>2020-2021</th>
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<tr>
<td><strong>Existing Deferred Maintenance</strong></td>
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<tr>
<td>Charged to Faculties</td>
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<tr>
<td>Facilities Renewal Program (2019 Provincial Budget)</td>
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<tr>
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<td>From University Fund</td>
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<td>Repurpose capital reserve</td>
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<tr>
<td><strong>Total</strong></td>
<td>$17.4</td>
<td>$18.2</td>
<td>$17.6</td>
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</table>

(numbers may not add due to rounding)

University is making a significant investment in deferred maintenance, with incremental funding of $6.7M this year and $6M for the next two years.

In addition to above, York’s budget for facility maintenance is $52M/year.

Within the above envelope in 2019-20 (as part of a multi-year plan):

- $2M will be dedicated to Keele/Glendon washroom renewal
- $4M will be dedicated to campus-wide classroom upgrades
Strategic Investments – Complement Renewal

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<th></th>
<th>Appointments to date</th>
<th>In Multi-Year Budgets</th>
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<td>2019/20 2020/21 2021/22</td>
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<td>Glendon</td>
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</tbody>
</table>
## Strategic Investments – From University Fund

### UNIVERSITY FUND ALLOCATIONS

<table>
<thead>
<tr>
<th></th>
<th>Commitments 2019-20</th>
<th>Commitments 2020-21</th>
<th>Commitments 2021-22</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic and Institutional Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty of Education</td>
<td>600,000</td>
<td></td>
<td></td>
<td>SHARP transition funding</td>
</tr>
<tr>
<td>Faculty of Science – Strategic Research Initiatives</td>
<td>200,000</td>
<td>200,000</td>
<td></td>
<td>Commitment made to Faculty of Science for strategic research initiatives.</td>
</tr>
<tr>
<td>Glendon</td>
<td>125,000</td>
<td></td>
<td></td>
<td>Glendon Branding Plan</td>
</tr>
<tr>
<td>YU Start</td>
<td>250,000</td>
<td>250,000</td>
<td></td>
<td>YU Start Support</td>
</tr>
<tr>
<td>VPS Wayfinding</td>
<td>250,000</td>
<td></td>
<td></td>
<td>Wayfinding</td>
</tr>
<tr>
<td>International recruitment</td>
<td>570,000</td>
<td>570,000</td>
<td>570,000</td>
<td>To support international recruitment</td>
</tr>
<tr>
<td>Digital Program Marketing</td>
<td>280,000</td>
<td>280,000</td>
<td>280,000</td>
<td>Funding for marketing of programs</td>
</tr>
<tr>
<td>York International</td>
<td></td>
<td>349,000</td>
<td>335,000</td>
<td>Additional staffing to support international students</td>
</tr>
<tr>
<td>Provost office</td>
<td>500,000</td>
<td>500,000</td>
<td>500,000</td>
<td>Markham support</td>
</tr>
<tr>
<td>Research</td>
<td>150,000</td>
<td>150,000</td>
<td>150,000</td>
<td>Yspace support</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,925,000</strong></td>
<td><strong>2,549,000</strong></td>
<td><strong>1,835,000</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Faculty Complement Renewal</strong></td>
<td>3,100,000</td>
<td>3,100,000</td>
<td>3,100,000</td>
<td>Commitment to support faculty complement renewal</td>
</tr>
<tr>
<td><strong>Student Aid/Scholarships</strong></td>
<td>2,024,000</td>
<td>3,521,000</td>
<td>1,121,000</td>
<td>Student Support, Work Study, etc</td>
</tr>
<tr>
<td><strong>VPRI and Research Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic CV Management</td>
<td>351,000</td>
<td>231,000</td>
<td>210,000</td>
<td>To implement an electronic CV management system</td>
</tr>
<tr>
<td>Investment in Strategic Research Plan</td>
<td>1,000,000</td>
<td>1,000,000</td>
<td></td>
<td>Funding towards a strategic fund</td>
</tr>
<tr>
<td>NCE Institutional Support</td>
<td>217,803</td>
<td>217,803</td>
<td>217,803</td>
<td>Central support for National Centre of Excellence</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>568,803</strong></td>
<td><strong>1,448,803</strong></td>
<td><strong>1,427,803</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Classroom Renewal</strong></td>
<td>2,000,000</td>
<td>2,000,000</td>
<td>2,000,000</td>
<td>Classroom technology renewal</td>
</tr>
<tr>
<td><strong>Deferred Maintenance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incremental Funding for Deferred Maintenance</td>
<td>3,500,000</td>
<td>3,500,000</td>
<td>3,500,000</td>
<td>To address deferred maintenance</td>
</tr>
<tr>
<td>Scott Library</td>
<td>650,000</td>
<td></td>
<td></td>
<td>Scott Library enhancements</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,150,000</strong></td>
<td><strong>3,500,000</strong></td>
<td><strong>3,500,000</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 14,767,803</strong></td>
<td><strong>$ 16,118,803</strong></td>
<td><strong>$ 12,983,803</strong></td>
<td></td>
</tr>
</tbody>
</table>
Strategic Investments – Major Capital Investments

