



FACULTY OF SCIENCE

COUNCIL OF THE FACULTY OF SCIENCE

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



FACULTY OF SCIENCE

COUNCIL OF THE FACULTY OF SCIENCE

Minutes

Tuesday, October 8, 2019

at 3:00pm – 4:30pm

306 Lumbers

Attendance: M. H. Armour (Chair), EJ Janse vanRensburg, T. Baumgartner, M. Xu, J. Amanatides, M. McCall, M. Hough, S. Domenikos, J. Lazenby, R. Metcalfe, V. Pavri, J. Steeves, W. Taylor, G. Audette, R. Fournier, J. Clark, S. Connor, A. Qayyum, A. Gideon, H. Kwon, R. Omar, R. Noormohammadi, P. Potvin, P. Lakin-Thomas, R. Tsushima, P. Szeptycki, J. M. Heffernan, A. Mills, T. Kirchner, S. Siyakatshana (Assistant Secretary)

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.

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

3. Approval of Minutes of September 10, 2019

A motion was moved, seconded and carried to approve the Minutes.

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 suspended 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 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 13: Professor Hovig Kouyoumdjian The Science of Beer-Making: More Than Barley, Water, Hops and Yeast

- 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 Turlakis, 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			
Senate	1 vacancy Member at Large		
Committee on Research and Awards	1 vacancy member - STS department		
Curriculum Committee	2 vacancies Members at Large		
<i>Student Representatives - few outstanding vacancies</i>			
Committee	Rules of Faculty Council - membership	Meeting time / Membership	Term From To
Senate	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	As per Senate website	
	Dean, Ex officio	EJ Janse vanRensburg	Designated
	Member at large	G. Audette	Designated 2022
	Member at large	VACANT	2019 2020
	Member at large	J. Lazenby, Department of STS	2019 2022
	Member at large	T. Baumgartner, Chemistry	2018 2021
	Member at large	B. Pietro, Chemistry	2019 2022
	Member at large	P. Lakin-Thomas, Biology	2019 2022
	Member at large	D. Wilson, Chemistry	2018 2021
	Department Chair	R. Tsushima, Biology	2018 2021
	Department Chair	R. Fournier, Chemistry	2019 2022
	Department Chair	P. Szeptycki, Mathematics & Statistics	2019 2022
	Director of NATS	J. Clark	Designated
	Student representative	Robert Cheung	2018 2021
	Student representative	Romina Noormohammadi	2019 2022
FSc Reps on Senate Committees			
Senate Executive	1 member from FSc	Paul Szeptycki	2018 2020
Academic Policy, Planning and Research Committee (APPRC)	1 member from FSc	R. Tsushima, Biology	2017 2020
Sub-Committee on Honorary Degrees & Ceremonies	1 member from FSc	W. Liu, Math & Statistics	2017 2020
Executive Committee	The <u>Executive Committee</u> 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 & Statistics, Physics & Astronomy, and Science and Technology Studies/Natural Science, the Dean of the Faculty of Science (<i>ex officio</i>), one student member of Council, and one of the staff members elected to Council.	The Executive Committee will normally meet the first Tuesday of each month (September to May) from 1:30 pm - 3:00 pm in LUM 305B	
	Chair of Council	M. H. Armour	2019 2020
	Vice-Chair of Council	C. Storry	2019 2020
	Dean, Ex officio	EJ Janse vanRensburg	Designated
	Asst. Dean - SEM & SEP	A. Mun	Designated
	Office of the Dean, staff representative	M. Hough	2019 2020
	Undergraduate Student Rep	VACANCY	2019 2020
	Biology	A. Hilliker	2018 2021
	Chemistry	S. Krylov	2019 2022
	Math & Stats	N. Madras	2019 2022
	Physics & Astronomy	R. Lewis	2019 2020
	STS	R. Metcalfe	2019 2022
APPC	The <u>Academic Policy and Planning Committee</u> shall include the Dean or designate (<i>ex officio</i>), the Master of Norman Bethune College and one member elected from each of Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy, and Science and Technology Studies/Natural Science, one student member of Council, and one of the staff members elected to Council.	APPC will normally meet the last Thursday of each month (September to April) from 9:00 am - 10:30 am	
	Associate Dean, Faculty Affairs, Ex officio	G. Audette	Designated
	Head of Bethune College	J. Amanatides	Designated
	Undergraduate Student Rep	R. Omar (Fall) R. Patel (Winter)	2019 2020
	Elected staff representative	M. Xu	2019 2020
	Biology, also representing STS	J. Clark	2019 2022
	Chemistry	R. McLaren	2019 2022
	Math & Stats	J. Heffernan	2019 2022
	Physics & Astronomy	J. Zylberberg	2019 2020
	STS	VACANCY (represented by J. Clark)	2019 2022
Curriculum Committee	The <u>Curriculum Committee</u> shall include the Dean and an Associate Dean (<i>ex officio</i>), the Chair or nominee from each teaching Division or Department, three members elected by Council and two student members of Council.	The Curriculum Committee will normally meet every last Tuesday of each month (September to April) from 1:30 pm - 3:00 pm	
	Member at Large	J. Clark	2019 2022
	Member at Large	VACANCY	2019 2022
	Dean, Ex officio	EJ Janse van Rensburg	Designated
	Associate Dean - Students, Ex officio	A. Mills	Designated
	Undergraduate Student Rep (two vacancies)	2 VACANCIES	2019 2020
	Biology	S. Connor	2019 2022
	Chemistry	P. Potvin	2019 2022
	Math & Stats	J. Grigull (Fall) M. Chen (Winter)	2019 2022
	Physics & Astronomy	P. Hall	2019 2020
	STS	E. Hamm	2019 2022
	Member at Large	VACANCY	2019 2022
CEAS	The <u>Committee on Examinations and Academic Standards</u> shall consist of an Associate Dean (<i>ex officio</i>), five members elected by Council from each of Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy and Science and Technology Studies/Natural Science, and one student member of Council.	CEAS will normally meet every alternate Wed / Thurs from 1:00 - 3:00 pm year round.	

