



**Senate Committee on Academic Development**  
Report to Senate – Meeting of April 22, 2010

**Proposal to introduce a new BA Minor in Chemistry, Faculty of Arts and Science**

**Introduction**

The proposal to introduce a new BA Minor in Chemistry in the Faculty of Arts and Science was reviewed by the Senate Committee on Academic Development (SCAD) at its meeting of April 7, 2010. H. Horton, Associate Dean of the Faculty of Arts and Science, attended the SCAD meeting to speak to the proposal and to answer questions from members of SCAD. Members of SCAD were also provided with background documentation provided by the Faculty of Arts and Science. A copy of the documentation is attached to this report.

**Analysis and Discussion**

The following should be noted:

- requirements to complete a BA Minor include: five courses in Chemistry and one supporting credit in Mathematics (MATH 121);
- introduction of a BA Minor will streamline the Department of Chemistry's offerings while allowing maximum flexibility for students;
- the Department of Chemistry is one of the few science departments that do not already offer a BA Minor;
- it is anticipated that many science students will combine a Minor in Chemistry with a Major from a cognate department;
- because five courses in Chemistry does not fulfill the requirements of a Bachelor of Science (8 credits in a general concentration) the degree designation is a Bachelor of Arts. If the BA Minor is combined with a science major, then the student will graduate with a BSc Major with a Minor in Chemistry. This combination of degrees reflects the senior level of the student's academic performance.

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## **Conclusions/Recommendation**

Recommendation:

**that Senate approve the proposal to introduce a BA Minor in Chemistry in the Faculty of Arts and Science with an implementation date of 1 September 2010.**

Respectfully submitted,



Bob Silverman  
Chair, Senate Committee on Academic Development

### **Committee Members:**

#### **Members**

N. Chesterley  
J. Emrich  
P. Fachinger  
N. Fulford  
A. Jack-Davies  
P. Oosthuizen  
T. Shearer  
B. Silverman (Chair)  
D. Stockley  
R. Ware  
P. Watkin (Secretary)



## Senate Budget Review Committee

Report to Senate – April 12, 2010

### I. Proposal to establish a BA Minor in Chemistry.

#### **Introduction**

On April 12, 2010, the Senate Budget Review Committee (SBRC) met to discuss the Proposal to establish a BA Minor in Chemistry.

#### **Analysis and Discussion**

N. Cann (Acting Associate Head, Department of Chemistry) informed the Committee that the resource implications of this program are minimal. The Minor relies on existing chemistry courses and no new courses, lecture or lab sections are required to support this program. A question was raised about the quality of the minor if students are allowed to select their own courses. Students are required to complete first year chemistry (CHEM 112) and 4.0 additional credits in chemistry, with a minimum of a 0.5 credit at the 300 level or above.

#### **Conclusions/Recommendation**

Members of the committee saw no major resource implications with the proposed program and voted unanimously to recommend to Senate that they approve the Proposal to Establish a BA Minor in Chemistry.

D. Pointer,  
Acting Chair, Senate Budget Review Committee

Committee Members:

H. Aaverns

P. Boag

I. Cameron

D. Janiec

S. Heard

J. Helland (Chair)

A. Husain

S. Kalb

E. Nkole

V. Pakalnis

D. Pointer



Queen's  
UNIVERSITY

FACULTY OF ARTS AND SCIENCE

Mackintosh-Corry Hall, Room F200  
Queen's University  
Kingston, Ontario, Canada K7L 3N6  
Tel 613 533-2470  
Fax 613 533-2467  
<http://www.queensu.ca/artsci>

# Memo

TO Patrick Deane, Vice-Principal (Academic)  
FROM Norma St John, Student Services Administrator  
DATE 22 March 2010  
SUBJECT **New Program Submission - B.A. Minor in Chemistry**

Enclosed is a Program Approval Submission from the Department of Chemistry to introduce a B.A. program with a minor concentration in Chemistry. This proposal was approved by the Faculty Board of Arts and Science on Friday, 15 January and will be forwarded to Senate for final approval. If approved, the program will be available to students in September 2010.