- $43.5M for Sherman Health Science Research Centre
- $41M for a new Student Information System
- $11.2M for Lions Stadium conversion, funded through Athletics and Recreation
- $9.2M for Lassonde Capacity Expansion (Engineering Pavilion, William Small Centre and 4751 Keele Street)
Faculty Strategic Investments – Facilities Renewal

<table>
<thead>
<tr>
<th></th>
<th>2018-19</th>
<th>2019-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMPD</td>
<td>0.7</td>
<td>1.0</td>
</tr>
<tr>
<td>LAPS</td>
<td>7.7</td>
<td>6.3</td>
</tr>
<tr>
<td>Lassonde</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22.6</strong></td>
<td><strong>7.3</strong></td>
</tr>
</tbody>
</table>

Faculties with positive carryforwards or with in-year results better than budget transferred a portion of their surplus to capital reserves, which will be used to fund priority Faculty specific projects (wet laboratory spaces, offices facilities renewal, etc.). In addition, Faculties are budgeting for continued facilities renewal, for 2019-20 of $7.3M.
Provincial Announcements

Tuition

### Domestic Students - Tuition Fee Framework

- 10% Tuition roll-back for 2019-20 and freeze through 2020-2021
- Assume the next tuition framework will allow a 3% increase (the previous norm) to domestic tuition rates in 2021-2022

### International Students - not subject to Tuition Fee Framework

- Tuition fees increasing from 0-10% depending on the program, for 2019-2020, 2020-2021 and 2021-2022, as approved by the Board

---

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Fees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Tuition Fees</td>
<td>$546.6</td>
<td>$540.1</td>
<td>$585.1</td>
<td>$643.8</td>
<td>$719.8</td>
</tr>
<tr>
<td>Continuing/Professional Education Tuition</td>
<td>54.8</td>
<td>61.5</td>
<td>65.4</td>
<td>69.7</td>
<td>73.2</td>
</tr>
<tr>
<td>Centrally Collected Ancillary Fees</td>
<td>30.4</td>
<td>31.7</td>
<td>31.8</td>
<td>32.1</td>
<td>32.4</td>
</tr>
<tr>
<td>Student Referenda</td>
<td>8.5</td>
<td>8.9</td>
<td>8.5</td>
<td>8.6</td>
<td>8.7</td>
</tr>
<tr>
<td>Application Fees</td>
<td>3.8</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>Total Student Fees</strong></td>
<td><strong>$644.2</strong></td>
<td><strong>$647.0</strong></td>
<td><strong>$695.6</strong></td>
<td><strong>$759.1</strong></td>
<td><strong>$838.8</strong></td>
</tr>
</tbody>
</table>
Provincial Government Announcements:
Strategic Mandate Agreements – SMA2 and SMA3

• **SMA2** – three years, 2017-2018 to 2019-2020
  - University funded at 2016-17 enrolment levels
  - Enrolment growth funded above 2016-17 for teacher education and graduate up to
    Ministry targets

• **SMA3** – five years, 2020-2021 to 2024-2025
  - University will be funded at 2019-20 enrolment levels.
    - Linked to 10 performance metrics
      - Performance based funding will increase each year, from 25% in 2020-2021 ($76M)
        to 60% in 2024-2025 ($169M)
  - Budget plan assumes same level of government grants in 2020-2021 and 2021-2022 as in 2019-2020, i.e., no funding loss due to missed performance metrics.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>$307.5</td>
<td>$306.9</td>
<td>$306.2</td>
<td>$305.2</td>
</tr>
<tr>
<td>Actuals</td>
<td>$308.9</td>
<td>$306.9</td>
<td>$306.2</td>
<td>$305.2</td>
</tr>
</tbody>
</table>
Enrolment
York University
SMA 2 Corridor based on WGUs
Undergraduate FFTE Enrolment Contracts to 2021-22