2019-2020 Fsc Report on vacancies for Senate and Fsc Standing Committees

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		
<i>Student Representatives - few outstanding vacancies</i>			
Committee	Rules of Faculty Council - membership	Meeting time / Membership	Term To
	In addition to the above membership of the committee, Council shall elect an alternate member from each of the Departments specified 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 will 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.		
	Associate Dean - Students, Ex officio	A. Mills	Designated
	Undergraduate Student Rep	VACANCY	2019 2020
	Undergraduate Student Rep	VACANCY	2019 2020
	Biology	C. Jang/ALT B. Schwartz	2019 2022
	Chemistry	D. Jackson (2020) / R. McLaren	2017/2020 2020/2023
	Math & Stats	M. Chen /ALT. Y. Fu	2019 2022
	Physics & Astronomy	S. Tulin/ALT. S. Jerzak	2019 2020
	STS	J. Lazenby/VACANCY	2019 2022
Petitions	The <u>Petitions Committee</u> for the purpose of hearing student petitions shall consist of an Associate Dean (ex officio), six members of Council, and two student members of Council. The Committee may divide the workload by splitting the Committee membership into two panels of four people each. A quorum shall consist of either (a) two faculty voting faculty members and one student member or (b) three voting faculty members.	Each panel meets once a month on Wednesday or Thursday from 2:30 pm - 4:00 pm	
	Associate Dean, Ex officio	A. Mills	Designated
	Undergraduate Student Rep	A. Qayyum	2019 2020
	Undergraduate Student Rep	VACANCY	2019 2020
	Member at Large	I. Raguimov	2019 2022
	Biology	A. Hilliker	2017 2020
	Chemistry	W. J. Pietro	2019 2022
	Physics & Astronomy	D. Harris (F), S. Rastgoo (W)	2019 2020
	Math & Stats	Y. Gao	2019 2022
	STS	S. P. Domenikos	2019 2022
	Member at Large	P. Peskun	2017 2020
SRC T & P Committee	The <u>Committee on Tenure and Promotions</u> shall consist of one currently tenured member from each of Biology, Chemistry, Mathematics & Statistics, Physics & 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 another 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 on an annual basis. An alternate can only vote in the event that existing members are not in attendance.	SRC T & P Committee will normally meet the last Friday of each month (September to May) from 9:00 am - 11:00 am in LUM 305B	
	Associate Dean - Faculty, Ex officio	J. Steeves	Designated
	Undergraduate Student Rep	F. Calingo (Fall)	2019 2020
	Biology	J. Clark / ALT - V. Saridakis	2017 2020
	Chemistry	D. Wilson/ALT - V. Tsoukanova	2019 2020/2022
	Physics & Astronomy	M. George/ALT S. Menary	2019 2022
	Math & Stats	A. Wong (Fall) S. Wang (Winter) ALT D. Liang	2019 2022
	STS	D. Lungu/ALT Vacancy	2018 2021
CoTL	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.	CoTL normally meets every third Thursday of each month (September to May) from 10:00 am - 11:30 am	
	Associate Dean - Students, Ex officio	A. Mills	
	Graduate Student Representative	Snezhana Kirusheva	2018 2020
	Graduate Student Representative	Amanda Liczner	2018 2020
	Undergraduate Student Rep	H. Kwon	2019 2020
	Steaie Librarian	Ilo-Katryn Maimets	Designated
	IT Representative	V. Gotcheva	Designated
	Teaching Commons Rep	Y. Su	Designated
	Staff representative, Elected	D. Hossain	2019 2020
	Biology	T. Kelly	2017 2020
	Biology	S. Connor (to replace C. Bucking for 1yr)	2019 2020
	Chemistry	H. Kouyoumjian	2017 2020
	Chemistry	C. Caputo	2018 2021
	Physics & Astronomy	E. Hyde (Fall, starting November 1st)	2019 2020
	Physics & Astronomy	N. Bozorgnia (Winter)	2019 2020
	Math & Stats	A. Chow	2017 2020
	Math & Stats	W. Liu	2018 2021
	STS	R. Marushia	2019 2022

2019-2020 Fsc Report on vacancies for Senate and Fsc Standing Committees

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			
<i>Student Representatives - few outstanding vacancies</i>				
Committee	Rules of Faculty Council - membership	Meeting time / Membership	From	Term To
Committee on Research & Awards	The <u>Committee on Research and Awards</u> 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 (<i>ex officio</i>) who will serve as the Chair.	The Research & Awards Committee will meet when grants and awards need to be adjudicated.		
	Associate Dean - Research & Graduate Education, ex officio	Jennifer Steeves	Designated	
	Undergraduate Student Rep	VACANCY	2019	2020
	Biology	R. Kwong	2017	2020
	Chemistry	S. Morin	2019	2022
	Physics & Astronomy	C. David	2019	2020
	Math & Stats	Huaiping Zhu	2019	2022
	STS	VACANCY	2019	2022
Appeals	The <u>Appeals Committee</u> for the purpose of hearing student appeals shall consist of four elected faculty members from Science units, an Associate Dean (<i>ex officio</i>) 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. Noormohammadi	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

York University

COUNCIL OF THE FACULTY OF SCIENCE

Report of the Science Curriculum Committee

October 2019

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 Musle 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/CHEM 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:

- | | |
|--|--|
| <input checked="" type="checkbox"/> in pre-requisite(s)/co-requisite(s) | <input type="checkbox"/> in cross-listing |
| <input type="checkbox"/> in course number/level | <input type="checkbox"/> in degree credit exclusion(s) |
| <input type="checkbox"/> in credit value | <input type="checkbox"/> regularize course (from Special Topics) |
| <input type="checkbox"/> in title (max. 40 characters for short title) | <input type="checkbox"/> in course format/mode of delivery * |
| <input type="checkbox"/> in Calendar description (max. 40 words or 200 characters) | <input type="checkbox"/> retire/expire course |
| <input type="checkbox"/> other (please specify): | <input type="checkbox"/> |

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 advance 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)

Chemistry

Change from

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).

[...]

[...]

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 (not necessarily in year one).

[...]

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
- [...]

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:

<input checked="" type="checkbox"/>	in pre-requisite(s)/co-requisite(s)	<input type="checkbox"/>	in cross-listing
<input type="checkbox"/>	in course number/level	<input type="checkbox"/>	in degree credit exclusion(s)
<input type="checkbox"/>	in credit value	<input type="checkbox"/>	regularize course (from Special Topics)
<input type="checkbox"/>	in title (max. 40 characters for short title)	<input type="checkbox"/>	in course format/mode of delivery *
<input checked="" type="checkbox"/>	in Calendar description (max. 40 words or 200)	<input type="checkbox"/>	retire/expire course
<input type="checkbox"/>	other (please specify):	<input type="checkbox"/>	

Change From:

To:

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

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 spectroscopies; 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.

COMMITTEE ON ACADEMIC STANDARDS, CURRICULUM AND PEDAGOGY TEMPLATE

NEW COURSE PROPOSAL FORM

Faculty:

Indicate all relevant
Faculty(ies)

Science

Department:

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

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.

**Brief Course
Description:**

**Maximum 2000
characters**

*(approximately 300 words
including spaces and
punctuation).*

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

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

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.

**Generic Course
Description:**

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

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

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.

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.

Instruction:

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

1. 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.)

Activity Grade: 5 % (e.g. iClicker questions)

Project 1: 10 % (Focus on Air Pollution, e.g. Assessment report for the Ontario Ministry of Environment and Climate Change)

Project 2: 10 % (Focus on Water Pollution, e.g. Critiquing a media article via a blog post)

Project 3: 10% (Focus on Soil/Land Pollution, e.g. Case study analysis of the Athabasca Oil Sands)

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 Cambridge University Press. Students will not be required to read chapters in their entirety.

Hill, Marquita K. (2010). *Understanding Environmental Pollution*, 3rd edition. United Kingdom: Cambridge University Press.

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

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 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.

