

04/21/09: Approved by CAS Academic Programs Committee, Maria Isabel Ayala, Chair

4/23/09: Approved by CAS Dean's Office, Gregory Stevens, Asst Dean; Edelgard Wulfert, Dean

March 30, 2009

To Whom It May Concern:

This cover letter explains the Department of Chemistry's proposal to modify the coursework in the M.S. in Applied Chemistry with a Concentration in Forensic Chemistry.

When this applied degree was first conceived and developed, our department had limited elective coursework specific to the track. We now would like to modify the curriculum to both align with the core coursework of our general M.S. track, and allow elective coursework specific to the applied track.

This shift allows us to better prepare the students in this Applied Program for employment while continuing to meet the CAS requirements for minimum number of students required in a graduate class. In addition, these modifications will allow us to streamline advisement, and keep better control of our curriculum as the previous requirements had a course from Public Health (HEht 530) which, over time, we learned was not a good fit for our students. Justification for the cross-listing of two elective graduate courses in Biology is documented at the end of this letter. If you have further questions, please do not hesitate to contact us.

Yours sincerely,

Paul Toscano  
Chair, and Associate Professor of Chemistry

University at Albany – State University of New York			
<b>College of Arts and Sciences</b>		<b>Course Action Form</b>	
		Proposal No. <u>09-058</u>	
Please mark all that apply:			
<input type="checkbox"/>	New Course	Revision of:	<input type="checkbox"/> Number
<input type="checkbox"/>	Cross-Listing		<input type="checkbox"/> Description
<input type="checkbox"/>	Shared-Resources Course		<input type="checkbox"/> Title
<input type="checkbox"/>	Deactivate / Activate Course (boldface & underline as appropriate)		<input type="checkbox"/> Credits
		<input checked="" type="checkbox"/>	Other (specify): <u>See below</u>
Department: <u>Chemistry</u>		To be effective (semester/year): <u>Fall 2009</u>	
Course Number	Current: <u>n/a</u>	New: <u>n/a</u>	Credits: <u>3</u>
Course Title: <b><u>M.S. in Applied Chemistry with a Concentration in Forensic Chemistry</u></b>			
Course Description to appear in Bulletin:			
<b>Modification of course requirements in an Applied M.S. degree based on available course offerings. Please see attached justification.</b>			
Prerequisites statement to be appended to description in Bulletin:			
<u>n/a</u>			
If S/U is to be designated as the only grading system in the course, check here:			<input checked="" type="checkbox"/>
This course is (will be) cross listed with (i.e., CAS ###):			_____
This course is (will be) a shared-resources course with (i.e., CAS ###):			_____
Explanation of proposal:			
The Department of Chemistry would like to make our <b>M.S. in Applied Chemistry with a Concentration in Forensic Chemistry</b> align with our current M.S. course offerings. When this applied degree was first conceived and developed, our department had limited elective coursework. We now would like to modify the curriculum to align core coursework with our general M.S. track, and allow elective coursework specific to the applied track.			
Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:			
Chair of Proposing Department (TYPE NAME/SIGN)			Date
Paul J. Toscano			3/30/09
Approved by Chair(s) of Department(s) having cross-listed course(s) (PRINT NAME/SIGN)		Date	Dean of College (PRINT NAME/SIGN)
			Gregory Stevens
			04/23/09
Chair of Academic Programs Committee (PRINT NAME/SIGN)		Date	Dean of Graduate (Undergraduate) Studies (PRINT NAME/SIGN)
Maria Isabel Ayala		4/21/09	

The following changes are being made to the degree requirements:

**1. Core Courses**

**AChm 517, AChm 632, and HEht 530 - removed from core list**

**AChm 520A & B, 525A & B, 535A & B, 544 - added to core list**

**AChm 550A and 550B made mandatory**

**2. Research Tool requirement added (3 credits)**

**3. Seminar in Chemistry AChm 689 added (1 credit)**

**4. Forensic Practicum made Elective status**

**COURSE LEGEND**

**AChm 517 - Advanced Synthesis Laboratory**

**AChm 520A, B - Inorganic Chemistry I and II**

**AChm 525A - Physical Organic Chemistry I and II**

**AChm 526 - Exp. Methods of Organic Structure Determination**

**AChm 535A, B - Advanced Physical Chemistry I and II**

**AChm 540A, B - Comprehensive Biochemistry I and II**

**AChm 544 - Theory & Tech. of Biophysics & Biophys. Chemistry**

**AChm 550 A, B - Forensic Chemistry I and II**

**AChm 632 - Special Topics in Biochemistry**

**HEht 530 - Principles of Toxicology**

**Current Requirements from Graduate Bulletin**

**Program of Study - M.S. in Applied Chemistry with a Concentration in Forensic Chemistry (34 credits, minimum, of which at least 22 credits are in letter graded courses)**

