Notice of Meeting
Tuesday, February 11, 2014
at 3:00pm – 4:30pm
306 Lumbers

Agenda

1. Call to Order and Approval of Agenda

2. Chair’s Remarks

3. Minutes of December 10, 2013 meeting

4. Business Arising

5. Dean’s Report to Council

6. Associate Deans’ and Bethune Master’s Remarks

7. Reports from Science Representatives on Senate Committees

8. Reports from Standing Committees of Council

  8.1 Curriculum Committee – Consent Agenda items

  8.2 Committee on Teaching and Learning (items for action)
      ➢ Renaming of the Faculty Level Graduate Student Teaching Award after Dr. Richard Jarrell
      ➢ Resolution concerning Integration of eLearning and Experiential Education in the Faculty of Science

  8.3 Executive Committee’s Vacancies Report on Senate and FSc Committees (item for action)

  8.4 Academic Policy & Planning Committee: Proposal to change 101 admission criteria (item for action)

9. Inquiries and Communications
   ➢ Senate Synopsis: December 12, 2013 and January 23, 2014 (items for information)

10. Other Business
    ➢ NSSE (National Survey on Student Engagement)
    ➢ High School Enrichment Program
    ➢ Coop Program

1. Call to Order and Approval of Agenda

The meeting was called to order and the agenda was adopted with the addition of Dean’s Search update contained under Inquiries and Communications.

2. Chair’s Remarks

The Chair of Council, Patrick Hall, talked to Council about the Lands for Learning Program. This program has an office located in York Lanes, which is open Tuesday to Thursday, and are asking for community input.

The Council is also encouraged to visit the website YUDC.ca for more information.

3. Minutes of November 12, 2013 meeting

Minutes of meeting held on November 12, 2013, were approved as presented.

4. Business Arising

There was no business arising from the Minutes.
5. **Dean’s Report to Council**

The Dean, Don Hastie, had no report to Council. Don Hastie instead reported on behalf of Robert Tsushima, Associate Dean Research. Council was updated on the call for the undergraduate summer research awards from NSERC were sent to the departments.

Faculty relations sent the call for the YUFA Junior Faculty Award funds. The funding envelope was being revised and will be sent in early January.

VPRI has tentatively approved 3 CFI Innovation Fund notices to move forward from FSC. One request is from Biology headed by Professor McDermott. Another is a multi-institution application being co-investigated by Professor Bhadra. The last application is another multi-institutional application being co-investigated by Professor Menary.

The last item from R. Tsushima is an update on the process of the meetings between the Faculty of Graduate Studies and Science regarding the International Student Fees. Associate Dean Tsushima will be setting up meetings in the coming months with the Graduate Program Directors regarding the funding breakdown for these students.

6. **Associate Deans’ and Bethune Master’s Remarks**

Associate Dean Morin, updated Council that the Search Committee received updates regularly in regards to the search for a new dean. Also the Health and Safety memos were sent to Biology and the Mathematics and Statistics memos will be sent shortly. Also a discussion has been taking place in regards to the CUPE Health and Safety Memos being sent out. In January Associate Dean Morin will be talking about the possible implementation of a clause in the contract for both CUPE and YUFA in regards to Health and Safety training.

Associate Dean Cribb, had no report for the Council.

Bethune Master Amanatides reminded Council that the Winter Academic Orientation will be held Friday January 3, 2014. Also of note Lassonde will be holding their own orientation for the winter session.

7. **Reports from Science Representatives on Senate Committees**

No Senate representative were present, therefore no report was given.

8. **Reports from Standing Committees of Council**

*Executive Committee’s Academic and Administrative Program Review (AAPR).*

Council was reminded that information on the AAPR is located on YU site.

*Curriculum Items (Consent Agenda)*

The Consent Agenda was deemed approved by Council.

9. **Inquiries and Communications**

Council was updated on the search for the new dean. The search started earlier and therefore had a higher quality of applicants from all over the world. The applicants were narrowed down to a short list and the interview process has happened. Once a candidate is selected by the committee
the name will be put forward to the President for approval. Once the President approved the candidate and the offer is signed then the name will be announced to the Faculty and York in general.

Council noted the Senate Synopsis of November 28, 2013 was not released in time for inclusion in the agenda package that was sent. Dean Hastie noted that the Science and Technology Studies program passed the first reading of Senate. The motion to approve the program will take place at the December 12, 2013 meeting. The only item that was of interest was the review of the AAPR.

A motion was moved and seconded to suspend the meeting pending the arrival of Patricia Lynch. Motion was approved.

Patricia Lynch, Copyright Officer for York gave a short presentation on how the copyright rules of York have changed. The copyright office is located at 1050 Kaneff Tower. The council is encouraged to visit the website www.yorku.ca/copyright for more information. If there are any questions about the material that is being used in the course pack or the Moodle site please send them to copy@yorku.ca or pmlynch@yorku.ca.

10. Other Business

There was no other business.

P. Hall, Chair of Council
T. Cuddy, Secretary of Council
J. Brethour, Assistant Secretary of Council
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 January 28, 2014, 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 jpearson@yorku.ca

I New Courses

7.2.1 SC/CHEM 1100 4.0 Chemistry and Materials Science for Engineers
7.2.2 SC/PHYS 4170 3.0 Observational and Theoretical Cosmology
   Library statement PHYS 4170 3.0 Observational and Theoretical Cosmology

II Changes

7.2.3 SC/BIOL 4085 4.0 & SC/MATH 4585 4.0 Quantitative Methods in Biology - Change in degree credit exclusion(s)
7.2.4 SC/BIOL 4080 4.0 Freshwater Biology – Change in degree credit exclusion(s)
The Committee on Teaching and Learning proposes/moves the following

Resolution concerning

Integration of eLearning and Experiential Education in the Faculty of Science

In so far as:

1. the Faculty wishes to foster a teaching and learning culture that is focussed on excellence and innovation, including evidence-based best practices;
2. we aim to enhance student learning, and also the flexibility of how we deliver teaching services;
3. students and parents want programs to include opportunities to apply learning in practical (and sometimes work-related) contexts;
4. the University, as apparent through its academic plan and specific recommendations arising from recent task forces, wishes to promote and support teaching innovation through eLearning and Experiential Education initiatives;
5. eLearning and EE as pedagogical approaches are defined in recent discussion paper consultation documents prepared by the task force committees;
6. the achievement of degree level expectations (learning outcomes) can be supported via targeted eLearning and EE innovations agreed upon at the degree program level;

Council resolves that Units will undertake a curriculum review of the programs they are responsible for with the aim of

1. identifying and evaluating courses in which eLearning and EE are already in place;
2. identifying eLearning approaches, including some that are already in place that are appropriate for enhancing pedagogy in the program;
3. identifying specific courses for which it is pedagogically appropriate to deploy eLearning approaches;
4. identifying EE approaches that are appropriate for enhancing pedagogy in the program;
5. identifying specific courses for which it is pedagogically appropriate to deploy EE approaches;
6. specifying a plan for the phased implementation of the identified pedagogical innovation;
7. identifying the support and resources necessary to implementation of the plan

and with the following timelines:

1. Steps 1 and 3 will be supported by “blue-skying” workshops during W14

   The aim of these steps is to provide a structure that will help units discuss and explore eLearning and EE, and then to allow time for information to gestate. We propose holding several sessions, with the support of the Teaching Commons, that will include:

   i. review of the definition and spectrum of activities that constitute eLearning and EE;
ii. ideas to help get people thinking (e.g., about Calibrated Peer Review, LON-CAPA, using social media, how to support an online component of your course);

iii. speakers who have working expertise (not consultants) in experiential education and eLearning;

iv. a survey of what other Faculties are doing;

These workshops may result in a repository of clever ideas for eLearning and EE.

2. Steps 2 and 4 will result in vision documents being prepared by September, 2014

Units would be expected to task a small committee to look into options for their department. Ideally the process should be done in tandem with Departmental/Unit curricular review. It is expected that members of CoTL would be part of these unit committees. Units would develop a plan that assumes they would be provided with adequate resources; part of the plan would detail the support and resources required to implement and sustain the activities.

It is possible that more specific workshops might be required to share ideas and information as units start to consider various ideas. It is worthwhile noting that units could consider courses that are offered simultaneously online and face-to-face (F2F).

3. Steps 5 and 6 will result in planning documents finalised by January, 2015.
1. Executive Committee
   Vacancy available in Natural Science/STS to replace R. Jarrell

2. Academic Policy and Planning Committee
   R. Fournier, Chemistry replaced M. Yousaf

3. Committee on Examinations and Academic Standards
   E. Rosonina replaced R. Quinlan
   G. Audette is now Chair

4. Committee on Tenure and Promotions
   Alternate Vacancy available in Natural Science/STS to replace R. Jarrell

5. Committee on Teaching and Learning
   Membership now includes a minimum of two representatives from each unit and two graduate students.

   Additional Members
   Yelin Su (Teaching Commons representative)
   James Elwick (STS/NATS)
   Julie Clark (Biology)
   Christopher Bergevin (Physics & Astronomy)
   Dov Lungu (Natural Science/STS)
   Stephen Chamberlin (Mathematics & Statistics)
   Dennis Kolosov (Graduate student Representative, Biology)
   Dawn Bazely (Biology)
   Dimitrios Keramidas (IT Representative, Office of the Dean)

   Current Membership:
   Peter Cribb (Associate Dean, Students, ex officio)
   Tamara Kelly (Biology)
   Norbert Bartel (Physics & Astronomy)
   Xin Gao (Mathematics & Statistics)
   Derek Jackson (Chemistry)
   Ilo-Katryn Maimets (Science Librarian representative)
   Olga Girina (Teaching Staff representative)
   M. Jeaneva, Undergraduate Student Representative
   Maryam Hariri (Graduate student representative, Chemistry)
Proposal to change 101 admission criteria

The attached proposal was developed by Peter Cribb, Associate Dean, Students and is being forwarded to council from the Academic Policy & Planning Committee for consideration by council.

Based on an analysis of first year performance, students who repeat high school courses perform poorly compared to those who do not.

The proposal is recommending that admission averages for 101 applicants (current Ontario High School students) be calculated using the average of the first two attempts for any repeated courses. Currently, the highest grade obtained is used, regardless of number of attempts.
Proposal to change 101 admission criteria

Executive Summary
We propose new criteria for who we offer admission to in the 101 pool; criteria that are intended to enhance retention and student success in first year. Currently if students repeat high school courses the highest grade is used in calculating their admission average. We propose to use instead the average of the first two attempts rather than the highest grade. We also propose to offer admission at somewhat lower averages on a case-by-case basis to those who have not repeated courses. The normal appeal and sub-committee consideration will also continue to exist for special case consideration.

Background
Analysis of the first year performance of 101 admitees shows that students who repeat high school courses perform poorly compared to those who do not. For example, first year success is higher for those whose average is in the 75-80% range and who do not repeat courses than it is for those whose average is in the 80-85% range but who do repeat even one course (approximately 70% with GPA greater than 4 compared to 60%).

A comprehensive analysis of first year performance compared to repetition of high school courses can be found in the appendix.

The Current Process
The admission average is calculated using marks in specified prerequisite courses and then those with highest marks to a total of six courses. If a course is repeated the highest mark is used. In fact offers of admission, which are always conditional, are made in three main stages:

1. early offers are based on grade 11 marks
2. the main batch of offers is made in early February based on either midterm marks (in 6 year-long courses including prerequisite courses) or final marks in semester courses (provided the student is also enrolled in prerequisite courses)
3. a later batch is based on final marks as available in June and July

Although these are the main batches, offers are also made weekly at certain times in the cycle, as new marks become available.