Figure 1: Undergraduate FFTE Actuals and Targets to Fiscal Year 2021-22


Eligible Ineligible - Visa
Graduate FFTE Enrolment Contracts to 2021-22

Figure 2: Masters Full Year FTE Actuals and Targets to Fiscal Year 2021-22

Figure 3: Doctoral Full Year FTE Actuals and Targets to Fiscal Year 2021-22
Enrolment Contracts
Labour Disruption and Effect on Enrolments

- Historically, labour disruptions have an impact on incoming enrolments. This past year, applications to York were down, despite the fact that system wide applications were up.

<table>
<thead>
<tr>
<th>Applications</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>York</td>
<td>-4.20%</td>
</tr>
<tr>
<td>Total System</td>
<td>+4.90%</td>
</tr>
</tbody>
</table>

- Given these circumstances, Faculties are budgeting a contingency against enrolment targets.

<table>
<thead>
<tr>
<th>Faculty</th>
<th>2019-20 Budget</th>
<th>2020-21 Budget $ millions</th>
<th>2021-22 Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts, Media, &amp; Performance Design</td>
<td>$1.7</td>
<td>$3.6</td>
<td>$4.4</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Environmental Studies</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Glendon</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Health</td>
<td>-</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Liberal Arts &amp; Professional Studies</td>
<td>13.7</td>
<td>24.8</td>
<td>37.8</td>
</tr>
<tr>
<td>Lassonde</td>
<td>0.5</td>
<td>1.2</td>
<td>2.0</td>
</tr>
<tr>
<td>Osgoode</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Schulich</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Science</td>
<td>1.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$18.9</strong></td>
<td><strong>$35.7</strong></td>
<td><strong>$50.1</strong></td>
</tr>
</tbody>
</table>

Figures may not add due to rounding.
Multi-Year Budget
Operating Fund – In Year Positions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VP Academic</td>
<td>(47.2)</td>
<td>32.1</td>
<td>2.4</td>
<td>(6.4)</td>
<td>26.6</td>
</tr>
<tr>
<td>President</td>
<td>(0.3)</td>
<td>0.5</td>
<td>(0.9)</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>VP Advancement</td>
<td>(1.7)</td>
<td>0.5</td>
<td>(3.1)</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>VP Finance</td>
<td>(3.5)</td>
<td>1.1</td>
<td>(6.1)</td>
<td>(3.5)</td>
<td>(3.8)</td>
</tr>
<tr>
<td>VP Research</td>
<td>(1.1)</td>
<td>0.8</td>
<td>(2.9)</td>
<td>(1.0)</td>
<td>(0.6)</td>
</tr>
<tr>
<td>In Year Divisional Surplus/(Deficit)</td>
<td>$ (53.9)</td>
<td>$ 35.1</td>
<td>$ (10.6)</td>
<td>$ (10.2)</td>
<td>$ 22.3</td>
</tr>
<tr>
<td>University Fund</td>
<td>27.3</td>
<td>27.5</td>
<td>15.4</td>
<td>4.8</td>
<td>(0.2)</td>
</tr>
<tr>
<td>Institutional Reserves</td>
<td>39.8</td>
<td>(31.8)</td>
<td>(1.0)</td>
<td>(0.7)</td>
<td>(2.3)</td>
</tr>
<tr>
<td>In Year Surplus/(Deficit) for Operating Fund</td>
<td>$ 13.1</td>
<td>$ 30.8</td>
<td>$ 3.8</td>
<td>(6.1)</td>
<td>$ 19.8</td>
</tr>
</tbody>
</table>

- Budget is balanced at the Divisional level over three years
- The Operating Fund is in a cumulative surplus position over the three years
- The deficit in 2020-21 of ($6.1M) is largely caused by the down payment ($10M) by the School of Continuing Studies, on its new building (a one-time capital item)
- In addition, if the University realizes some of the Enrolment Contingency the results for 2019-20, 2020-21 and 2021-22 will be better than presented above