- 1. Core Courses (21 credits):** AChm 517, AChm 526, AChm 540A, AChm 540B, AChm 550A, AChm 550B, AChm 632 and HEht 530
- 2. Forensic Drug Chemistry Internship/Practicum (8 credits):** AChm 580A and AChm 580B
- 3. Chemical Research (6-12 credits):** AChm 699 and Chemical Research (Thesis) AChm 699T

**Updated Requirements for Fall 2009 Graduate Bulletin.**

**Program of Study - M.S. in Applied Chemistry with a Concentration in Forensic Chemistry (34 credits, minimum, of which at least 22 credits are in letter graded courses)**

**1. Core Courses (15 credits, minimum)**

- 1 a) Three (3) courses are to be chosen from the following set of core courses:**  
AChm 520A, AChm 520B, AChm 525A, AChm 525B, AChm 535A, AChm 535B, AChm 540A, AChm 540B or AChm 544 and must be taken within the first three semesters. Two of the five graduate courses must be within the

student's field of specialization. (Now similar to the core requirements for our M.S. in Chemistry degree.)

1 b) **AChm 550A and AChm 550B**

2. **Research Tool.** One (1) course from the following: AChm 526, AChm 544, AChm 570, AChm 561. AChm 544 may not be used to satisfy the research tool requirement and the core course requirement simultaneously. (Required for our M.S. in Chemistry degree; proficiency in a research methodology is essential.)

3. **Chemical Research (6-12 credits):** AChm 699 and Chemical Research (Thesis) AChm 699T (leading to a written research thesis). (No change.)

4. **Seminar in Chemistry AChm 689** (1 credit, two semester minimum)  
(Required of all M.S. and Ph.D. graduate students programs as well as the Applied Chemistry degree with an emphasis in organic synthesis, but previously omitted from list.)

5. **Recommended Forensic electives:**

- Forensic Drug Chemistry Internship/Practicum:  
AChm 580A and AChm 580B (4, 4 = 8 total credits)
- Medicinal Chemistry/Pharmacology AChm 558 (3 credits)
- Techniques in Forensic Science ABio 577 (3 credits)
- Courtroom Testimony ABio 627 (3 credits)

Hi Jason--

Yes, please use this correspondence as confirmation for listing ABIO 577 and ABIO 627 as elective coursework in the revised M.S. in Forensic Chemistry program.

Don

-----Original Message-----

From: Jason Shepard [<mailto:jshepard@albany.edu>]

Sent: Tuesday, March 24, 2009 11:15 AM

To: Donald D Orokos

Subject: If need be

Don -

Regarding our graduate forensic coursework - we are submitting paperwork to alter the coursework requirements. We discussed that our students might have interest in taking ABIO 577 Techniques in Forensic Science and ABIO 627 Courtroom Testimony in the future. For justification for these courses as "crosslisted"(I am not sure if I need this yet, as the they would officially be listed as electives, not requirements) - do you mind if I just use our previous email correspondence with your acknowledgement that our students could take these? Thanks,

Jason

Jason Shepard  
Assistant Professor  
Department of Chemistry  
University at Albany, SUNY  
1400 Washington Ave  
Albany, NY 12222  
Phone: 518.442.4447  
Fax: 518.442.3462 (Chemistry)  
E-mail: [jshepard@albany.edu](mailto:jshepard@albany.edu)

## Florence Bolton

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**From:** Paul J Toscano  
**Sent:** Thursday, May 07, 2009 8:51 AM  
**To:** Florence Bolton  
**Subject:** RE: Proposal to Modify Applied Chemistry with Forensic Concentration

Florence--I have forwarded your concerns to Prof. Jason Shepard in our Department, who will be better able to answer your concerns.

Paul

Paul J. Toscano  
Chair and Associate Professor, Chemistry

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**From:** Florence Bolton  
**Sent:** Wednesday, May 06, 2009 5:37 PM  
**To:** Paul J Toscano  
**Subject:** Proposal to Modify Applied Chemistry with Forensic Concentration  
**Importance:** High

Dear Dr. Toscano,

The GAC's Committee on Curriculum and Instruction (CC&I) met this afternoon and your proposal to modify the coursework requirements of the MS in Applied Chemistry with a Concentration in Forensic Chemistry was on the agenda. After some discussion the Committee members asked that the following comments and questions be directed to you in hopes of receiving some clarification.