The proposal has been circulated and signed by the required individuals, other than yourself. Please review this proposal, attach comments as you feel appropriate, and sign where indicated on the final page of the document.

I believe that your office will forward the fully signed version to SCAD for consideration at its next meeting.

Please feel free to call me at 77312 if you have any questions.

Thank you,

A handwritten signature in blue ink that reads "Norma St John".

cc: Judy Sakell, Director, Student Services Division

Senate Committee on Academic Development  
and  
Senate Budget Review Committee

Program Approval Submission 2009-10

*deferred*  
*09.11.11*  
*09.11.18*

*This form is to be used when seeking approval for all new or substantially revised programs of study leading to a degree, diploma or certificate*

*approved by*  
*Curriculum*  
*Committee*  
*09.12.02*

FACULTY/SCHOOL: FACULTY OF ARTS AND SCIENCE

PROPOSED NEW PROGRAM: BA MIN CHEM

PROPOSED IMPLEMENTATION DATE: SEPT. 1, 2010

DATE OF FACULTY BOARD APPROVAL: 15 JANUARY 2010

SUBMISSION CONTACT

NAME: Natalie M. Cann/ Ralph A. Whitney

TELEPHONE: 613-533-2651/613-533-2641

EMAIL: Natalie.cann@chem.queensu.ca/ralph.whitney@chem.queensu.ca

SIGNATURE OF THE DEAN:

*Cornelia E. Smith*

DATE:

*Nov. 25/09*

Please note that program proposals must receive the approval of Faculty Board prior to being submitted to the Senate Office for referral to the Senate Committee on Academic Development (SCAD) and the Senate Budget Review Committee (SBRC), which will then make their recommendations to Senate.

The criteria requested in PART A should be regarded as the minimum criteria for the assessment of academic programs. Any unit planning a new program should show how not only the criteria listed below but also, where appropriate, those required by the Undergraduate Program Review Audit Committee and those of the Ministry of Training, Colleges & Universities have been taken into account. For further information, please refer to the Senate Policy "Policies and Procedures for Establishing New Undergraduate Programs" (<http://www.queensu.ca/secretariat/senate/policies/newprog/index.html>)

## PART A

### 1. OBJECTIVES:

Please summarize the rationale for introducing this program. The program should be consistent with the Queen's mission, the academic plans of the unit including its teaching and research strengths, the relation of the unit with other academic units and the standards, educational goals and learning objectives of the degree. Explain how this program will achieve the expected academic quality. Please identify the Faculty, School or Department, which will be administratively responsible for the academic aspects of this program such as supervision of graduate students, curriculum development and the Internal Academic Review Process.

The department of chemistry proposes to replace the BAH MED program and all six BSc MED programs by the BA MIN CHEM. The MIN streamlines our program offerings while allowing maximum flexibility, in terms of course selection and timetabling. The program is consistent with a faculty-wide increase in student enrolment for the MJM degree, faculty objectives of reducing the overall number of programs, and simplified timetabling.

Over the years, students have enquired about a CHEM MIN and, in some cases, the MED did not offer an attractive alternate. The BIOL CHEM MED, for instance, is very specific in the required CHEM courses. The MIN, in contrast, allows students to pursue their interest and balance their workload by carefully choosing and scheduling CHEM courses. Thus, we anticipate that the MIN will attract more student interest than the MED. As well, the MIN is ideally suited to Concurrent Education students.

The president of the chemistry undergraduate society, Jessica Sonnenberg, notes that the MIN "will encourage a lot more people to take chemistry" and noted several difficulties with the MED degrees.