In batches 1 and 2 students must be enrolled in the prerequisite courses to be offered admission, even though marks may not be available. For batch 1 an average of 85% has been the cut-off for all programs in recent years. For batches 2 and 3 the cut-off averages have varied but are typically around 80% for bio-related programs and 75% for all others. Averages are set with the help of a modeling exercise that predicts registrants in September based on the previous 3-year history of conversion of offers. Conversion rates are program, choice and average dependent.

Note that for admission purposes a student’s average will often be different for different programs since different courses are prerequisite. Thus, a student may be admissible to one program but not another.
Offers may be rescinded if at the end of the day final marks have dropped significantly, or if a prerequisite course is not passed or dropped, or if high school graduation requirements are not met. Of course, it is difficult to rescind an offer of admission and typically the rescind average is a point lower than the cut-off mentioned above.

**Proposed Process**

The admission average is calculated using marks in specified prerequisite courses and then those with highest marks to a total of six courses. *If English or a science or mathematics course is repeated the average of the first two attempts is used.*

**Batch 1: Early offers**

Offers will be made with a specified cut-off (currently 85%, which has been used in the last two years for this first batch) provided the student is enrolled in prerequisite courses and provided they are not repeating a 4U English, science or mathematics course. This may occur when a student has taken one of these 4U courses in the previous year and has enrolled in it again in the current year. I.e. students who are repeating one or more of these courses will not be eligible for admission in this batch.

**Batch 2: February Offers**

Offers will be made based on the average of midterm or final marks as described above (currently around 75% or 80% depending on the program) for students who have not repeated any prerequisite course.

If a student is repeating a prerequisite course there are a few scenarios:

1. the first mark is known and the midterm of the second is known – the average of the two can be used
2. the first mark is known and so is the second – the average of the two can be used
3. the first mark is known but the second is not – offer can be made at a higher average (to be determined, but for example 85%)

In addition we will request worksheets for students who have no repeats but whose average is up to 2% lower than the cut-offs. Depending on the strength of the student in science subjects an offer may be made.

Offers based on these scenarios would generally continue weekly throughout the Feb. to June period as data became available.

**Batch 3: June Offers**

Offers will be made based on the average of final marks as described above (around 75% or 80% depending on the program) for students who have not repeated any prerequisite course.

If a student is repeating a prerequisite course both marks should be known and the cut-off average for an offer will be based on the average of the marks in any repeated courses.
In addition we will request worksheets for students who have no repeats but whose average is up to 2% lower than the cut-offs. Depending on the strength of the student in science subjects an offer may be made.
Appendix: Smarter 101 Admission Criteria

Context
Retention and student success are critical metrics for the Faculty. Quality teaching, supplemental instruction, peer support, and early intervention are core components of our strategy, but these should be complemented by admission measures. The data below suggest that we should adjust our admission criteria, not to simply reduce numbers by raising cut-offs, but by being smarter about who amongst marginal students we offer admission to.

The data show that students who have repeated high school courses struggle in their science program, with the rate of poor performance, defined as achieving a GPA less than 4.0 in their first year, being significantly higher for this group than it is for those who had not repeated any high school course. Those who repeat more than once without achieving a significantly improved average perform even more poorly.

This data provides a basis for adjusting admission criteria. The basic strategy is to keep cut-off averages essentially the same, to alter how the average is calculated, and to adopt a holistic approach to reviewing the records of students who are below the cut-offs and who have not repeated courses. The latter should allow us to maintain numbers and perhaps meet targets.

Current:
The admission average is calculated using marks in specified prerequisite courses and then those highest marks to a total of six courses. If a course is repeated the highest mark is used.

To Consider:
The admission average is calculated using marks in specified prerequisite courses and then those with highest marks to a total of six courses. If a course is repeated the average of the first two attempts is used. If a student has repeated two or more courses, or the same course more than once, the cut-off average will be at least 80%.

Corollary:
To compensate for loss in heads we should admit below the normal cut-off average for those who have not repeated any HS course.

Data Analysis

1. Dependence of first year performance on having repeated high school courses
The first year York academic performance of students who have repeated HS course(s) is markedly poorer than those who have not. The following tables (1a, 1b, 1c) present data on student success in their first year. In FW10, of 610 newly admitted high school (101) students 404 had not repeated any high school course (Table 1a). Tables 1b and 1c show these numbers for FW11 and FW12. The tables show more detailed information but collectively over the three years 10.6% of these students achieved a first year GPA less than 3, and a further 7.6% achieved in the 3 to 4 range. Of students who repeated one course at high school, collectively over the three years 17.6% achieved a first year GPA less than 3, and a further 17.0% achieved in the 3 to 4 range. In other words the rate of poor first year performance for those who repeated a course is
twice the rate for those who did not repeat any course. Collectively over the three years 40% of those who repeated two courses perform poorly (GPA < 4.0) in first year, and 56.5% of those who repeated 3 or more courses performed poorly.

**Table 1a:** Academic performance at York in first year (YGPA) versus repetition of HS courses in FW10. (HS repeats counts all repeats, i.e. value 4 may mean four different HS courses repeated once each or one HS course repeated 4 times.)

<table>
<thead>
<tr>
<th>FW10 bin</th>
<th>YGPA</th>
<th>YGPA bin</th>
</tr>
</thead>
<tbody>
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<td>HS repeats</td>
<td>0-3</td>
<td>3-4</td>
</tr>
<tr>
<td>0</td>
<td>35</td>
<td>36</td>
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<tr>
<td>1</td>
<td>17</td>
<td>25</td>
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<tr>
<td>7</td>
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**Table 1b:** Academic performance at York in first year (YGPA) versus repetition of HS courses in FW11.

