

UNIVERSITY COUNCIL  
ACADEMIC PROGRAMS COMMITTEE  
REQUEST FOR DECISION

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**PRESENTED BY:** Terry Wotherspoon; Chair, Academic Programs Committee

**DATE OF MEETING:** November 16, 2017

**SUBJECT:** Direct-entry Doctor of Philosophy (Ph.D.) in Chemistry

**DECISION REQUESTED:**

*It is recommended:*

*That Council approve a direct-entry Doctor of Philosophy (Ph.D.) program in Chemistry with an 85% admission average, effective September 2018*

**PURPOSE:**

The College of Graduate and Postdoctoral Studies has the ability to implement direct-entry Ph.D. programs within an approved template, as approved by University Council in December 2012 and confirmed by Senate in April 2013. The proposal for the direct-entry Ph.D. in Chemistry does not fit within the template because of the admissions average requirement of 85%, which exceeds the 80% requirement outlined in the template.

**CONTEXT AND BACKGROUND:**

The Department of Chemistry proposes 85% as the admission requirement for students applying for a Ph.D. with just an undergraduate degree in order to recruit exceptional students into the program. Many Chemistry programs at our comparator institutions have direct-entry Ph.D. programs and introducing one at the U of S will allow us to competitively recruit top-quality undergraduates into the graduate program.

In addition to the deviation from the template for direct-entry Ph.D.'s that was approved by Council in 2012, a slight change in the required ~~courses credit units~~ is being proposed that differs from those in a combined M.Sc. and Ph.D. program. Students in the direct-entry program will ~~no longer be required~~ not be expected to complete CHEM 801.6 – a foundational class, ~~but will have an additional~~ rather they will complete an alternate 3 c.u. of coursework ~~relevant to the research area~~ required. This will result in direct-entry Ph.D. students requiring a minimum of 12 c.u. of coursework, whereas students entering the M.Sc. and transferring to the Ph.D. are required to complete 15 c.u. of coursework.

Students who do not meet the 85% admission average can still apply to the Master's program in Chemistry with the possibility of transferring into the PhD program after a time.

**CONSULTATION:**

The proposal for a direct-entry Ph.D. program in Chemistry with an admissions average of 85% was approved by the Graduate Programs Committee on September 13, 2017 and the Executive Committee of the College of Graduate Studies and Research on September 25, 2017.

The proposal was discussed at the Academic Programs Committee on October 25, 2017, with it made the recommendation that Council approve the direct-entry Ph.D. program in Kinesiology Chemistry with 85% admission average as a requirement for admission.

**FURTHER ACTION REQUIRED:**

University Senate was asked to confirm the decision at their April 2018 meeting.

**ATTACHMENTS:**

1. Proposal for Direct-entry admission for the PhD in Chemistry program

# Memorandum

**To:** Terry Wotherspoon, Chair, Academic Programs Committee of University Council

**CC:** Andrew Grosvenor, Graduate Chair, Department of Chemistry

**From:** Ryan Walker, Acting Associate Dean, College of Graduate and Postdoctoral Studies

**Date:** October 11, 2017

**Re:** Implementing direct-entry Ph.D. admission in Chemistry

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In September 2017, the Graduate Programs Committee and the Executive Committee of the College of Graduate and Postdoctoral Studies (CGPS) considered a proposal to implement a direct-entry Ph.D. program in Chemistry. While the CGPS has authority to approve direct-entry Ph.D. programs developed on an approved template, the Department of Chemistry was seeking to increase the minimum admission average, reduce the required credit units, and modify some of the program milestone timelines. Through the review process, the CGPS committees were impressed with the thoughtful development of the proposal. The proposal was consistent with U15 comparators for direct-entry Ph.D. programs in Chemistry, which would allow the department to be competitive in recruiting top students.

There are currently 54 approved Ph.D. programs in CGPS, and 18 have implemented the direct-entry admission option (33%). Of the programs that have implemented the direct-entry option, 17 out of 18 have implemented the template requirements. In April 2017, University Senate confirmed the direct-entry Ph.D. in Kinesiology with an 85% minimum admission average.