### 2. ADMISSION REQUIREMENTS:

The admission requirements (preparation and achievement) should be appropriate for the learning objectives of the program and the institution to ensure the appropriate quality of student applicants. In no case should admission requirements be lower than the published minimum standards for the University. Indicators of student demand including applications, registrations, projected enrolment levels, and of the quality of students must be considered. Where admission is competitive, actual admission requirements may be higher than the published minimum standards. Information about anticipated enrolments should also be included.

Acceptance into and progress through the Chemistry MIN requires a minimum overall average of 65 per cent in all courses in chemistry and supporting subjects. Initial acceptance into the program requires successful completion of CHEM 112 and MATH 121 (or equivalent).

The department expects to advertise the program on the first year web site, at chemistry orientation events, and in CHEM 112. Predicted enrolment is anticipated at 10-15 students in the first few years of the program. We will impose a program limit of 30 students in each of the first two years of the program.

### 3. CURRICULUM:

Provide a detailed overview of the proposed program, along with the proposed *Calendar* description. Details such as course requirements (core, supporting, recommended, optional courses), prerequisites, problems students may encounter and new courses being proposed for the program should be included. The structure and curriculum of the program should be appropriate for its learning objectives.

The program will consist of the following:

CHEM 112; 4.0 additional credits in chemistry, with a minimum of 0.5 credit at the 300 level or above. In addition students must complete the supporting credit MATH 121 (or equivalent).

PHYS 106 (or equivalent) is strongly recommended.

Three approaches to course selection are possible:

1) Enroll in most/all of the second year CHEM concentrator courses (CHEM 211\*/212\*/213\*/221\*/222\*/223\*). Depending on their course choices in second year, students will be able to complete their CHEM credits by selecting from a range of third year courses, including Environmental and Green Chemistry (CHEM 326\*), Biological Chemistry (CHEM 323\*), and Experimental Chemistry (CHEM 397/398\*/399\*). This is expected to be the preferred option with a broad introduction to chemistry and maximum flexibility in choosing third year courses.

2) Some students may have an interest in a specific area of chemistry, likely to complement their MAJ program. These students could forego some breadth in second year and choose courses related to their area of interest. For example, expertise in synthetic chemistry would be developed by selecting from CHEM 211\*, CHEM 212\*, CHEM 223\*, CHEM 311\*, CHEM 312\*, CHEM 323\*, CHEM 397/398\*/399\*, CHEM 422\*, CHEM 423\*, CHEM 424\*, and CHEM 425\*. Many other course combinations, emphasizing other aspects of chemistry, are possible within our course offerings.

3) For students that have completed CHEM 281\* and CHEM 282\*, some complications arise. These courses are offered to non-chem concentrators and are not considered acceptable preparation for some third year CHEM courses. Students that have completed CHEM 281\* and 282\* may still select a CHEM MIN although some third and fourth year courses are no longer available. These students will be able to select their CHEM credits from: CHEM 213\*, CHEM 221\*, CHEM 222\*, CHEM 321\*, CHEM 326\*, CHEM 347\*, CHEM 397/398\*/399\*, CHEM 411\*.

We anticipate that option 1) will be selected by students enrolled in concurrent education since breadth is emphasized by this course selection. Option 2) will appeal to students wishing to complement their MAJ programs with additional chemistry. Students in the MJM BIOL/CHEM, MJM BCHM/CHEM, MJM PHYS/CHEM, and MJM MATH/CHEM programs will favor this option. Option 3) will be selected by BIOL, BMCO, and LISC students deciding upon a BA MIN CHEM after beginning second year.

As a rule, BA MIN CHEM students will not be accepted into the 4<sup>th</sup> year project courses CHEM 497/498\*/499\*. However, the calendar description of these courses notes "where appropriate, students in a Chemistry Medial program may take the course with permission of the Department." In practice, MED students have been considered on a case-by-case basis and, for example, a student in a MED CHEM PHYS would be allowed to undertake a 4<sup>th</sup> year project in physical chemistry. A similar approach would be adopted for the MIN and, in particular, students selecting option 3) may be suitable for a 4<sup>th</sup> year project.