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<th>FW11 bin</th>
<th>YGPA</th>
<th>YGPA bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS repeats</td>
<td>0-3</td>
<td>3-4</td>
</tr>
<tr>
<td>0</td>
<td>36</td>
<td>28</td>
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<td>1</td>
<td>17</td>
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<td>12</td>
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**Table 1c:** Academic performance at York in first year (YGPA) versus repetition of HS courses in FW12.

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<tr>
<th>FW12 bin</th>
<th>YGPA</th>
<th>YGPA bin</th>
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</thead>
<tbody>
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<td>HS repeats</td>
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<td>3-4</td>
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<td>0</td>
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<td>3</td>
<td>6</td>
<td>10</td>
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2. Dependence of first year performance on high school average

How the first year York academic performance depends on the high school final average for students who have no repeated courses is shown in Tables 2a, b, and c for the 2010, 2011 and 2012 admit classes respectively. We will exclude those with high school averages in the 70 to 75 range since they were mostly special case committee admits. When the high school average is in the 75-80% range 31.8% (collectively over the three years) achieve a York GPA less than 4.0 in their first year. In the 80-85% range 20.6% perform poorly (GPA < 4.0) and at 85% and above around 6% performed poorly.

Table 2a F10 admits with no repeated high school courses

<table>
<thead>
<tr>
<th>HS avg.</th>
<th>0-3</th>
<th>3-4</th>
<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
<th>7-8</th>
<th>8-9</th>
<th>Total</th>
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<td>70-75</td>
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Table 2b F11 admits with no repeated high school courses

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<th>HS avg.</th>
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<th>3-4</th>
<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
<th>7-8</th>
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Table 2c F12 admits with no repeated high school courses

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<th>HS avg.</th>
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<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
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</tbody>
</table>
Tables 3a, b, and c show the same data for those who repeated one high school course. Again, excluding those with averages in the 70-75 range and combining the years we see that in the 75-80% range 41.7% have performed poorly (GPA < 4.0) in first year; in the 80-85% range 39.4% have performed poorly; and above 85% the figure is 14.3%. Note that for those who have repeated a course there is not much difference in their first year York performance if the high school average is in the 75-80% range compared to the 80-85% range.

**Table 3a** F10 admits with one repeated high school course

<table>
<thead>
<tr>
<th>HS avg.</th>
<th>0-3</th>
<th>3-4</th>
<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
<th>7-8</th>
<th>8-9</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-75</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>75-80</td>
<td>5</td>
<td>12</td>
<td>8</td>
<td>12</td>
<td>6</td>
<td>3</td>
<td>11</td>
<td>46</td>
</tr>
<tr>
<td>80-85</td>
<td>10</td>
<td>9</td>
<td>8</td>
<td>10</td>
<td>8</td>
<td>2</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>85-90</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>90-95</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>&gt;=95</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>25</td>
<td>19</td>
<td>27</td>
<td>18</td>
<td>14</td>
<td>5</td>
<td>125</td>
</tr>
</tbody>
</table>

**Table 3b** F11 admits with one repeated high school course

<table>
<thead>
<tr>
<th>HS avg.</th>
<th>0-3</th>
<th>3-4</th>
<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
<th>7-8</th>
<th>8-9</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-75</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>75-80</td>
<td>2</td>
<td>9</td>
<td>10</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>80-85</td>
<td>11</td>
<td>8</td>
<td>13</td>
<td>11</td>
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<td>3</td>
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<tr>
<td>85-90</td>
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<td>2</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
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<tr>
<td>90-95</td>
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<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>&gt;=95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>19</td>
<td>26</td>
<td>30</td>
<td>11</td>
<td>10</td>
<td>6</td>
<td>117</td>
</tr>
</tbody>
</table>

**Table 3c** F12 admits with one repeated high school course

<table>
<thead>
<tr>
<th>HS avg.</th>
<th>0-3</th>
<th>3-4</th>
<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
<th>7-8</th>
<th>8-9</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-75</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>75-80</td>
<td>14</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>2</td>
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<td></td>
<td>31</td>
</tr>
<tr>
<td>80-85</td>
<td>11</td>
<td>7</td>
<td>5</td>
<td>11</td>
<td>4</td>
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<td>41</td>
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<td>85-90</td>
<td>2</td>
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<td>1</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>90-95</td>
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<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
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<td>19</td>
<td>27</td>
<td>18</td>
<td>14</td>
<td>5</td>
<td>125</td>
</tr>
<tr>
<td>HS avg.</td>
<td>0-3</td>
<td>3-4</td>
<td>4-5</td>
<td>5-6</td>
<td>6-7</td>
<td>7-8</td>
<td>8-9</td>
<td>Total</td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-----</td>
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<td>-----</td>
<td>-----</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>75-80</td>
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<td></td>
<td>5</td>
</tr>
<tr>
<td>90-95</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>81</td>
</tr>
</tbody>
</table>

**Table 4a** F10 admits with two or more repeated high school course

<table>
<thead>
<tr>
<th>HS avg.</th>
<th>0-3</th>
<th>3-4</th>
<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
<th>7-8</th>
<th>8-9</th>
<th>Total</th>
<th>YGPA range</th>
<th>YGPA range</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-75</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>100.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%</td>
<td></td>
</tr>
<tr>
<td>75-80</td>
<td>20</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td>41</td>
<td>48.8% 19.5% 22.0% 2.4% 4.9% 2.4% 0.0%</td>
<td></td>
</tr>
<tr>
<td>80-85</td>
<td>12</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>45</td>
<td>26.7% 15.6% 20.0% 17.8% 8.9% 8.9% 2.2%</td>
<td></td>
</tr>
<tr>
<td>85-90</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td>11</td>
<td>18.2% 9.1% 18.2% 27.3% 9.1% 18.2% 0.0%</td>
<td></td>
</tr>
<tr>
<td>90-95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>3</td>
<td>0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 100.0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>16</td>
<td>20</td>
<td>12</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>101</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4b** F11 admits with two or more repeated high school course