For the purposes of transparency, the CGPS posts information on direct-entry Ph.D. programs through the University Course Challenge process. For consistency, this proposal has been submitted for information to the October 2017 course challenge.

The CGPS recommends that the direct-entry Ph.D. in Chemistry be approved.

Please note that consultation with the Registrar was sought; however, it was not required as the change would not impact the student information system.

Attached please find:

- A copy of the memo from the Executive Committee of CGPS recommending the proposal
- A copy of the memo from the Graduate Programs Committee of CGPS recommending the proposal
- The completed proposal form for curricular change

If you have any questions, please contact [kelly.clement@usask.ca](mailto:kelly.clement@usask.ca) (306-966-2229).

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## Memorandum

**To:** Dr. Terry Wotherspoon, Chair, APC (of University Council)

**Copies:** Dr. Bruce Eglington, Chair, GPC CGPS  
Dr. Andrew Grosvenor, Grad Chair, Department of Chemistry

**From:** Dr. Trever Crowe, Chair, Executive Committee, CGPS

**Date:** September 25, 2017

**Re:** Direct-Entry PhD in Chemistry

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On September 25, the Executive Committee of CGPS (EC) reviewed the following proposal from the Graduate Programs Committee of CGPS:

On September 13, 2017, the Graduate Programs Committee (GPC) reviewed the request to implement a direct-entry PhD program option in Chemistry. Motion: *To recommend approval of the direct-entry PhD in Chemistry.* Kulshreshtha/Andrews

**CGPS Executive Committee (EC) supports the proposal** and comments that *this department is raising the bar. They have put together a strong case and it enables their ability to select their own top students that could go directly into the PhD – overall it made sense to implement the way they are proposing.*

**B. Eglington moved that the EC recommend approval of the of the direct-entry PhD in Chemistry /seconded M. Ferrari **All in Favour: CARRIED****

If you have any questions or concerns regarding the EC's motion/recommendations please contact [lori.lisitza@usask.ca](mailto:lori.lisitza@usask.ca) on behalf of the Executive Committee.

## Memorandum

**To:** Dr. Trever Crowe, Chair, CGPS Executive Committee

**Copies:** Dr. Andrew Grosvenor, Grad Chair, Department of Chemistry

**From:** Dr. Bruce Eglinton, Graduate Programs Committee, CGPS

**Date:** September 14, 2017

**Re:** Direct-Entry PhD in Chemistry

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On September 13, 2017, the Graduate Programs Committee (GPC) reviewed the request to implement a direct-entry PhD program option in Chemistry.

In 2011, institutional approval was granted to allow implementation of direct-entry PhD programs, where students could be admitted to a PhD directly after completing a bachelor's degree. The direct-entry PhD program options included specific criteria, including programmatic requirements that would be consistent with requirements for students entering a master's program and transferring to a PhD inclusive of minimum credit unit requirements and required coursework. Minimum admission requirements for the direct-entry PhD included a minimum GPA of 80% over the last 60 credit units. The CGPS (CGSR at that time) provided each academic program with a template specifying the degree requirements that could be implemented for programs electing to provide the direct-entry admission option. Program proponents were informed that modifications to the provided templates could be proposed for approval.

The variations in Chemistry's proposal as compared to the template include:

\*A minimum GPA of 85% for admission, rather than 80%

\*Completion of 12 credit units rather than 15

\*Changes to the timelines for completion of program elements

(Note CHEM 801.6 is noted in the proposal. The class is a 6-credit unit class on 6 sections of chemistry. The class is normally required for students; however, it is not a formal element required for all students. Students' background preparation is assessed to determine appropriate course requirements.)

During the GPC review, committee members noted that the 20-month allowance for the qualifying exam and coursework to be concluded seemed long; however, members were satisfied that those elements normally would be concluded much more quickly. Members appreciated the timeline providing opportunities for students to transfer and complete an MSc. Members appreciated the thoroughness of the proposal, and noted that the proposed requirements were consistent with comparator institutions.