Figures may not add due to rounding.
Major Planning Assumptions: Compensation

- Compensation increases driven by collective agreements; these have been factored into budgets of Faculties, schools and central service units
- Under SHARP Budget model Faculties are responsible for funding salary and benefit increases in the Faculty
- Central service units receive only 50% of salary increments and are responsible to fund the remaining portion
- Implications to compensation assumptions as a result of Protecting a Sustainable Public Sector For Future Generations Act, 2019, introduced June 5, 2019
  - Typically salary increments amount to approximately $12M, using a ~2% increment
  - A 1% cap introduced in the legislation would reduce overall compensation costs by approximately $6M, annually, when fully implemented.
  - Announcement has not been factored into budget plan

<table>
<thead>
<tr>
<th>Year</th>
<th>Budget</th>
<th>Actuals</th>
<th>Budget</th>
<th>Budget</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018-19</td>
<td>$567.8</td>
<td>$557.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019-20</td>
<td>$590.4</td>
<td></td>
<td></td>
<td>$615.9</td>
<td></td>
</tr>
<tr>
<td>2020-21</td>
<td></td>
<td></td>
<td></td>
<td>$615.9</td>
<td></td>
</tr>
<tr>
<td>2021-22</td>
<td></td>
<td></td>
<td></td>
<td>$640.6</td>
<td></td>
</tr>
</tbody>
</table>
Major Budget Risks

• Enrolment
  – Recovery from Labour Disruption
  – Achieving targets in domestic and growing international

• Impact of 10% domestic tuition reduction and freeze for 2019-20 and 2020-21

• New tuition framework beyond 2020-21
• Future Labour Relations
• Performance Based Government Funding, beginning in 2020-21
• Realignment of enrolment and budget plans based on the Province’s new funding formula
• Changing Political Landscape
• Achieving successes in Service Transformation
Key Messages

• The University’s budget position is fundamentally strong
• Investments are being made in strategic priorities
• SMA3 negotiations provide an opportunity to balance growth with academic quality
• Attention to providing efficient, high quality services to support academic priorities
Other Capital Priorities
Markham Centre Campus

- In October 2018 the Provincial government announced the cancellation of $127M in capital funding for the Markham Centre Campus

- Similar announcements for other two satellite campuses awarded under Major Capacity Expansion (MCE) program – WLU in Milton and Ryerson in Brampton

- Government invited the University to submit a business case

- Business case in development
## Major Capital Priority Projects
Approved by the Board in February 2019

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Size (sq. ft)</th>
<th>Estimated Cost</th>
<th>Status/Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering &amp; Science Expansion</td>
<td>To accommodate growth in Science and Engineering, with an emphasis on Bio Chemical discipline</td>
<td>231,000 (new space)</td>
<td>$175-200M.</td>
<td>Funding Plan – to be established</td>
</tr>
<tr>
<td>Scott Library</td>
<td>Replacement of book stacks with compact shelving, to allow for expansion of student study and lounge space. In additional the installation of a second elevator and improvements to the escalator will increase improve traffic.</td>
<td>118,000 (renovated space)</td>
<td>$30M</td>
<td>Funding Plan – to be established</td>
</tr>
</tbody>
</table>
Lands for Learning

Development over time of perimeter lands to support York’s academic mission and its Capital Plans.

Planning Horizon is 7-10 years.
Service Transformation

Service Transformation is a partnership between York’s academic and administrative units that are working collaboratively to help the University use its resources differently, efficiently and more effectively in support of the University’s academic goals. Supported by benchmarking data, and data from previous initiatives, the goal of the Service Transformation is to collaboratively create user-centered, high quality, efficient and effective services.

York’s vision for its administrative services is a balanced delivery model, one that meets institutional needs with established standards, resources that are aligned to processes and measured outcomes. Key elements for the future state based on the vision include:

- optimal streamlined processes;
- clearly defined roles and responsibilities;
- automation where appropriate, and
- defined and agreed upon process metrics which will help to establish standards and monitor performance.
The SHARP Budget model was developed based on 5 principles as recommended by the Working Group on Budget Committee:

- Support the academic goals of the institution through the alignment of resources to priorities as outlined in our planning documents (the White Paper, University Academic Plans/School Plans, IR Plans);
- Be transparent;
- Provide for a predictable and sustainable framework for budget planning;
- Provide performance incentives and ensure accountability; and
- Provide for clear and straightforward allocation methodologies.
SHARP Budget Model – Conceptual Design

Total Operating Revenue Received by Institution ($)

- Tuition
- Grants
- Application Fees
- Ancillary Fees
- Investment Income
- Referendum Fees
- Expendable Donations & other Revenue

- Net Tuition Set Aside
- Revenues be directed to the Faculties/units that generate them. (Inter-Faculty Double Major & Major Minor**)