<table>
<thead>
<tr>
<th>HS avg.</th>
<th>0-3</th>
<th>3-4</th>
<th>4-5</th>
<th>5-6</th>
<th>6-7</th>
<th>7-8</th>
<th>8-9</th>
<th>Total</th>
<th>YGPA range</th>
<th>YGPA range</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-75</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>66.7% 33.3% 0.0% 0.0% 0.0% 0.0% 0.0%</td>
<td></td>
</tr>
<tr>
<td>75-80</td>
<td>24</td>
<td>11</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td>45</td>
<td>53.3% 24.4% 11.1% 8.9% 2.2% 0.0% 0.0%</td>
<td></td>
</tr>
<tr>
<td>80-85</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>7</td>
<td>9</td>
<td>2</td>
<td></td>
<td>54</td>
<td>24.1% 22.2% 20.4% 13.0% 16.7% 3.7% 0.0%</td>
<td></td>
</tr>
<tr>
<td>85-90</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td>12</td>
<td>33.3% 8.3% 8.3% 16.7% 16.7% 16.7% 0.0%</td>
<td></td>
</tr>
<tr>
<td>90-95</td>
<td></td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>0.0% 20.0% 0.0% 60.0% 0.0% 20.0% 0.0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>26</td>
<td>17</td>
<td>16</td>
<td>12</td>
<td>5</td>
<td></td>
<td>119</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4c** F12 admits with two or more repeated high school course
Table 5 summarises this data. Clearly, reducing the number of students who have repeated high school courses, even at the expense of increasing the number of students at a lower average who have not repeated any course will positively affect retention after first year.

**Table 5:** Percent whose first year York performance is poor (GPA < 4.0)

<table>
<thead>
<tr>
<th></th>
<th>75-80%</th>
<th>80-85%</th>
<th>&gt;85%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 repeats</td>
<td>31.8%</td>
<td>20.6%</td>
<td>6%</td>
</tr>
<tr>
<td>1 repeat</td>
<td>41.7%</td>
<td>39.4%</td>
<td>14.3%</td>
</tr>
<tr>
<td>2 or more</td>
<td>66.9%</td>
<td>40.8%</td>
<td>27.5%</td>
</tr>
</tbody>
</table>

In particular it seems that students who have repeated twice or more and yet achieved a high school average less than 80% should not be offered admission. In their place we should selectively offer admission to students whose averages are in the 70-75% range and who have not repeated courses.

**The Impact on Numbers**

Changing how the high school admission average is calculated affects which students are offered admission. The admission average is calculated using different prerequisite courses for the different programs and a student may be admissible to one program they applied to but not another. In the data below we only use the one program that was the highest choice. The data does not include students who repeated the same course more than once; it does include students who repeated multiple courses but only once each and these are separated in the following two tables.

Table 6a shows that in 2012 and in the programs listed, 76 applicants who were offered admission would have had an average below the cut-off for the program if it had been calculated using the average of repeated courses. However, of those 76 only 25 actually registered in classes. The first year result (YGPA) for the 25 is shown: slightly over 50% achieved a GPA less than 4.0.

**Table 6a** Fall 2012 admits who had repeated one course and would not have been admitted if the average of repeated high school courses was used.

<table>
<thead>
<tr>
<th></th>
<th># with repeats</th>
<th>Count</th>
<th># below rescind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>1639</td>
<td>435</td>
<td>273</td>
</tr>
<tr>
<td>Chemistry</td>
<td>203</td>
<td>64</td>
<td>30</td>
</tr>
<tr>
<td>Biochem/Biophys</td>
<td>220</td>
<td>37</td>
<td>21</td>
</tr>
<tr>
<td>Physics/Astron</td>
<td>63</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>AppMath BSc</td>
<td>71</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>Math for Ed</td>
<td>39</td>
<td>11</td>
<td>7</td>
</tr>
</tbody>
</table>

GPA range FW12

\[
\begin{array}{ccccccc}
& & & 0-3 & 3-4 & 4-5 & 5-6 & 6-7 \\
Registered & 76 & 25 & 8 & 5 & 4 & 7 & 1 \\
\end{array}
\]

Table 6b shows the same data for students who had repeated more than one course once (i.e. these had not repeated the same course). 82 fell below the cut-offs of whom 34 actually registered in classes and 21 (62%) achieved a York GPA less than 4.0.

**Table 6b** Fall 2012 admits who would not have been admitted if the average of repeated high school courses was used.
Thus in 2012 around 160 students would have been affected, i.e. likely not offered admission or rescinded had they accepted. In 2012 around 60 of these students did accept and register in courses but 34 of those performed poorly (GPA<4) and likely contribute to our retention statistics.

These numbers are approximate since they do not include all programs and they do not include those students who repeated a course more than once. (I cannot perform the calculation for students who have repeated the same course more than once; nor can I perform the calculation for programs that have few specific prerequisite HS courses.) For example, in the Biology program, the data include 399 of 435 students who had repeated one or more high school courses.

**Can numbers be increased elsewhere?**

For the F12 admission there were 108 students who had chosen a program in the Faculty as their first or second choice, who had repeated no courses, and whose HS average was within 3 points of the cut-off (i.e. cut-offs of 72 for non-bio programs and 77 for bio programs). The data suggests that if such students were offered admission they would succeed in first year better than those who had repeated courses. Conversion rates suggest that around 50 of these 108 would register at York.

There were 74 students who would have been offered admission if the lowered cut-offs of 78 and 73 were used. Around 35 would likely have registered.