**STEACIE SCIENCE & ENGINEERING LIBRARY
YORK UNIVERSITY**

MEMORANDUM

To: Julie Clark, Director, Division of Natural Science

From: Minglu Wang, Research Data Management / Science Librarian

Re: NATS 1512 - Environmental Pollution

Date: September 11, 2019

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:

- Hill, Marquita K. (2010). *Understanding Environmental Pollution*, 3rd edition. United Kingdom: Cambridge University Press. **(Print and eBook)**

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.

**STEACIE SCIENCE & ENGINEERING LIBRARY
YORK UNIVERSITY**

MEMORANDUM

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

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 1516

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

Water Pollution

Short Title:

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

Water 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.

**Brief Course
Description:**

**Maximum 2000
characters**

*(approximately 300 words
including spaces and
punctuation).*

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

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

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.

**Generic Course
Description:**

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

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

**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.

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.

Instruction:

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

1. 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.

Laws, Edward A. (2018). Aquatic Pollution: An Introductory Text, 4th edition. John Wiley & Sons Ltd.

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.

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.

**STEACIE SCIENCE & ENGINEERING LIBRARY
YORK UNIVERSITY**

MEMORANDUM

To: Julie Clark, Director, Division of Natural Science

From: Minglu Wang, Research Data Management / Science Librarian

Re: NATS 1516 – Water Pollution

Date: September 11, 2019

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:

- 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 **in order** by the library:

- Laws, Edward A. (2018). Aquatic Pollution: An Introductory Text, 4th edition. Jonh Wiley & Sons Ltd. (**eBook**)

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,

**STEACIE SCIENCE & ENGINEERING LIBRARY
YORK UNIVERSITY**

MEMORANDUM

Minglu Wang, Research Data Management / Science Librarian
Steacie Science & Engineering Library
416-736-2100 x40075
mingluwa@yorku.ca

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:

- | | | | |
|-------------------------------------|---|--------------------------|---|
| <input checked="" type="checkbox"/> | in pre-requisite(s)/co-requisite(s) | <input type="checkbox"/> | in cross-listing |
| <input type="checkbox"/> | in course number/level | <input type="checkbox"/> | in degree credit exclusion(s) |
| <input type="checkbox"/> | in credit value | <input type="checkbox"/> | regularize course (from Special Topics) |
| <input type="checkbox"/> | in title (max. 40 characters for short title) | <input type="checkbox"/> | in course format/mode of delivery * |
| <input checked="" type="checkbox"/> | in Calendar description (max. 40 words or 200 characters) | <input type="checkbox"/> | retire/expire course |
| <input checked="" type="checkbox"/> | other (please specify): NCR update | <input type="checkbox"/> | |

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/CHEM 1000 3.00 or SC/CHEM 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/CHEM 1000 3.00 or SC/CHEM 1001 3.00. Not open to any students enrolled in a Chemistry program.

Rationale:

Updating pre-requisite to address the⁶¹ how 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

Faculty:
Indicate all relevant
Faculty(ies)

Science

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

Physics and Astronomy
(PHYS)

Date of Submission: Oct. 2019

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

4030

Var:

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

3.0

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

Advanced Computational Methods for Scientists and Engineers

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

Advanced Computational Methods

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

Brief Course Description:**Maximum 2000 characters**

(approximately 300 words including spaces and punctuation).

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

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

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).

Generic Course Description:

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

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

Not applicable.

Expanded Course Description:

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

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

Course Design:

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

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

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

This course 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 $\frac{1}{2}$ to $\frac{2}{3}$ 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.

1. One section expected in the Fall of each year.
2. Chris Bergevin, Elaina Hyde, Randy Lewis, Joel Zylberberg.
3. Chris Bergevin, Elaina Hyde.
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.

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%

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

- o Collis, J., & Hussey, R. (2013). *Business research: A practical guide for undergraduate and postgraduate students*. Macmillan International Higher Education.
- o DeVries, P. L., & Hasbun, J. E. (2011). *A first course in computational physics*. Jones & Bartlett Publishers.
- o Giordano, N. J., & Nakanishi, H. (2006). *Computational Physics*.
- o Gregory, P. (2005). *Bayesian Logical Data Analysis for the Physical Sciences: A Comparative Approach*. Cambridge University Press.
- o Ivezić, Ž., Connolly, A. J., VanderPlas, J. T., & Gray, A. (2014). *Statistics, data mining, and machine learning in astronomy: a practical Python guide for the analysis of survey data* (Vol. 1). Princeton University Press.
- o Kinder J.M. and Nelson P. (2015) *A student's guide to python for physical modeling*, Princeton University Press.
- o Kutz, J. N. (2013). *Data-driven modeling & scientific computation: methods for complex systems & big data*. Oxford University Press.
- o Langtangen H.P. (2014) *A primer on scientific programming with Python*, Springer.
- o Press, W. H., Teukolsky, S. A., Vetterling, W. T., & Flannery, B. P. (2007). *Numerical recipes 3rd edition: The art of scientific computing*. Cambridge University Press.
- o Sivia, D., & Skilling, J. (2006). *Data analysis: a Bayesian tutorial*. Oxford University Press.
- o Stickler, B. A., & Schachinger, E. (2016). *Basic concepts in computational physics*. Springer.
- o VanderPlas, J. (2016). *Python data science handbook: essential tools for working with data*. " O'Reilly Media, Inc."

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.”*
- University of British Columbia: PHYS410 Computational Physics (24L/24P) → *“Scientific programming applied to problems in physics. Fundamentals of numerical analysis for continuum problems. Solution of linear and non-linear algebraic systems, ordinary differential equations and stochastic problems.”*

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.

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.

August 30, 2019

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/>.

- DeVries, P. L., & Hasbun, J. E. (2011). *A first course in computational physics*. Jones & Bartlett Publishers. <https://www.library.yorku.ca/find/Record/2391991>
- Giordano, N. J., & Nakanishi, H. (2006). *Computational Physics*. <https://www.library.yorku.ca/find/Record/1839590>
- Gregory, P. (2005). *Bayesian Logical Data Analysis for the Physical Sciences: A Comparative Approach*. Cambridge University Press. <https://www.library.yorku.ca/find/Record/4102246>
- Kinder J.M. and Nelson P. (2015) *A student's guide to python for physical modeling*, Princeton University Press. <https://www.library.yorku.ca/find/Record/3511837>
- Kutz, J. N. (2013). *Data-driven modeling & scientific computation: methods for complex systems & big data*. Oxford University Press. <https://www.library.yorku.ca/find/Record/3262221>
- Langtangen H.P. (2014) *A primer on scientific programming with Python*, Springer. <https://www.library.yorku.ca/find/Record/3324228>
- Press, W. H., Teukolsky, S. A., Vetterling, W. T., & Flannery, B. P. (2007). *Numerical recipes 3rd edition: The art of scientific computing*. Cambridge University Press. <https://www.library.yorku.ca/find/Record/2053186>
- Sivia, D., & Skilling, J. (2006). *Data analysis: a Bayesian tutorial*. Oxford University Press. <https://www.library.yorku.ca/find/Record/3861790>
- Stickler, B. A., & Schachinger, E. (2016). *Basic concepts in computational physics*. Springer. <https://www.library.yorku.ca/find/Record/3291487>

Electronic Resources

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

E-Books Packages

- Numerous electronic book packages such as Elsevier, Taylor & Francis, Cambridge University Press, Oxford Scholarship Online, SPIE Digital Library, Springer E-Books, and others.