The GPC passed the following motion:

Motion: *To recommend approval of the direct-entry PhD in Chemistry.* Kulshreshtha/Andrews

If you have any questions, please contact Kelly Clement at [Kelly.clement@usask.ca](mailto:Kelly.clement@usask.ca) or 306-966-2229.

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UNIVERSITY OF  
SASKATCHEWAN

## Proposal for Academic or Curricular Change

### PROPOSAL IDENTIFICATION

Title of proposal: [Direct-Entry Ph.D. Program in Chemistry](#)

Degree(s): [Ph.D.](#)

Field(s) of Specialization: [Chemistry](#)

Level(s) of Concentration: [not applicable](#)

Option(s): [not applicable](#)

Degree College: [College of Graduate and Postdoctoral Studies](#)

Contact person(s) (name, telephone, fax, e-mail):

Proposed date of implementation: [Sept 1, 2018](#)

### Proposal Document

The Chemistry Department at the University of Saskatchewan was established in 1910 and has a long history of research and graduate training. The first Master's degree was conferred in 1915 and the first Doctorate in 1953. Many of our graduates have gone on to have distinguished careers in academia and in industry, most notably Henry Taube (B.Sc., 1935; M.Sc., 1937; Nobel Laureate, 1983).

Currently, there are 77 students enrolled in graduate programs in chemistry; 24 in the M.Sc. program and 53 in the Ph.D. program. The successful recruitment of high quality students into our graduate programs is crucial and demands our continuous attention. In recent years, several colleagues have indicated that the inability of certain prospective students holding a 4 year B.Sc. degree to directly enter our Ph.D. program was an impediment to recruitment of such students. Indeed, many chemistry departments in Canadian universities allow direct entry of B.Sc. graduates into their Ph.D. programs (e.g., UBC, UofAlberta, UofCalgary, Queen's, McGill). The University of Saskatchewan also allows for this possibility and a 'template' approved by CGPS for direct entry Ph.D. programs prescribes the admission and program requirements. However, after much discussion the Department concluded that certain aspects of this approved 'template' were

not suitable for the program that was envisaged. Specifically, the admission requirements were too low and the program requirements were too similar to our existing path from B.Sc. to Ph.D. (i.e., admission to the M.Sc. program followed by a transfer to the Ph.D. program after 12-24 months). Our program design aims to provide a direct-entry Ph.D. program that recognizes the potential of superb candidates but also provides a successful endpoint (e.g., a M.Sc. degree) for those that, for whatever reason, fail to perform at the anticipated level. Thus, the proposed criteria include significant evaluations at the 20-month mark as this would be the last opportunity to transfer to a M.Sc. program without penalty. Below, the CGPS approved template for direct-entry Ph.D. programs is reproduced with all deviations from that template proposed for the Direct-entry Ph.D. Program in Chemistry and their justifications highlighted in yellow. With the exception of those highlighted criteria, the proposed program is fully consistent with the approved template. A brief description of our plans to administer the proposed program is appended to the template.

## **CGSR 'Template' for Direct-Entry PhD Programs**

### **Admission Requirements**

With the recommendation of the unit, direct entry Ph.D. admission is available to exceptionally strong students, who show great promise in terms of academic accomplishments and potential for research.

- A four-year bachelor of science degree in Chemistry, or equivalent.
- A cumulative weighted average of at least 80% in the last two years of undergraduate study (i.e., 60 credit units of course work).  
**Chemistry Proposal: a cumulative weighted average of at least 85% in the last two years of undergraduate study (i.e., 60 credit units of course work).**
- Demonstrated ability for independent thought, advanced study, and independent research.
- Evidence of English proficiency.

**Justification for change:** The envisaged program will be restricted to truly exceptional undergraduates, specifically those whose academic and research achievements at graduation are comparable to those of NSERC-PGS award winners.

### **Degree Requirements**

Students must maintain continuous registration in the CHEM 996 course.