One of the goals stated for the changes proposed for the Forensic Concentration was to cause it to "align with the core coursework of our general M.S. track". Presently both the Organic Chemistry and Forensic Chemistry concentrations include an internship/practicum component in their core requirements. Designating the Forensic Internship/Practicum as an elective seems to be contrary to this alignment goal.

Internships often provide students with valuable experience. Therefore, it was difficult to understand how no longer requiring one would help "better prepare the students in this Applied Program for employment."

With the placement of the internship/practicum as an elective most of the forensic courses (with the exception of Chm 550 A and B) would now fall within the recommended forensic electives. Electives tend to be more negotiable in a program. Would it be possible to waive and/or substitute courses for enough of these electives that the concentration in forensic chemistry becomes lost or weakened?

Could you help explain the rationale behind this particular change to the program? At this late point in the Spring semester your quick reply is necessary. Today's meeting was the last one for the CC&I and its recommendation concerning your proposal should go to the GAC that meets for its last time on Monday, May 11<sup>th</sup>. If your answer could be received tomorrow, it is possible to circulate it electronically among the CC&I members. If approved, the next step would be to include this rationale within a revised, final proposal. Otherwise the proposal will remain unfinished business to be addressed again when Committees reconvene next Fall.

*Florie*

Florence Bolton  
Assistant to Dean of Graduate Studies  
Office of Graduate Studies -- UAB 121  
(518) 442-5121

5/8/2009

Dear Florence --

Per our discussion, I would like to clarify and outline some aspects that were used to justify the modifications that the Department of Chemistry has suggested to the Applied Chemistry, Forensic Concentration. Based on our conversation, there were two major points of clarification needed by the GAC, regarding the internship and the overall course credits.

**Internship:**

The Department of Chemistry agrees with the GAC's Committee's assessment that an internship is truly a valuable aspect of the educational process of our students, and this sentiment is reinforced by our students who have had the opportunity to intern at the New York State Police Forensic Investigation Center (FIC). Even with the proposed changes, we would strongly recommend our students strive to obtain an internship, as it provides "real-world" insight into the career, allows them to make contacts for future employment, and participate in valuable research. That being said, we have four specific rationale for as to why internships were made elective status. These reasons follow in no particular order.

1. **Availability.** These internships are highly competitive. As our program continues to grow, we feel the competitive nature of the internship will preclude some students the opportunity to participate in an internship in a timely fashion. Having internships as mandatory, but possibly unattainable would cause obvious problems.
2. Because of the delicate nature of the internships, i.e. with the New York State Police, interns are subjected to the same features of the hiring process associated with any police officer, including a comprehensive background check, drug screening, and polygraph. Applicants have to apply up to six months ahead of time, at minimum, for the entire process to play out. We have recently had a graduate student fail the application process, essentially meaning that this student would not be able to get an internship. It is impractical, and realistically impossible, for us to screen applicants to our graduate program in a similar fashion. Other than making the internship elective status, our recourse seemed to either apply a waiver to such students, or remove them from our program. Based on this situation and the other three justifications outlined herein, we decided elective internships as the appropriate path.
3. Our department has found both at the undergraduate and graduate level, an enormous interest in forensic science. Our experience is that, particularly with our graduate students entering the Applied/Forensic Concentration, putting forensic-related coursework as electives has not deterred our students' desire to take them. As you will see in the second **Course Credit** section, electives are required to meet the overall credit requirements, and our experience is that these students strongly prefer to take the forensic electives

over other standard chemistry options. Nevertheless, we also believe our two required forensic courses, Forensic Chemistry I and II and very thorough and provide substantial hands on instrumentation experience not available at many universities. We have one of the best equipped instructional labs in the country, and our laboratory mirrors the state-of-the-art labs housed across the street at the FIC. Our courses allow our students all of the time they want or need to become proficient in operating said instrumentation, and we have numerous graduates that cite this as one of our program's strengths.

4. Our colleagues at the FIC are adamant in citing the aspect most lacking of potential hires, no matter what university from which the applicant originated, is a lack of chemistry. While all jobs tend to have some aspect of "on-the-job-training", the hiring managers we continue to speak with expect new employees to have a fundamental comprehension in chemistry, and prefer that the forensic-side is what they learn on the job. We feel these changes do not compromise the requirement for our students to obtain the basic chemistry needed for their careers

**Course Credit:**

Our rationale for the description involving course credit is detailed in the following manner. The requirement of 34 credits total, of which 22 are in letter graded coursework, has not changed. The current bulletin required 21 specific credits (listed as Core Courses), with the remaining letter graded credit coming from Elective Coursework. Our proposed changes calls for three Core Courses for 9 credits, 550A and B for 6 credits, and a Research Tool for 3 credits, totaling 18 credits. The remaining 4 letter graded credits would come from elective coursework, likely forensic-related, but not mandated as such. In the proposed curriculum, the remaining credit for degree (34 total minus the ~22 letter graded coursework), would come from Seminar, Research, Elective Coursework and/or Internship, in a similar fashion to the original guidelines.