E-Journal Packages

- Numerous electronic journal packages such as American Institute of Physics, American Physical Society, Elsevier, Nature, Optical Society of America, Springer. SPIE Digital Library, Taylor and Francis, Wiley, and others.

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

**Report of the Executive and Planning Committee of the Faculty of Health
March 2019**

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.

<p>23. STANDING COMMITTEES</p> <p>Standing committee duties shall be defined by Council from time to time. Standing committees will report at least annually to Council.</p> <ul style="list-style-type: none">a. Executive and Planning Committeeb. Curriculum Committeec. Committee on Examinations and Academic Standardsd. Committee on Research and Awardse. Petitions Committeef. Committee on Tenure and Promotions <p>31b. Curriculum Committee The Curriculum Committee shall</p>	<p>23. STANDING COMMITTEES</p> <p>Standing committee duties shall be defined by Council from time to time. Standing committees will report at least annually to Council.</p> <ul style="list-style-type: none">a. Executive and Planning Committeeb. Undergraduate Curriculum Committeec. Committee on Examinations and Academic Standardsd. Committee on Research and Awardse. Petitions Committeef. Committee on Tenure and Promotionsg. Graduate Committee <p>31b. Undergraduate Curriculum Committee The Undergraduate Curriculum shall</p>
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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:

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 ~~encourage the development of interdisciplinary and inter-Faculty programs;~~ 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 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 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.

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 **undergraduate** programs and Faculty-level legislation including:

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. It

will forward proposals to Senate as appropriate and report such actions to Council for information. It will collaborate with the Faculty of Graduate Studies on issues of joint concern.

The Committee will promote and celebrate graduate research and creative scholarship at the Faculty level. It will adjudicate Faculty level graduate competitions and awards as applicable.

The Graduate Committee shall consist of an Associate Dean (ex officio), one member elected from each of the Faculty's Schools / Department who must be appointed to their graduate program, and 2 graduate student members.

2. ITEM FOR ACTION (2)

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

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 undergraduate student members registered in the Faculty of Health. This number will include two Faculty of Health student senators (ex officio) and at least one student from each of the academic units selected annually

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

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).

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

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.

From: Dimitra Markatas <dmarkata@yorku.ca>

Sent: October 28, 2019 9:23 AM

To: ADMINRES <adminres@yorku.ca>

Subject: RE: Faculty Members needed to sit on the Human Participants Review Committee (HPRC)

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

Budget Consultation 2019-20

Rhonda Lenton, President & Vice-Chancellor
Carol McAulay, Vice-President Finance & Administration
Lisa Philipps, Provost & Vice-President Academic

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

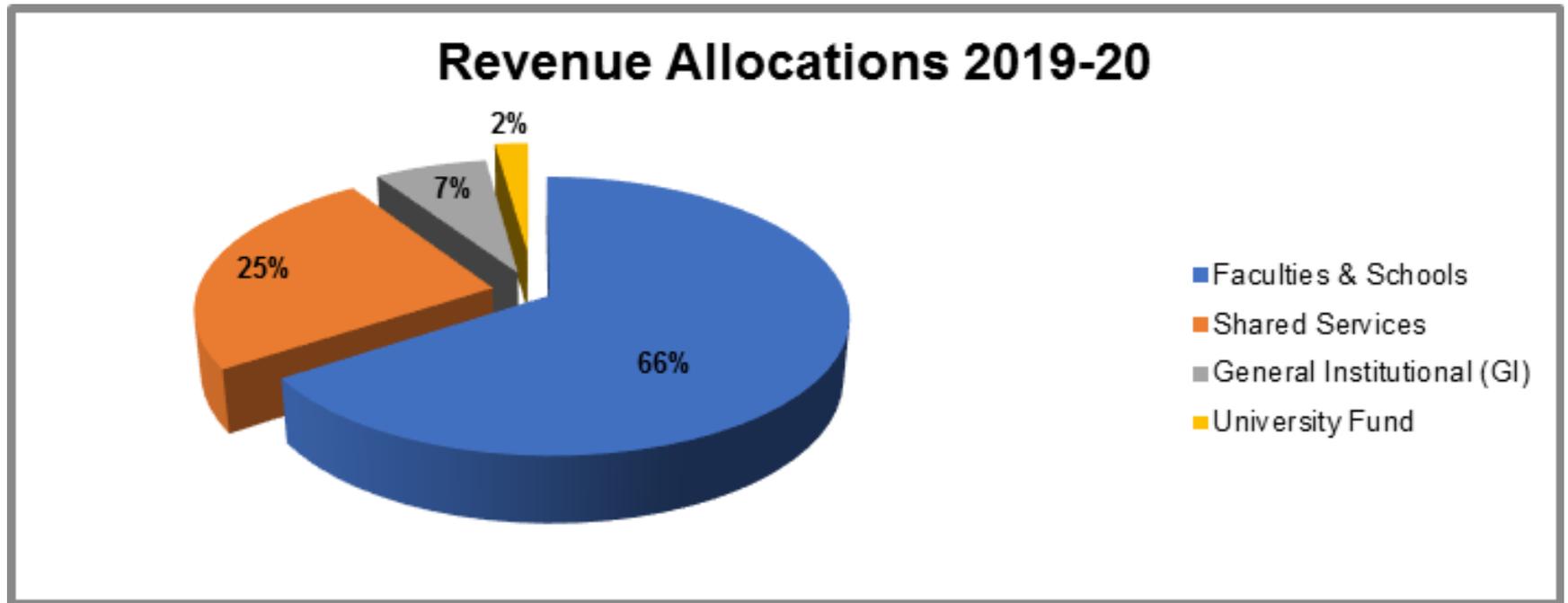


Deferred Maintenance

Deferred Maintenance (millions)
As presented to Land and Property Committee
February 2019

	Glendon	Keele	Total
Academic	\$12.1	\$302.1	\$314.2
Infrastructure	1.0	23.6	24.6
Subtotal	13.1	325.7	338.8
Ancillary	10.0	19.1	29.1
Residence	15.9	142.9	158.8
Subtotal	25.9	162.0	187.9
Total	\$39.0	\$487.7	\$526.7

Revenue Allocations



Strategic Investments – Deferred Maintenance

(in millions)

	2019-20	2020-2021	2021-22
	\$	\$	\$
Existing Deferred Maintenance			
Charged to Faculties	6.4	6.5	6.5
Facilities Renewal Program (2019 Provincial Budget)	4.3	5.7	5.1
	10.7	12.2	11.6
Incremental Funding			
From University Fund	4.2	3.5	3.5
Repurpose capital reserve	2.5	2.5	2.5
	6.7	6.0	6.0
Total	\$ 17.4	\$ 18.2	\$ 17.6