- At least 9 credit units of course work at the graduate level must be successfully completed in the first year of the program.  
**Chemistry Proposal: at least 9 credit units of course work completed (not CHEM 801) within the first 20 months in the program with a cumulative average of at least 80%**
- Within the first year of the program, successfully complete a Ph.D. Qualifying Examination that is at least as rigorous as the defense for a Master's thesis in the program area.  
**Chemistry Proposal: successfully complete a Ph.D. Qualifying Examination within the first 20 months in the program.**
- GSR 960
- GSR 961 if research involves human subjects
- GSR 962 if research involves animal subjects

- A minimum of 15 credit units
  - Chemistry Proposal: a minimum of 12 credit units (Not CHEM 801. Chem 801 is not included in this program)**
- CHEM 991
- CHEM 990
- CHEM 996
- Pass a comprehensive examination, after completing the required course work, and prior to focusing on their research and doctoral thesis.
  - Chemistry Proposal: pass the Ph.D. Comprehensive Examination within the first 40 months in the program.**
- Write and successfully defend a thesis based on original investigation.

**Justification for changes:**

**9 credit units within 20 months:** The number of graduate courses offered within the department in any given year is limited. Without taking CHEM 801.6, it would be difficult for the majority of our students to have access to three **relevant** graduate courses (e.g., CHEM 8xx.3) within their first two academic terms. Most students could achieve that objective within three academic terms (16 months) but only in exceptionally rare cases would more than four terms (20 months) be needed. The 20-month mark is an important milestone in our program design as it is the latest point where a student could transfer to a M.Sc. program and potentially complete that program (9 credit units required) within the 24 month period for which our Department guarantees full funding. (also see the justification 'Ph.D. Qualifying examination within 20 months' below)

**Successfully complete the Ph.D. Qualifying Examination within in the first 20 months:** The format of the Ph.D. Qualifying Examination in the Department of Chemistry is different from that in many other units. Specifically, the examination involves the submission of a written report on the proposed Ph.D. research and an oral presentation of the proposal (open to the university community) followed by an oral defence of the proposal. Adjudication of the examination is the responsibility of an Examining Committee (EC) composed of the Advisory Committee (AC) supplemented by two additional faculty members and it is unusual and difficult to schedule these examinations in the summer months. Students must expend considerable effort to prepare for this exam and a significant benefit accrues to those candidates able to acquire meaningful 'preliminary' results relevant to their proposed Ph.D. research in advance of the exam. For Ph.D. students entering with an M.Sc. qualification, successfully completing this exam within their first year is quite feasible, in part because few complete more than 3 credit units of course work during that period. In contrast, direct-entry Ph.D. students need to complete 9 credit units of course work prior to taking this examination. As noted above, this would be difficult to achieve within the first year of the program simply due to the limited availability of relevant course. Moreover, any students able to complete the 9 credit unit requirement would have little time available to progress in their research. For these reasons, we propose to extend the **maximum** time to complete 9 credit units of courses and the Ph.D. Qualifying examination from 12 to 20 months. We propose that students admitted to the direct-entry Ph.D. program have 'probationary status' until they have passed



the Ph.D. Qualifying Examination. The 20-month mark is an important milestone in our program design as it is the latest point where a student could transfer to a M.Sc. program and potentially complete that program (9 credit units required) within the 24 month period for which our Department guarantees full funding. (also see the justification '9 credit units within 20 months' above)

**12 credit units:** A B.Sc. student who enters our M.Sc. program and then transfers into a Ph.D. program is required to take a minimum of 15 credits (in total). Moreover, 6 of those credit units are earned in CHEM 801.6. This course is based on all sub-disciplines of chemistry, encompasses both experimental and theoretical work, and is meant to assist students to integrate their knowledge by providing a unifying approach to the various sub-disciplines of chemistry appropriate for beginning research students. The envisaged direct-entry Ph.D. program is for the very best undergraduates that have outstanding academic credentials and demonstrated ability for independent research; hence, CHEM 801.6 has little relevance for these students (we do not require CHEM 801 for UofS students with a cumulative average of at least 85%). Students are still expected to take a minimum number of courses that will enable them to broaden their understanding of chemistry. It is proposed that this goal will be met for direct entry Ph.D. students by having them complete a total of four 3 CU courses. The reduction in the proposed minimum from 15 to 12 credit units for our direct-entry Ph.D. students is simply an acknowledgement of the academic achievements of those students and is consistent with the course requirements for most other direct-entry chemistry Ph.D. programs in Canada.