The MIN relies on existing CHEM courses and no new courses are required or planned to support this program.

Calendar Description:

### **Bachelor of Arts - BA**

**Minor Concentration - MIN** (Consists of 5.0 credits as described below; 1.0 supporting credit and 9.0 elective credits to total 15.0)

### **Chemistry – CHEM**

CHEM 112; 4.0 additional credits in chemistry, with a minimum of 0.5 credit at the 300 level or above. In addition students must complete the supporting credit MATH 121 (or equivalent). PHYS 106 (or equivalent) is strongly recommended.



**4. TEACHING:**

Briefly explain how the intended mode of delivery (including, where applicable, distance or on-line delivery) and standards of instruction for this program are appropriate to meet the program's learning objectives.

Teaching methods will be identical to that currently employed in the CHEM GEN, MAJ, and SSP. The CHEM MIN students will enroll in the same courses as students in CHEM GEN, MAJ, and SSP with the possible exception of CHEM 281\* and CHEM 282\* as discussed above.

**5. EVALUATION OF STUDENT PROGRESS:**

Briefly explain the intended method of evaluation of student progress and how it is appropriate for this program.

Student progress will be evaluated in each course, following the same criteria applied to CHEM GEN, MAJ, and SSP students. The Departmental Undergraduate Chair will oversee student progress through the program.

**6. EQUITY:**

This program's planning, development and implementation should be consistent with the equity goals of the University and must avoid direct, indirect and systemic discrimination.

The CHEM department, and all of the programs offered by the department, are consistent with Queen's equity principles.

**7. HUMAN RESOURCES:**

Please demonstrate that the number, quality and academic expertise of the faculty in the area of the proposed program are sufficient to meet the demands of the program. Where appropriate, the availability of support staff, teaching and laboratory assistants should be indicated. (Additional details should be provided on the Resource Implications Checklist in **PART B** of this form).

Resource implications of this program are minimal. No new courses, lecture or lab sections are required to support the program. Human Resource pressures might be expected at the second year level, where several of our "core" chem courses have yearly enrolments exceeding 250 students. These courses (CHEM 211\* and CHEM 212\* in particular) are required for chemical engineers, engineering chemists, and biochemists. The yearly fluctuation in the numbers of students enrolled in the 2<sup>nd</sup> year of these three programs greatly exceeds the maximum enrolment of the BA MIN CHEM. Thus, we will be able to adapt and accommodate the MIN students. As well, they will be selecting their CHEM credits over several years and several courses and this minimizes their impact.

**8. PHYSICAL AND INFORMATION RESOURCES:**

Please provide a summary of available or required program-specific resources, such as: classroom requirements, laboratories, information technology services and facilities, and library facilities and information resources (including unique and special collections). (Additional details should be provided on the Resource Implications Checklist in **PART B** of this form).

Additional classroom facilities, laboratories, library or information technology services will not be required.

**9. FINANCIAL RESOURCES:**

There should be evidence of sufficient resources to introduce and maintain the program for a reasonable period of time. This should include consideration of any additional funds from internal sources and from government or other external sources as well as possible financial impact of the programs on other programs, within and outside the unit. (Additional details should be provided on the Resource Implications Checklist in **PART B** of this form).

There are no financial implications to the MIN program. These students will be accommodated within existing courses and lab sections.

**10. SOCIETAL CONTEXT (STUDENT DEMAND, SOCIETAL NEED, DUPLICATION):**

Please provide a summary of how this program is expected to meet student demand and societal need. Evidence of student demand could include: projected enrollment levels, application statistics, origin of student demand (domestic and international), and duration of projected demand. Evidence of review and comment by appropriate student organizations should be provided. Please explain how the program will fulfill a societal need in specifically identified fields (academic, public and /or private sector) and consider the probable availability of positions on graduation, the likelihood of attracting out of province or international students and the equity implications of the program, In the case of a professional program, discuss its congruence with the regulatory requirements of the profession. Please cite similar programs offered by other institutions and provide evidence of additional societal need and/or student demand as well as indicate innovative and distinguished aspects of the program.