(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

	Appointments	In Multi-Year Budgets		
	to date	2019/20	2020/21	2021/22
AMPD	11	14	0	1
Education	5	6	1	1
FES	0	1	0	0
Glendon	8	8	1	1
Health	35	51	4	0
LA&PS	39	50	40	40
Lassonde	8	12	4	3
Osgoode	2	5	1	1
Schulich	7	6	7	1
Science	11	15	11	10
Libraries	3	6	0	0
Totals:	129	174	69	58

Strategic Investments – From University Fund

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

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

<i>\$millions</i>	2018-19	2019-20
AMPD	0.7	1.0
LAPS	7.7	6.3
Lassonde	1.5	
Education	2.2	
Health	6.0	
Science	4.5	
	<hr/>	<hr/>
	22.6	7.3
	<hr/>	<hr/>

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



Provincial Announcements

Tuition

(\$ millions)

	2018-19		2019-20	2020-21	2021-22
	Budget	Actuals	Budget	Budget	Budget
Student Fees					
Credit Tuition Fees	\$ 546.6	\$ 540.1	\$ 585.1	\$ 643.8	\$ 719.8
Continuing/Professional Education Tuition	54.8	61.5	65.4	69.7	73.2
Centrally Collected Ancillary Fees	30.4	31.7	31.8	32.1	32.4
Student Referenda	8.5	8.9	8.5	8.6	8.7
Application Fees	3.8	4.7	4.7	4.7	4.7
Total Student Fees	\$ 644.2	\$ 647.0	\$ 695.6	\$ 759.1	\$ 838.8

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

Provincial Government Announcements: Strategic Mandate Agreements – SMA2 and SMA3

	2018-19		2019-20	2020-21	2021-22
	Budget	Actuals	Budget	Budget	Budget
Total Government Operating Grants	\$ 307.5	\$ 308.9	\$ 306.9	\$ 306.2	\$ 305.2

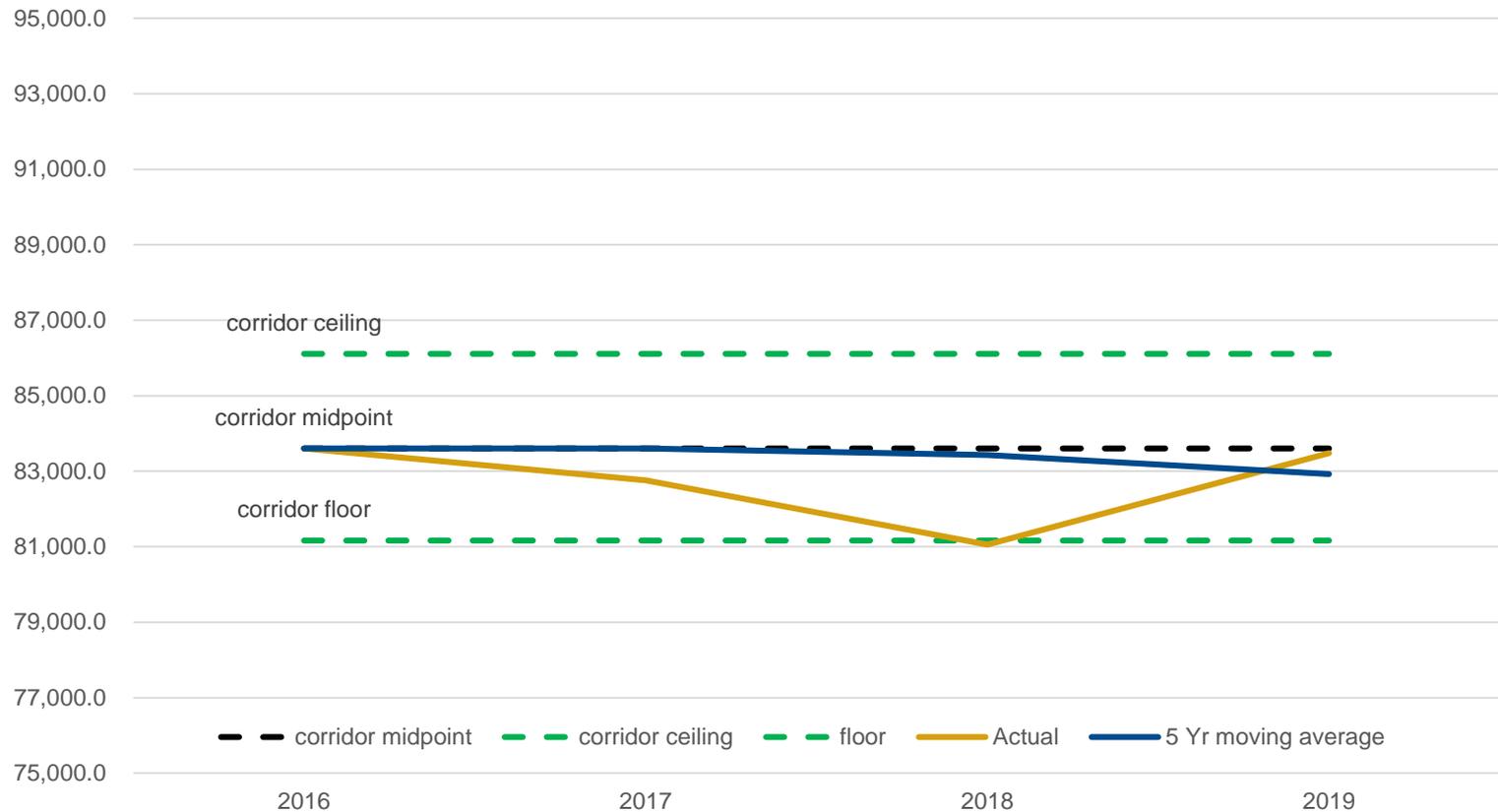
- SMA2 – three years, 2017-2018 to 2019-2020
 - University funded at 2016-17 enrolment levels
 - Enrolment growth funded above 2016-17 for teacher education and graduate up to Ministry targets

- 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.