**Successfully complete the Ph.D. Comprehensive Examination within in the first 40 months:** The Ph.D. Comprehensive Examination in the Department of Chemistry is quite different in both form and content compared to those of many other units. In particular, "... *The objective of the examination is for the student to demonstrate the ability to read critically, work independently, and present information and ideas in a suitable manner. The student must prepare a "mini-review" on an important topic from recent literature, and present a formal seminar based on that review, including a suggestion for further research. The topic should not be an aspect of the student's current or past thesis research, but rather should be a new direction (but within the student's general area of expertise)*". As suggested by the above objective, this exam is not meant to precede the student's focus on their research. Rather it is meant to be later in the program after all required courses are completed and the thesis research is well advanced. The exam is the last formal evaluation of the student's academic qualifications prior to the thesis defense. Our 'regular' Ph.D. program requires that this examination be completed within 40 months of starting the program (including any time spent in a M.Sc. program for those that transferred to the Ph.D. program). We propose that direct-entry Ph.D. students be treated in the same way (i.e., complete this examination within 40 months in the program).

## **Administrative Policies for the Direct-Entry PhD Program in Chemistry**

In the event that a student fails to achieve a cumulative average of at least 80% over their first 9 credit units of graduate course work, they will be required to discontinue from the “Direct Entry Ph.D. Program” but will have the option of transferring to an M.Sc. Program if an average of at least 70% has been achieved. Application and admission to a ‘regular’ Ph.D. Program would be considered after successful completion of the M.Sc. Program.; however, 6 additional credit units of course work will be required (as is the usual).

In the event that a student fails to pass the Ph.D. Qualifying Examination **on their first attempt**, they will be required to discontinue from the “Direct Entry Ph.D. Program” but will have the option of transferring to an M.Sc. Program. Application and admission to a ‘regular’ Ph.D. Program would be considered after successful completion of the M.Sc. Program.

In the event that a student fails to achieve a cumulative average of at least 80% over their first 12 credit units of graduate course work, they will be required to take an additional 3 credit units of course work (i.e., a minimum of 15 credit units in total).

## SUMMARY

### 1. Academic justification:

- a. *Describe why the program would be a useful addition to the university, from an academic programming perspective.*
  - i. The Chemistry Department at the University of Saskatchewan was established in 1910 and has a long history of research and graduate training. Recruiting talented students into our graduate program is crucial to our success and being able to offer a direct-entry Ph.D. program will allow us to better compete with the many departments that already offer this option in the recruitment of outstanding candidates.
- b. *Giving consideration to strategic objectives, specify how the new program fits the university signature areas and/or integrated plan areas, and/or the college/school, and/or department plans.*
  - i. The PhD program in the Department of Chemistry offers students the ability to perform research on a wide range of topics that cover Organic Chemistry, Inorganic Chemistry, Analytical Chemistry, and Physical Chemistry. The range of research conducted by PhD students in the Department of Chemistry fit very well with the UofS signature areas, specifically: Agriculture, Energy and Mineral Resources, One Health, Synchrotron Sciences and Water Security. The diverse research programs offered in the Department of Chemistry often span multiple signature areas. For example, nearly half of the Department utilizes synchrotron radiation techniques to investigate a wide range of materials and compounds. Further, our commitment to recruitment and training of indigenous students falls within the Aboriginal Peoples signature area.