General University Fund
- a. Strategic Initiatives
- b. Transition
- c. Contingency

Shared Services Costs
- Financial Management
- Academic Management
- Human Resources
- Libraries
- Advancement
- Research Management
- CSBO
- UIT
- Graduate Administration
- Student Services Administration
- General Institutional

TOTAL BUDGET
- Inter-Faculty Adjustment

- Undergraduate Inter-Faculty Teaching
- Graduate Inter-Faculty Teaching & Supervisory
- Non-course Activity

NET BUDGET

Cost of Shared Service units will be net of the revenue they receive.
SHARP Review

- At implementation, the University committed to reviewing the design elements of the SHARP Budget model based on early experience.
- Design elements include revenue attribution formulas, cost drivers for shared services, formulas for calculating the General University Fund contributions, transition funding, etc.
- Proposed timeline for the review of SHARP:

<table>
<thead>
<tr>
<th>Year</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-18</td>
<td>• First two years of SHARP budget model.</td>
</tr>
<tr>
<td>2018-19</td>
<td>• First two years of SHARP budget model.</td>
</tr>
<tr>
<td>2019-20</td>
<td>• External group to consult with Faculties and Administrative Units, on SHARP model, with Final Report targeted by end of 2019</td>
</tr>
<tr>
<td></td>
<td>• Engage University Community on SHARP as part of current Budget Consultations</td>
</tr>
<tr>
<td></td>
<td>• Internal budget review committee to review SHARP recommendations and develop a transition plan for changes to SHARP</td>
</tr>
<tr>
<td>2020-21 and beyond</td>
<td>• Implement SHARP 2 (subject to the magnitude and impact of proposed changes to the SHARP design)</td>
</tr>
</tbody>
</table>
SHARP Budget Model

Written submissions can be sent to sharp@yorku.ca
2019 York Cares Campaign Events Overview

Campaign Events – details to come via yfile.

Pledge drive - Nov 6 to Dec 6
Pledges comprise 95% of York’s campaign. On Launch day we will send the UnitedWay@Work email pledge tool to staff and faculty. We will continue to send email reminders over the course of the pledge drive. The Alice and Grant Burton Challenge Gift matches all new Leadership donations or increases to Leadership donations, made to the United Way. Leadership donors get complimentary tickets to attend the Songs of the City concert.

CN Tower Climb – Saturday Nov 2
On Saturday November 2 we’ll climb 1,776 steps to the top of the CN Tower and help communities rise from poverty to possibility. Students, staff and faculty are encouraged to register with the “York University-York Cares” team as a way of taking positive action and showing our local love.

Pancake Breakfast— Nov 15
The annual campaign pancake breakfast will take place in Central Square. This is an opportunity to learn more about the United Way and the York Cares campaign while enjoying delicious pancakes. Come out and cheer on our senior leaders along with our York Cares committee as they flip pancakes for an important cause.

Silent Auction – Wednesday Nov 20 to Thursday Nov 21
The York Cares campaign silent auction will run for two days, Nov 20 and 21, from 12 noon to 2 pm in the WOB Big Egg. In addition to auctioning off items it is also a skills swap where you can showcase your creativity and abilities outside of what you do at work. It is a great way to share your hidden talents with your colleagues. Contact yucares@yorku.ca for more details or to donate auction items.

Some of the auction items last year include: a one-year planetary membership to the Ontario Science Centre; hand blown glass vases and bowls; handmade one of a kind jewelry; baked goods; one of a kind photography and printed art; professional photography session; an official Toronto Maple Leafs jersey; tickets to the Ripley’s Aquarium and Reptilia; a private behind-the-scenes tour of the Allan I. Carswell Observatory; a spin class with your choice of music; knitted items; bath products and much more.

Day of Caring – team building opportunity
Day of Caring is a community-wide United Way event that demonstrates the power of volunteering. Members of the York University community will have the chance to give back to local agencies for all the hard work they do in our community. Volunteers have an opportunity to learn more about local agencies while assisting them to complete much-needed work.

Leadership Breakfast – Late Jan or Early Feb
The leadership breakfast takes place after the campaign closes for Leadership donors (gifts of $1,200+). Leadership donors are a group of dedicated individuals who love where they live and want to make a difference when it comes to fighting local poverty in all its forms. The event consists of speeches by the President, campaign chairs and United Way speakers to highlight and share stories of impact.