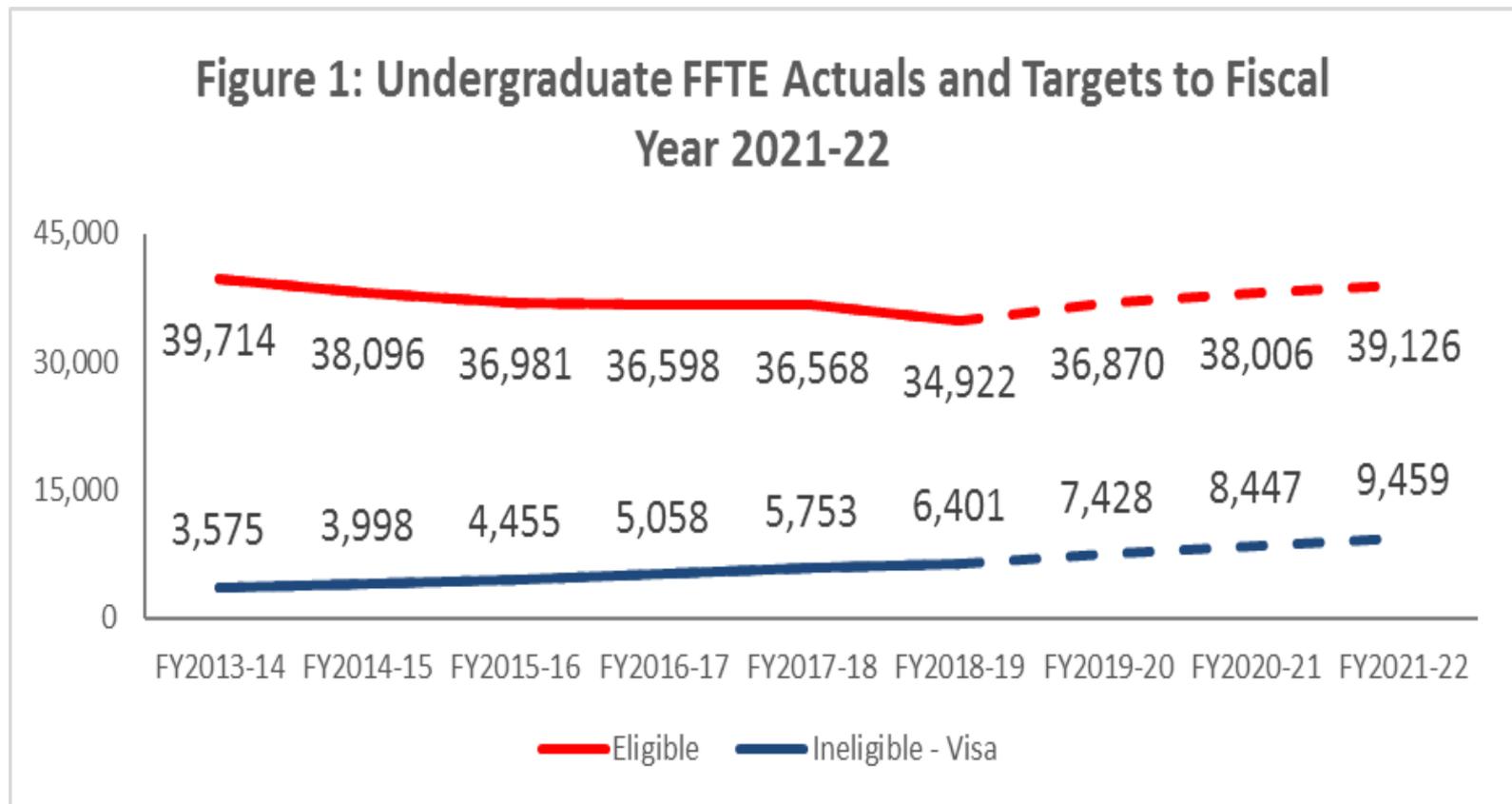
Enrolment



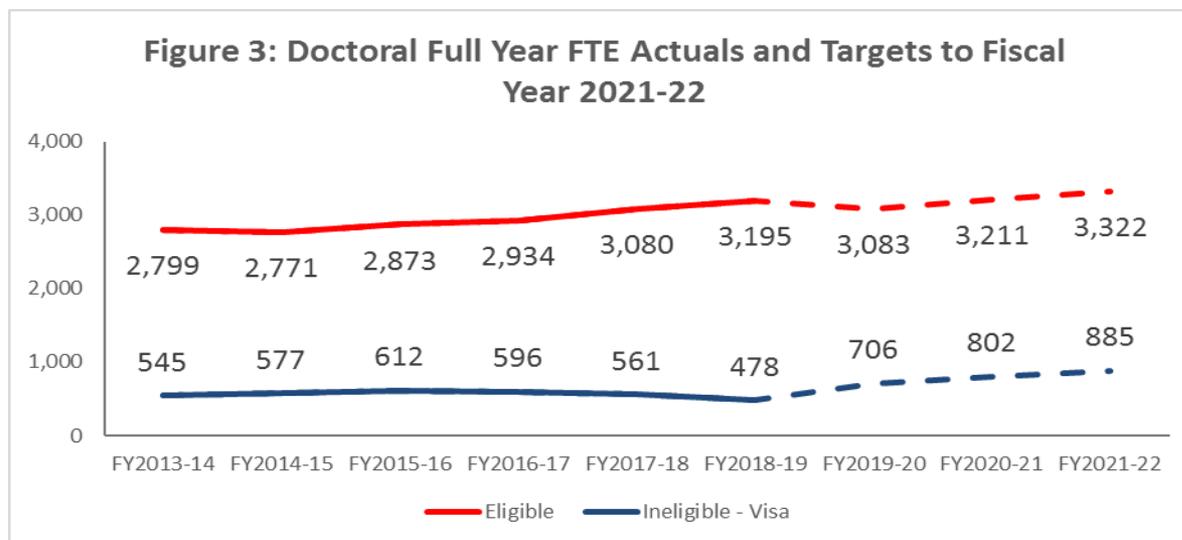
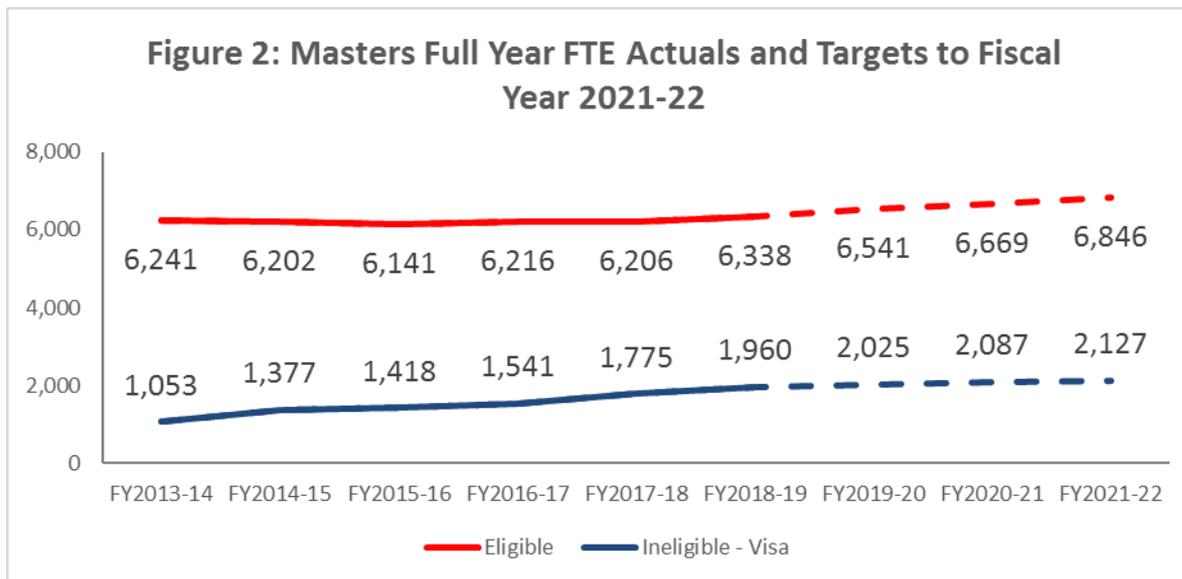
York University SMA 2 Corridor based on WGUs



Undergraduate FFTE Enrolment Contracts to 2021-22



Graduate FTE Enrolment Contracts to 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.