**Conclusion**

Two thirds of students who have repeated more than one high school course yet achieved an average less than 80% perform poorly in their first year. Regardless of program I suggest that there be a cut-off average of 80% in such cases. This would not affect non-biology programs since the bio cut-off is 80% anyway.

Students who have repeated any high school course have significantly less likelihood of success in first year than those who have not repeated any course. Using an average of the first two attempts would better reflect (to some extent) the preparation of such students compared to those who have not repeated the course. Trimming the number of students admitted who have repeated courses by using the average of the first two attempts would affect attrition rates positively. The application of such admission rules and their affect on numbers is difficult to estimate. Offers of admission are made conditionally based on grade 11 marks initially, and then on partial grade 12 marks. Hence the algorithm applied would likely use a combination of high school data.
from grades 11 and 12. The data discussed above is from final results for grade 12 and therefore provides only an estimate.
Remarks

The Chair of Senate, Professor Mykitiuk, greeted Senators at the end of the Fall term and noted that Senate would meet for 600th time in January 2014, an occasion that will be commemorated.

President Shoukri expressed his thanks to Senators and the community for their dedication, and provided Senate with an overview of the key issues for York and other Ontario universities – the government’s Differentiation Policy Framework and the development of related Strategic Mandate Agreements. While optimistic that York’s size, diverse programs and recognized excellence will stand the University in good stead, these are the most consequential public policy initiatives in many years. The President’s presentation was posted online with other documentation for the meeting (for this and other reports mentioned in the synopsis, see link at the bottom of the page).

Establishment of a Department of Science and Technology Studies, Faculty of Science

On a recommendation from the Academic Policy, Planning and Research Committee, Senate approved a statutory motion to establish a Department of Science and Technology Studies in the Faculty of Science and to recommend approval of the Department by the Board of Governors. Subject to approval by the Board, the STS programs currently housed in Liberal Arts and Professional Studies will move to the Department.

Reports

Senators on the Board of Governors transmitted a synopsis of the Board’s meeting of December 9, 2013.

The Academic Colleague to the Council of Ontario Universities shared the most recent COU Update, and highlighted initiatives related to access, Aboriginal students, and the organization’s current advocacy campaigns.

Under the auspices of the Academic Policy, Planning and Research Committee, Vice President Haché presented his annual research report with a focus on indicators of research impact and other rakings, together with a summary of major research achievements in the past year.

Approvals

Senate approved recommendations of the Academic Standards, Curriculum and Pedagogy Committee to establish a York University English as a Second Language Bridging Program (YUBridge) through the York University English Language Institute, and to amend Thesis, Dissertation and Supervision Guidelines for the Faculty of Graduate Studies to accommodate the adoption of an Electronic Thesis and Dissertation (ETD) submission platform.
Committee Information Items

Senate Executive informed Senate of its facilitation of a process by which Senate will elect two Senators to serve on the Academic Sub-Committee of the Academic and Administrative Program Review Steering Committee remaining vacancies on Senate committees.

The Appeals Committee filed its annual report and in doing so advised that cases reaching the Senate level had fallen by half of in the last two years, and confirmed that the Office of the University Secretary and University Counsel will continue to conduct workshops to enhance appeals processes.

In presenting its annual report to Senate, the Awards Committee advised that recommendations for a new scholarship framework are in the final stage of consideration.

Academic Standards, Curriculum and Pedagogy advised that it had participated in consultations with the Experiential Education Working Group on issues of central important to the University Academic Plan’s student experience objectives.

Academic Policy, Planning and Research submitted an updated chronology of its involvement in the Academic and Administrative Program Review initaitve and shared the terms of reference it had endorsed for a new Major Awards Advisory Committee supported by the Vice-President Research and Innovation.

For information on these items please refer to the full Senate agenda posted online at


University Secretariat www.yorku.ca/secretariat or extension 55310.

Senate’s 600th meeting will be held at 3:00 p.m. on Thursday, January 23, 2014.
The Senate of York University

Synopsis

of the 600th Meeting of Senate held on
Thursday, January 23, 2014

Remarks

The Chair, Professor Mykitiuk, greeted Senators on the occasion of the 600th meeting of Senate, congratulated President Shoukri on his being named to the Order of Canada, expressed condolences on the passing of Professor Richard Jarrell and, commenting on the religious accommodation issue that has been on the minds of members of the community, urged thoughtful reflection on a complex and sensitive matter.

In his remarks, Dr Shoukri profiled the new Dean of Science, Professor Ray Jayawardhana, and thanked Dean Donald Hastie for providing outstanding leadership to the Faculty. The President updated Senate on provincial postsecondary initiatives, including development of a Strategic Mandate Agreement, credit transfer, the online institute, and the University’s position on the question of applying for funding for a satellite campus. The President also spoke about religious accommodation in the context of a secular institution that promotes equity, social justice and respect.

Reports

Under the auspices of the Academic Policy, Planning and Research Committee, Provost Lenton reported on the Academic and Administrative Program Review initiative and the Strategic Mandate Agreement process. Senate will have opportunities for consultation on both of these matters.

Notice of Motion to Establish a New Degree Type

Academic Standards, Curriculum and Pedagogy gave notice of its intent to present a statutory motion recommending the establishment of a Master of Business Analytics Degree.