- c. *Is there a particular student demographic this program is targeted towards and, if so, what is that target? (e.g., Aboriginal, mature, international, returning)*
  - i. We are targeting truly exceptional undergraduates, specifically those whose academic and research achievements at graduation are comparable to those of NSERC-PGS award winners.
- d. *What are the most similar competing programs in Saskatchewan, and in Canada? How is this program different?*
  - i. No other direct-entry Ph.D. programs in chemistry within Saskatchewan but many other in Canada (e.g., UBC, Uof Alberta, Uof Calgary, Queen's, McGill). The proposed program is consistent with these others in terms of program requirements but has higher entry criteria.

## **2. Admissions**

- a. *What are the admissions requirements of this program?*
  - i. A four-year bachelor of science degree in Chemistry, or equivalent.
  - ii. A cumulative weighted average of at least 85% in the last two years of undergraduate study (i.e., 60 credit units of course work).
  - iii. Demonstrated ability for independent thought, advanced study, and independent research.
  - iv. Evidence of English proficiency.

## **3. Description of the program**

- a. *What are the curricular objectives, and how are these accomplished?*
  - i. The major objective of the PhD program is to train students to become independent researchers that are capable of obtaining employment in industry, academics, or government laboratories.
  - ii. Students develop critical thinking, analytical and technical skills through the conception, planning, and completion of an independent chemistry research program under the guidance of their academic supervisor.
  - iii. Students are expected to participate in the teaching assistant program, in which they learn to teach chemistry at junior and senior levels. Student communication skills are developed through the required literature presentations course (Chem 991), a required seminar on their research as part of the department seminar program (Chem 990), and public seminars as a component of the Ph.D. Qualifying Examination and the Ph.D. Comprehensive Examination.
- b. *Describe the modes of delivery, experiential learning opportunities, and general teaching philosophy relevant to the programming. Where appropriate, include information about whether this program is being delivered in a distributed format.*
  - i. A core element of the program requires students to develop and carry out an independent research program, mentored by their faculty supervisor. This involves a high degree of both guided and self-directed discovery, including experiential learning.



academic committee meeting which require the writing of a progress report and presenting a seminar.

- v. Citizen Goals: Students learn the value of diversity through their research work, teaching and interactions with students and faculty in a diverse learning environment. They learn to share their knowledge and demonstrate leadership within their research groups as well as giving a departmental seminar at the conclusion of their thesis. Students also have opportunities to present their research at national and international conferences.
- g. *Describe how students can enter this program from other programs (program transferability).*

Students are not able to transfer to the direct entry Ph.D. program from other programs. However, students are able to transfer to the 'regular' Ph.D. program from the M.Sc. program on the basis of satisfactory academic and research performance (as determined by the Advisory Committee) and passing the Ph.D. qualifying exam [put timing of exam here]

- h. *Specify the criteria that will be used to evaluate whether the program is a success within a timeframe clearly specified by the proponents in the proposal.*  
Program success will be determined by the number of students that enrol and the fraction of those students that successfully complete the program within the anticipated time frame (i.e., 60 months)
- i. *If applicable, is accreditation or certification available, and if so how will the program meet professional standard criteria. Specify in the budget below any costs that may be associated.*

Not applicable.

#### 4. Consultation

Not applicable

#### 5. Budget

The proposal has negligible budgetary implications because it is not a *NEW* program *per se* but rather a new route to enter a Ph.D. program. The cohort of students admitted into this program will be a part of the total number of students in all Chemistry graduate programs. That number is ultimately limited by the physical plant and financial resources made available to the Department by the University or through external agencies. The Department already has a successful Ph.D. program (for >60 years) and whether certain students holding a B.Sc. enter the Ph.D. program directly (as proposed) or first enter a M.Sc. program and then transfer into the Ph.D. program after 12-24 months has no effect on required resources (i.e., same amount of instruction, supervision, and support)

- a. *How many instructors will participate in teaching, advising and other activities related to core program delivery (not including distribution/ breadth requirements or electives)? (estimate the percentage time for each person).*

Up to 20 faculty will be involved in the supervision of students in the program and instruction of courses relevant to the program. As noted

above, this will not have any affect on the amount of time spent by instructors.

- b. *What courses or programs are being eliminated in order to provide time to teach the additional courses?*

No courses will be eliminated because, as noted above, students in this program will take the same courses as offered to graduate students in the M.Sc. program and 'regular' Ph.D. program.