Applications	Total
York	-4.20%
Total System	+4.90%

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

Faculty	2019-20 Budget	2020-21 Budget \$millions	2021-22 Budget
Arts, Media, & Performance Design	\$ 1.7	\$ 3.6	\$ 4.4
Education	-	-	-
Environmental Studies	1.0	1.0	1.0
Glendon	1.0	1.0	1.0
Health	-	2.0	2.0
Liberal Arts & Professional Studies	13.7	24.8	37.8
Lassonde	0.5	1.2	2.0
Osgoode	-	-	-
Schulich	-	-	-
Science	1.0	2.0	2.0
Total	\$ 18.9	\$ 35.7	\$ 50.1

Figures may not add due to rounding.

Multi-Year Budget



Operating Fund – In Year Positions

	2018-19		2019-20	2020-21	2021-22
	Budget	Actuals	Budget	Budget	Budget
VP Academic	(47.2)	32.1	2.4	(6.4)	26.6
President	(0.3)	0.5	(0.9)	0.2	0.1
VP Advancement	(1.7)	0.5	(3.1)	0.5	0.1
VP Finance	(3.5)	1.1	(6.1)	(3.5)	(3.8)
VP Research	(1.1)	0.8	(2.9)	(1.0)	(0.6)
In Year Divisional Surplus/ (Deficit)	\$ (53.9)	\$ 35.1	\$ (10.6)	\$ (10.2)	\$ 22.3
University Fund	27.3	27.5	15.4	4.8	(0.2)
Institutional Reserves	39.8	(31.8)	(1.0)	(0.7)	(2.3)
In Year Surplus/(Deficit) for Operating Fund	\$ 13.1	\$ 30.8	\$ 3.8	\$ (6.1)	\$ 19.8

- 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

Major Planning Assumptions: Compensation

	2018-19		2019-20	2020-21	2021-22
	Budget	Actuals	Budget	Budget	Budget
Salaries and Wages	\$ 567.8	\$ 557.5	\$ 590.4	\$ 615.9	\$ 640.6

- 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

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



Markham Centre Campus

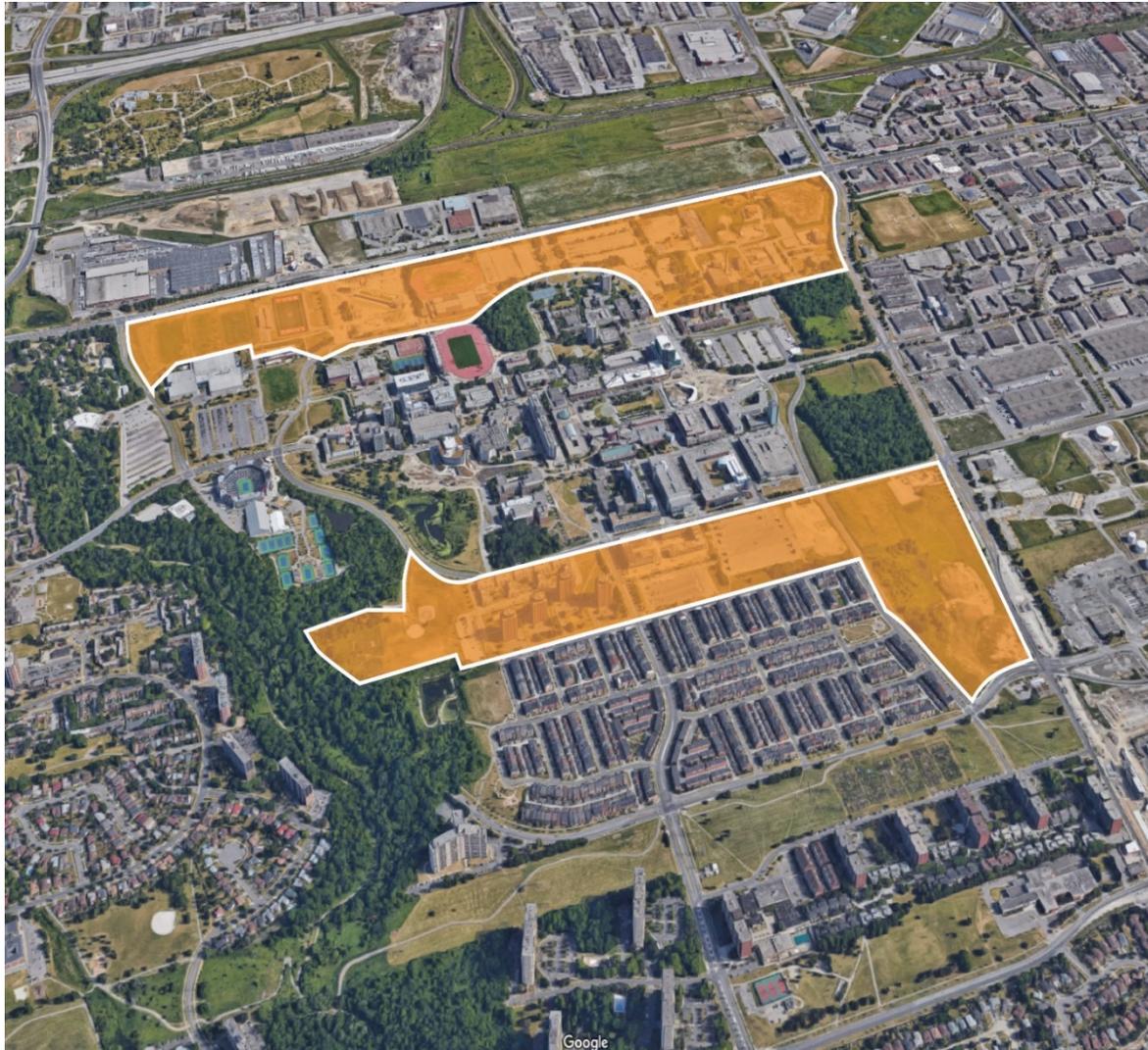
- In October 2018 the Provincial government announced the cancellation of \$127M in capital funding for the Markham Centre Campus
- Similar announcements for other two satellite campuses awarded under Major Capacity Expansion (MCE) program – WLU in Milton and Ryerson in Brampton
- Government invited the University to submit a business case
- Business case in development