Approvals

Senate elected Professor Gareth Morgan to the Tenure and Promotions Committee and approved the following recommendations made by the Academic Standards, Curriculum and Pedagogy Committee:

- establishment of a Graduate Diploma in Comparative Literature, Graduate Program in Humanities, Graduate Studies
- establishment of a Type 2 Graduate Diploma in World Literature, Graduate Program English, Graduate Studies
- establishment of an Honours Minor BA Option in Computational Arts & Technology, Digital Media Program, Fine Arts
- closure of the Graduate Diploma in Health Services & Policy Research, York Institute for Health / Graduate Studies
- closure of the Graduate Diploma in Teaching of Acting, Graduate Program in Theatre, Graduate Studies
- closure of the Graduate Diploma in Teaching of Movement for Theatre, Graduate Program in Theatre, Graduate Studies
- closure of the Undergraduate Certificate in Biblical Studies, Humanities, Liberal Arts & Professional Studies
- Policy on the Length of Completion of York-Seneca-Georgian BScN Program, Nursing, Health
- addition of streams / changes to degree requirements for the Specialized Honours BA Program in Digital Media, Digital Media Program, Fine Arts / Lassonde
- changes to requirements / admission standards for MA Program in Critical Disability Studies, Faculty of Graduate Studies
changes to the Time to Completion Option for Part-Time Students in MSc in Nursing, Graduate Studies

Committee Information Items

The Executive Committee advised Senate of its approval of Faculty Council nominees to serve on Senate Executive and Academic Policy, Planning and Research, reported on the status of motion, later withdrawn, on aspects of the Academic and Administrative Program Review initiative, relayed its view that religious accommodation should be taken up in an informed, collegial way, and confirmed that Senators who had been absent for three consecutive meetings had been contacted.

Academic Standards, Curriculum and Pedagogy reported its approval of the following minor changes in curriculum, nomenclature and degree requirements

a) Faculty of Fine Arts
   BFA program in Film (Screenwriting)

b) Faculty of Graduate Studies
   Kinesiology and Health Sciences graduate program
   Graduate Diploma in Post-Secondary Education: Community, Culture and Policy

c) Faculty of Liberal Arts & Professional Studies:
   Business and Society
   Certificate in Geographic Information Systems and Remote Sensing
   Children’s Studies
   Classical Studies
   Classics
   English
   Geography and Urban Studies
   German Studies
   History
   Humanities
   Religious Studies
   South Asian Studies

d) Faculty of Science
   Biology (Biomedical Stream)
   Environmental Biology
   Environmental Science
   BA in Mathematics & Statistics; BSc in Applied Mathematics
   Geography
   General Science
   Physics & Astronomy (Astronomy Stream)
   Mathematics for Commerce (Operations Research Stream)

Academic Policy, Planning and Research reported on its input to the University’s SMA submission, described its involvement in recent AAPR developments, and provided details on its upcoming round of meetings with the Deans, Principal and University Librarian.

For information on these items please refer to the full Senate agenda posted online at


University Secretariat www.yorku.ca/secretariat or extension -55310.

Senate’s 601st meeting will be held at 3:00 p.m. on Thursday, February 27, 2014.
Program Overview

The Faculty of Science is developing a high school enrichment program for students with an interest in science and mathematics. The program will target gifted and/or high performing students, with the aim of attracting more high quality students into the Faculty’s undergraduate programs.

This summer program will consist of a series of week-long non-credit courses for students in grades 9 to 12. The courses will highlight specific research strengths within the Faculty of Science, and will be developed and delivered by graduate students. The program will also include an optional residence program, allowing students from across Canada and around the world to participate.

The program is intended to be self-funding, requiring no financial support from the Faculty or University.

Program Goals & Benefits

The primary goal of the program is to foster academic curiosity and excite youth about futures in science and math. The program will also:

- Position York as a leading scientific research and teaching university
- Serve as a recruitment tool for the Faculty by attracting top students, thereby improving the quality of the undergraduate student population
- Provide teaching and curriculum development experience for graduate students
- Assist in recruiting more students to programs within the Faculty that have enrolment capacity
- Help redefine the current reputation that exists about York in high schools
- Elucidate the unique research strengths within the Faculty
- Allow the Faculty to engage with high performing pre-university students locally, nationally, and internationally
- Contribute to achievement of the Graduate Degree Learning Expectations in Masters and PhD programs

Summer 2014 Dates

Week 1: July 7-11, 2014
Week 2: July 14-18, 2014
Week 3: July 21-25, 2014
Week 4: July 28-August 1, 2014
Summer Science Institute

Course Proposal Application
The summer program will consist of a series of week-long non-credit courses for students in grades 9 to 12. The courses will highlight specific research strengths within the Faculty of Science, and will be developed and delivered by a combination of graduate students, post-docs, alumni, and faculty.

Those interested in developing and delivering one or more week-long courses should complete the Application Form and Course Proposal below and submit to Justin Chan at jchan@yorku.ca by February 24, 2014.

Proposal Submission Details

PART I: Application Form

PART II: Course proposal

Part I: Application Form

Personal Information
Please select: Dr. Mr. Ms.

First Name: ____________________________
Last Name: ____________________________
Email Address: ________________________
Home Address: _________________________

City: _________________________________
Province/State: _______________________
Postal/Zip Code: ______________________
Phone (Day): _________________________
Phone (Evening): _____________________

Educational Background

<table>
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<tr>
<th>Institution and Faculty</th>
<th>Program and Department</th>
<th>Degree / Certification</th>
<th>Year Completed / Expected Completion</th>
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Are you:
  o Faculty
  o Pursuing a PhD degree
  o Pursuing a Masters degree
  o An alumnus/alumna
  o Other _____________________________

Eligibility

You are a:
  o Canadian Citizen or Landed Immigrant
  o Visa Student

If you are a visa student, do you have a permit to work in Canada?
  Yes    No

Availability

Please check all that apply:
  o July 7-11, 2014
  o July 14-18, 2014
  o July 21-25, 2014
  o July 28-August 1, 2014

Additional Information
Please note that offers of employment are conditional upon instructors attending training, submitting a police records check clearance letter and proof of WHMIS certification.
Part 2: Course Proposal

Sample Course

Title: Nanobiotechnology

Proposed Grade Level: Senior (Grades 11 & 12)