Students that would have enrolled in a MED can now enroll in a MIN. As Jessica Sonneberg, president of the chemistry undergraduate society notes "the minor can still satisfy" students who previously selected a MED. She also notes that the MIN will "encourage a lot more people to take chemistry". Due to the flexibility in course selection, missing from the MED programs, we expect this to be true. The MIN will also appeal to concurrent education students, as it offers the widest possible variety of course selection and scheduling.

An enrolment of 10-15 students is expected in the first few years of the program. Aggressive promotion of the program will be undertaken, with promotion on the CHEM web site, at orientation events, and in class. We will impose a program limit of 30 students in each of the first two years of the program as we adjust and deal with any unforeseen issues.

In structuring the BA MIN CHEM program, similar programs at the University of Toronto, the University of Calgary, the University of Manitoba, the University of Montreal, and McGill were examined.

**11. LEARNING AND PROGRAM OUTCOMES:**

While the aim of a university education is to produce educated individuals who possess good judgment and the capacity for critical thought, it is also important to consider specific indicators of learning and program outcomes, such as a graduation rate, length of studies, job placement, external scholarships, awards of graduating students, results of professional certification or licensing examinations, etc. Please discuss the anticipated outcomes of this program.

As a MIN program, outcomes are necessarily more reflective of the MAJ component of the program. However, certain combinations are expected to be more frequent: MJM BIOL/CHEM, MJM PHYS/CHEM, MJM BCHM/CHEM, and MJM MATH/CHEM. For these, the CHEM minor will complement their major by broadening their employment prospects. For instance, a MJM BCHM CHEM student may be more competitive for employment in the pharmaceutical sector. As another example, a MJM PHYS/CHEM student could be accepted as a graduate student in CHEM depending on the CHEM course selection and proposed area of research, such as physical chemistry.

Concurrent education students will also benefit from chemistry as a "teachable" subject.

**12. OTHER ISSUES:**

Please describe any additional special considerations with respect to this program.

## PART B - RESOURCE IMPLICATIONS

### 1. SUMMARY OF RESOURCES REQUIRED

*If you are unsure of the resource implications for any of the following, please consult with someone in the affected department or unit.*

Please summarize the *additional* resources needed to implement the program:

- a) FACULTY \_\_\_\_\_ None \_\_\_\_\_  
(number of half courses)
- b) STAFF \_\_\_\_\_ None \_\_\_\_\_  
(number or fraction of FTEs)
- c) TEACHING ASSISTANTS \_ None \_\_\_\_\_  
(number of student-courses)

#### d) PHYSICAL FACILITIES:

Please describe the space resource implications of the proposal in terms of the following (include both size (in terms of # of students) and frequency (number of hours per week required))

1. Classrooms \_ None. Students will be accommodated within existing course.
2. Laboratories \_ None. Students will be accommodated within existing lab sections.
3. Offices \_ None. \_\_\_\_\_

*For number d) 3 above, please reallocation or reconfiguration of space is required. If so, appropriate approval must be appended.*

#### e) INFORMATION FACILITIES

Please indicate the ITS resource implications for the proposal in terms of requirement for

1. Hardware \_\_\_ None. \_\_\_\_\_
2. Software / Internet \_\_\_ None. \_\_\_\_\_
3. Audio-Visual \_\_\_ None. \_\_\_\_\_
4. Telecommunications \_\_\_ None. \_\_\_\_\_

Note: The chemistry department maintains its own server. Technology use within courses is provided via the server. The current configuration allows students to access resources remotely, via their laptop computers, library computers, or other computers publically available throughout the university.