Major Capital Priority Projects

Approved by the Board in February 2019

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

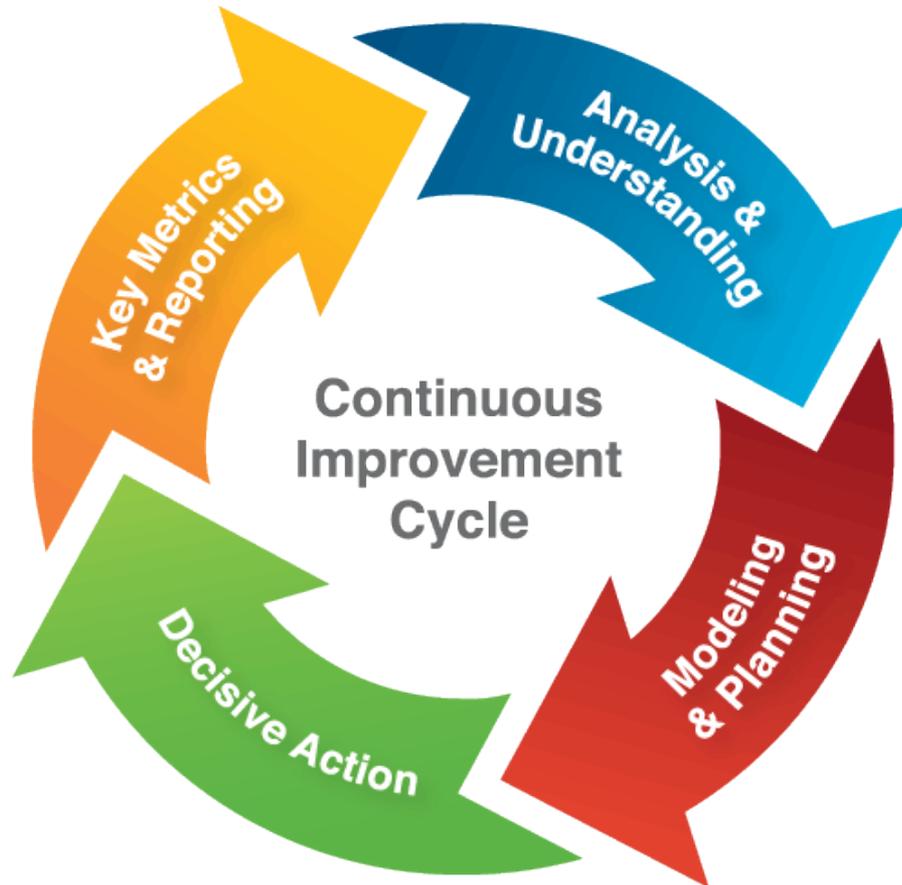
Lands for Learning



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.

SHARP Review

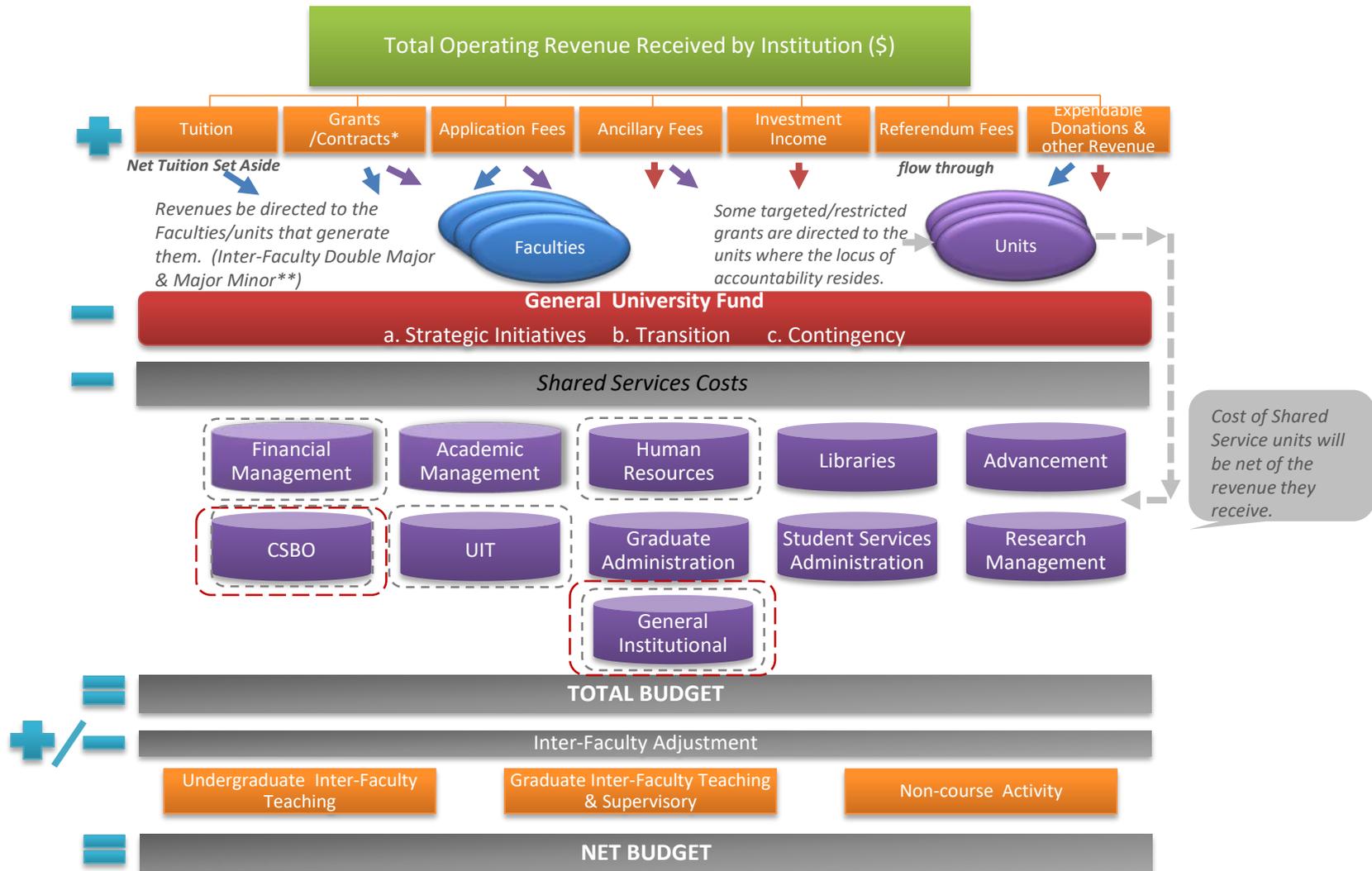


SHARP Budget Model – Guiding Principles

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 straight forward allocation methodologies**.

SHARP Budget Model – Conceptual Design



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:

2017-18 2018-19	<ul style="list-style-type: none">• First two years of SHARP budget model.
2019-20	<ul style="list-style-type: none">• External group to consult with Faculties and Administrative Units, on SHARP model, with Final Report targeted by end of 2019• Engage University Community on SHARP as part of current Budget Consultations• Internal budget review committee to review SHARP recommendations and develop a transition plan for changes to SHARP
2020-21 and beyond	<ul style="list-style-type: none">• Implement SHARP 2 (subject to the magnitude and impact of proposed changes to the SHARP design)

SHARP Budget Model



Written submissions can be sent to sharp@yorku.ca



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.
More info: <http://uwgta.org/daysofcaring>.

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.