Proposed Stream: Biomedical Engineering

Course Description

The World Health Organization reports that cancer will soon become the leading cause of death worldwide. The National Cancer Institute grants $4.7 billion each year to cancer research which illustrates the importance of understanding cancer and engineering novel strategies to battle this deadly disease. Through a series of laboratory activities and in-class discussions, this course will explore the cellular changes that lead to cancer and the science, application and development of diagnostic and treatment strategies. The important role of biomedical engineers will be emphasized in the development of new approaches and technologies designed to improve the diagnosis and treatment of cancer.
## Sample Course Proposal

<table>
<thead>
<tr>
<th>Theme</th>
<th>Course Introduction &amp; Fundamentals</th>
<th>Observing the Hallmarks of Cancer in Action</th>
<th>Becoming a critical consumer of scientific literature</th>
<th>Innovations in Research</th>
<th>Working Towards the Cure</th>
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<tr>
<td><strong>Lecture Topics</strong></td>
<td>Students will learn about the types, causes and hallmarks of cancer as well as the impact of this disease on society</td>
<td>Cell physiology and diagnostic techniques overview</td>
<td>Cancer treatment strategies and how to become more scientifically literate</td>
<td>The scientific method and the design process</td>
<td>Collaborative and interdisciplinary approaches to research</td>
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<td><strong>Proposed Activities</strong></td>
<td>Introductions &amp; icebreakers. Foundational lecture exploring current topics in cancer research that are controversial (morning). Brief lecture &amp; guest speaker followed by Q&amp;A (afternoon)</td>
<td>Cancer cell culture lab pt. 1 (morning) and exploring cancer diagnostic techniques/presentation prep in the computer lab (afternoon)</td>
<td>Lecture and research on cancer treatment strategies; design competition prep (morning) and cancer diagnosis lab (afternoon)</td>
<td>Design project competition (morning) and pt. 2 of the cancer cell culture lab (afternoon)</td>
<td>Tours of two cancer research centres – U of T’s pharmaceutical chemistry cancer research lab and a cancer imaging facility at MaRS (morning) and research presentations with judges (afternoon)</td>
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<td><strong>Learning Goals</strong></td>
<td>Students will be able to demonstrate a concrete understanding of the various approaches to cancer research &amp; of the ethical issues surrounding research in this field</td>
<td>Students will learn several of the techniques used in research labs and be able to evaluate the pros and cons of various diagnostic approaches</td>
<td>Students will be able to assess non-human DNA samples and determine the hereditary tendencies of several conditions. Students will be taught how to critically evaluate research publications</td>
<td>Students will understand how to implement &amp; evaluate the effectiveness of the scientific method and iterative design process</td>
<td>After visiting two cancer research centres, students will be able to judge the effectiveness of collaborative and interdisciplinary approaches to research and be asked to forecast future trends in the field of cancer research</td>
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<tr>
<td>How is the content you cover each day being applied to solve real world problems?</td>
<td>When students learn about the types, causes, hallmarks, the evolution of various approaches to cancer research and the impact of this disease, they are able to grasp how valuable scholarship in this area is, how incremental approaches lead to shifts in paradigms and how research is translated from the bench top to the bedside. They become acutely aware that although a substantial amount of progress has been made towards finding a cure, there is still a lot of work to be done and many ways for them to contribute.</td>
<td>This row must speak to the content you wish to cover each day.</td>
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<td>Facilities Required</td>
<td>Tutorial room with movable desks (all day)</td>
<td>Tutorial room with movable desks &amp; Biosafety level 1 lab with biosafety cabinets (morning) and a Windows computer lab space (afternoon). ECT logins required for each student</td>
<td>Tutorial room with movable desks/design space (morning), Biosafety level 1 lab with biosafety cabinets (afternoon) and a Windows computer lab space (late morning)</td>
<td>Design space or a tutorial room with movable desks (morning) and a Biosafety level 1 lab with biosafety cabinets (afternoon)</td>
<td>Tutorial room/case room (afternoon); I will arrange for the tours of the two cancer research centres (morning)</td>
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<td>Materials</td>
<td>Mac laptop projector cable, projector and speakers, class set of writing utensils &amp; notebooks (all week), 5 packs of playing cards, 10 die, 20 sheets of poster board, small prizes (5) for winners of the debate. 5 laptops (1 for each group) with power supplies and internet access. 3 sets of handouts to be provided two weeks before classes begin</td>
<td>Microscopes, a hemocytometer, a CO2 humidified incubator, P100 &amp; P1000 pipettors with tips, 25mL flasks, Eppendorf tubes, Ethanol (anhydrous), SKOV3 &amp; Lo29 cells, sterile PBS and cell culture media.</td>
<td>Genetic Diagnosis of Cancer Lab Kit (pre-digested DNA and a DNA stain) &amp; electrophoresis stations, various buffers (more information to follow). Design competition: safety goggles, work gloves, nails, lumber, tarps, wheels &amp; pulleys, arts &amp; craft supplies including epoxy &amp; paint (quantities &amp; specifics to follow shortly)</td>
<td>Small prizes ($) for the winners of the design competition.</td>
<td>Digital cameras to take pictures of the facilities if available. Gift bags and thank you cards for tour guides (2) and 15 small prizes for top three teams (best research presentations)</td>
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Course Proposal

Title: __________________________________

Proposed Grade Level:  
Junior (Grades 9 & 10)  
Senior (Grades 11 & 12)

Proposed Stream: ________________________

Course Description

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Course Outline
Each day has specific themes and learning objectives designed to build upon each the previous day’s work. 50-60% of the week should consist of opportunities for students to do laboratory work, demonstrations, computer programming, or computer modeling.

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<td>Theme</td>
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<td>Lecture Topics</td>
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<td>Proposed Activities</td>
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<td>Learning Goal</td>
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<td>Activity Details</td>
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<td>Materials</td>
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<td>Use of Materials</td>
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<td>Afternoon Activity (If Applicable)</td>
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