I do hope the above justifications meet the concerns of the GAC Committee, but as we discussed, please do not hesitate to contact me for further questions. As I mentioned to you on the phone, I would be more than happy to attend Monday's meeting if that will also help, or to clarify any of the above. Thanks.

Very truly yours,

Jason



**Florence Bolton**

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**From:** Jason Shepard [jshepard@albany.edu]  
**Sent:** Friday, May 08, 2009 9:38 AM  
**To:** Florence Bolton  
**Cc:** Paul J Toscano  
**Subject:** RE: Proposal to Modify Applied Chemistry with Forensic Concentration

Florence -

I would be happy to respond to this next round of questions. This set of questions appear to be different from what we discussed, but hopefully my responses will take care of the remaining concerns that your Committee has with our proposal. I just did this round as an email rather than a word document, I hope that is acceptable.

**COMMENT 1**

1) As far as total credits per degree, I am uncertain as to why this is an issue that would prohibit this proposal from moving forward, but in general, we set our requirements based on what we think is relevant to the degree. We would like to cite that varying levels of credits is not uncommon to our discipline. For example, at the undergraduate level we have a number of tracks with different credit requirements. Specifically, the B.A. (51 credits), the standard B.S. (66 credits), a forensic track (69 credits), a comprehensive forensic track (82 credits), and the Honors College degree in chemistry (77 credits). If the Committee feels strongly that having different credits at the M.S. level is unacceptable, we do not feel strongly opposed to varying this aspect of our program and would be happy to consider what the Committee suggests for appropriate levels of credits for such degrees.

2) The alignment that we refer to is with what we consider our Core Coursework. By having substantial similarities between all of our graduate degree Core Coursework, i.e. the PhD, Applied/Organic, Applied/Forensic, and standard M.S./Chemistry, we feel that aligning the Core Coursework across these degrees allows us to provide a central focus of the important aspects of chemistry that are fundamental to any advanced degree, but having it "buffet-style" allows the students to frame their interests within chemistry. These core courses, along with our attainment exams and cumulative exams ensures that students going through our program are proficient chemists. It may not be apparent to the Committee, but some of the sub-disciplines in chemistry differ greatly, such as Physical, Organic, Biochemistry, Inorganic, and Analytical (of which Forensics falls under). So this way, we essentially pool resources for teaching and advising of graduate students, while at the same time allowing flexibility to creep in based on the different sub-departments in chemistry.

**COMMENT 2**

3) We feel that part of the problem here is that our department has a number of issues that we are trying to deal with in a single proposal. We believe that all of these rationale may not have been clearly apparent in the original proposal, but based on the previous response that we provided, and point #2 above, I hope it is now more clearly stated. Some aspects of our proposal are intended to be practical in nature, such as the need to move the internship to elective status as described previously. Other aspects are also practical, but necessary, and relate to staffing and budget, as well as what we feel is in our students' best interests. By offering a similar Core Coursework across all chemistry sub-disciplines, we outline central pillars of knowledge important for ANY chemistry graduate student, while allowing us to maintain staff to support

5/8/2009

them, and student levels (# of students per class) that are mandated by the university. This philosophy is similar to our undergraduate model, where much of the first 2-3 years coursework (Gen Chem, Orgo, Quantitative Analysis, math and physics) is identical for the student no matter what UG degree is sought, but varies in the 3rd and 4th years based on the specific UG degree. Other less global, more specific rationales were included in the original document, such as "we had a course from Public Health (HEht 530) which, over time, we learned was not a good fit for our students" that, in the original description of the course seemed relevant, but upon reflection having gone through a few years, was not a good resource for our students.