## 2. NEW EXPENDITURES

What **new** funds will be needed for each of the following? One-time \$ are monies that will only be required once for startup. Base \$ are funds that will continue to be needed year after year. Please attach some backup to show how the numbers were calculated.

e.g. Staff - Base \$60,000 (1.5 FTE @ \$40,000))

	ONE TIME \$	BASE BUDGET \$
FACULTY	\$0.00	\$0.00
STAFF	\$0.00	\$0.00
TEACHING ASSISTANTS	\$0.00	\$0.00
STUDENT ASSISTANCE (Grad)	\$0.00	\$0.00
OTHER NON-SALARY	\$0.00	\$0.00
<b>TOTAL</b>	\$0.00	\$0.00

## 3. FUNDING SOURCES

Please show the source of the **additional and/or re-allocated funds** needed for the proposal. What amount will be re-allocated from within the department's budget, from within the faculty's budget, from within the University's budget and how much will come from tuition or other sources. One-time \$ are monies that will only be required once for startup. Base \$ are funds that will continue to be needed year after year. The total costs in section 2 (Cost Breakdown) must match the total costs in section 3 (funding sources)

	ONE TIME \$	BASE BUDGET \$
DEPARTMENT BUDGET	\$0.00	\$0.00
FACULTY BUDGET	\$0.00	\$0.00
UNIVERSITY BUDGET	\$0.00	\$0.00
TUITION REVENUE	\$0.00	\$0.00
OTHER SOURCES	\$0.00	\$0.00
<b>TOTAL</b>		

If other sources are used, please list the sources and indicate if the funds have been applied for and if they have been secured.

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#### 4. IMPACT ON ENROLMENT

- a) How many students are expected in the program? Up to 30
- b) How many new students will the program attract to Queen's University? Unknown but likely minimal as the students select their program after first year, and a BA MIN is unlikely to impact decisions re Queen's and competing institutions.
- c) How many students must be accommodated by other departments / units? \_\_\_\_\_  
(Please indicate which departments / units will be affected and how.)

\_\_\_\_\_ The BA MIN CHEM students will require MATH 121 (or equivalent) as part of their program. A MATH 12X prerequisite is common to many science programs and the BA MIN CHEM will have a very minor impact (if any) on the number of students enrolled in MATH 12X.

#### 5. NET IMPACT OF THE PROPOSAL

Please summarize any other resource or funding implications of the proposal.

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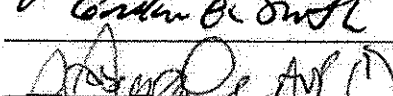
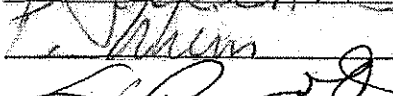
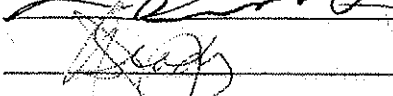
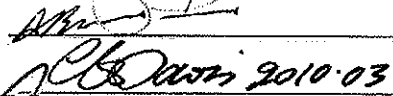



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#### 6. SIGN-OFF

Following Faculty Board approval, signatures from the following individuals listed below must be obtained to verify that they have reviewed this proposal. Supplementary comments may be appended and so indicated by checking the box beside the appropriate signature.

Title	Comments Appended	Signature
Department Head	<input type="checkbox"/>	
Dean or Associate Dean	<input type="checkbox"/>	
Dean of Student Affairs	<input type="checkbox"/>	
University Librarian	<input type="checkbox"/>	
Director, Information Technology Services	<input type="checkbox"/>	
University Registrar	<input type="checkbox"/>	
Associate VP (Operations & Facilities)	<input type="checkbox"/>	
Vice-Principal ( <del>Operations &amp; Finance</del> )	<input type="checkbox"/>	
Vice-Principal (Academic) <b>Financial Admin</b>	<input type="checkbox"/>	