- c. *How are the teaching assignments of each unit and instructor affected by this proposal?*

No change in teaching assignments is anticipated because, as noted above, students in this program will take the same courses as offered to graduate students in the M.Sc. program and 'regular' Ph.D. program.

- d. *Describe budget allocations and how the unit resources are reallocated to accommodate this proposal. (Unit administrative support, space issues, class room availability, studio/practice rooms laboratory/clinical or other instructional space requirements).*

As noted above, no change in budget allocations is anticipated.

- e. *If this program is to be offered in a distributed context, please describe the costs associated with this approach of delivery and how these costs will be covered.*

Not applicable.

- f. *If this is an interdisciplinary program, please indicate whether there is a pool of resources available from other colleges involved in the program.*

Not applicable.

- g. *What scholarships will students be able to apply for, and how many? What other provisions are being provided for student financial aid and to promote accessibility of the program?*

The students will be eligible for all standard scholarships, including Devolved funds, Wilson fund, GTFs, Spinks, and Herzberg. The department offers a standard 56 months of support to fully qualified PhD students from a combination of Devolved funds, TA positions and research stipends.

- h. *What is the program tuition? Will the program utilize a special tuition model or standard tuition categories? (The approval authority for tuition is the Board of Governors).*

Program tuition follows standard tuition categories, currently at \$3939/year for domestic students.

- i. *What are the estimated costs of program delivery, based on the total time commitment estimates provided? (Use TABBS information, as provided by the College/School financial officer)*

As noted above, delivery of the Department's ongoing and successful Ph.D. program will not be impacted by having certain students holding a B.Sc. enter the Ph.D. program directly (as proposed) compared to entering an M.Sc. program and then transferring to a Ph.D. program after 12-24 months

- j. *What is the enrolment target for the program? How many years to reach this target? What is the minimum enrolment, below which the program ceases to be feasible? What is the maximum enrolment, given the limitations of the resources allocated to the program?*

There is no target for the number of students accepted into this program. Rather, the program offers gifted students an additional path into a Ph.D. program in Chemistry.

- k. *What are the total expected revenues at the target enrolment level, separated into core program delivery and distribution/breadth requirements or electives? What portion of this expected revenue can be thought of as incremental (or new) revenue?*

Not applicable.

- l. *At what enrolment number will this program be independently sustainable? If this enrolment number is higher than the enrolment target, where will the resources come from to sustain the program, and what commitments define the supply of those resources?*

The program is not designed to be 'independent' at any level. The students will merely form a component of the total cohort of graduate students within the department. As noted above, that total is limited by a variety of factors.

- m. *Proponents are required to clearly explain the total incremental costs of the program. This is to be expressed as: (i) total cost of resources needed to deliver the program: (ii) existing resources (including in-kind and tagged as such) applied against the total cost: and (iii) a listing of those resource costs that will require additional funding (including new in-kind support).*

As noted above, there are no incremental costs associated with this program.

- n. *List all new funding sources and amounts (including in-kind) and the anticipated contribution of each to offsetting increment program costs. Please identify if any indicated funding is contingent on subsequent approval by a funding authority and/or future conditions. Also indicate under what conditions the program is expected to be cost neutral. The proponents should also indicated any anticipated surpluses/deficits associated with the new program.*

Not applicable.

## College Statement

Please provide here or attach to the online portal, a statement from the College which contains the following:

- Recommendation from the College regarding the program
- Description of the College process used to arrive at that recommendation
- Summary of issues that the College discussed and how they were resolved

## Related Documentation

At the online portal, attach any related documentation which is relevant to this proposal to the online portal, such as:

- Excerpts from the College Plan and Planning Parameters
- SPR recommendations
- Relevant sections of the College plan
- Accreditation review recommendations
- Letters of support
- Memos of consultation

It is particularly important for Council committees to know if a curriculum changes are being made in response to College Plans and Planning Parameters, review recommendations or accreditation recommendations.