4) As for the final comment "If, as proposed, potential employers want students to have stronger Chemistry background, and to learn Forensic work on the job training, then why don't we offer the students a Chemistry degree instead of a degree labeled as Forensic Chemistry which contains mostly Chemistry with only two required Forensic Chemistry courses.". I am a bit puzzled by this question, because it seems to improperly distort the spirit of my previous response, and the answer is simple. We are striking a balance between chemistry and forensic science that we, as academics in the field and in conjunction with the New York State Police Forensic Investigation Center (who were integral in helping us shape our curriculum and were partners in the \$1.5 million DOJ grant that initiated this program) feel is appropriate for our students. What the employers want is a balance - a chemist with familiarity in forensics, not a forensic scientist with a familiarity of chemistry - the latter of which is more common amongst graduate schools in the country. This distinction is NOT trivial. The large majority of programs offer graduate degrees in forensic science or forensic science with a chemistry emphasis. In addition, as stated in the previous justification, while "only" two forensic courses are required for this Applied degree, others are available as elective, and so far, our students seem interested and driven enough to have had the desire to take these forensic electives, so they are actually taking four forensic courses. That being said, we have one of the most well equipped educational forensic laboratories in the nation, and we put our students to work in those two Forensic Chemistry courses, such that, I do not remotely hesitate to believe our students get a healthy dose of hands-on work in our forensic labs that provides a nice balance to the core chemistry, even in the case where only these two courses are taken. If it would help the Committee, I can provide the lecture and laboratory content from our Forensic Chemistry I and II courses to support this claim.

Florence - I hope this helps and thank you very much for dealing with these issues so quickly, and as before, please do not hesitate to contact us again, or if we are needed at the Monday meeting, let us know.

Regards,

Jason

Jason Shepard  
Assistant Professor  
Department of Chemistry  
University at Albany, SUNY  
1400 Washington Ave  
Albany, NY 12222  
Phone: 518.442.4447

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**From:** Florence Bolton [mailto: Bolton@albany.edu]

5/8/2009

**Sent:** Thursday, May 07, 2009 4:06 PM  
**To:** Jason R E Shepard  
**Subject:** FW: Proposal to Modify Applied Chemistry with Forensic Concentration

Dear Professor Shepard,

The rationale you provided for modifying the Applied Chemistry Forensic Concentration has been circulated to members of the Committee on Curriculum and Instruction (CC&I). Some comments have been forthcoming which I am asking you to address.

Comment 1.

I think we didn't understand why the forensic track required more credits (34) than the organic track (30). They're both tracks in the applied chemistry program so why isn't there equal credits?

Second, I still don't understand how these changes better "align" with core courses as the proposal suggests at the beginning.

I'm sure Chemistry has these answers; I'm just not sure I understand them yet.

Comment 2.

I still don't see the rationale to make these changes - except to remove the Forensic Chemistry classes and internship from the requirements of a Forensic Chemistry degree.

If, as proposed, potential employers want students to have stronger Chemistry background, and to learn Forensic work on the job training, then why don't we offer the students a Chemistry degree instead of a degree labeled as Forensic Chemistry which contains mostly Chemistry with only two required Forensic Chemistry courses.

Thank you for taking time to help clarify these issues.

*Florie*

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**From:** Jason Shepard [mailto:jshepard@albany.edu]  
**Sent:** Thursday, May 07, 2009 11:27 AM  
**To:** Florence Bolton  
**Cc:** Paul J Toscano  
**Subject:** RE: Proposal to Modify Applied Chemistry with Forensic Concentration

Florence -

In have had brief earlier conversation with my chair, but I believe he is in meetings most of the day/afternoon, so in the interest of time, I pass this document along to you, as I believe it captures the spirit of our conversation. Again, it was nice speaking with you, and please do not hesitate me if questions remain from the GAC Committee after reading this document.

Best -

Jason

Jason Shepard  
Assistant Professor  
Department of Chemistry

5/8/2009

University at Albany, SUNY  
1400 Washington Ave  
Albany, NY 12222  
Phone: 518.442.4447

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**From:** Paul J Toscano [mailto:PToscano@albany.edu]  
**Sent:** Thursday, May 07, 2009 8:51 AM  
**To:** Florence Bolton  
**Subject:** RE: Proposal to Modify Applied Chemistry with Forensic Concentration

Florence--I have forwarded your concerns to Prof. Jason Shepard in our Department, who will be better able to answer your concerns.

Paul

Paul J. Toscano  
Chair and Associate Professor, Chemistry

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**From:** Florence Bolton  
**Sent:** Wednesday, May 06, 2009 5:37 PM  
**To:** Paul J Toscano  
**Subject:** Proposal to Modify Applied Chemistry with Forensic Concentration  
**Importance:** High

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*Florie*

5/8/2009

Florence Bolton  
Assistant to Dean of Graduate Studies  
Office of Graduate Studies -- UAB 121  
(518) 442-5121