The revisions to the Chemistry major program are needed to allow the department to change the credit hours associated with our Chem 295A and 295B courses (Advanced Integrated Laboratory) from 2.0 credit hours per course to 3.0 credit hours per course. This change in credit hours for Chem 295A and 295B would then increase the number of total hours required for the chemistry major from 32 hours to 34 hours.

Based on our first run through the Chem 295A course this semester it was apparent to the enrolled students and the instructors that the time requirements for the course exceeded that of a 2.0 credit hour course. Given the similar structure of the Chem 295B course, it was determined that both courses should be changed.

At the February 3, 2012 Chemistry Department faculty meeting the faculty voted 23 for, 0 against and 0 abstaining to increase the credit hours associated with Chem 295A and 295B from 2.0 to 3.0 credit hours and to approve the edits to the chemistry major program as shown in the attached file (A&S catalog Spring 2012 Edits.docx).

There are no staffing, space or cost issues associated with this change.
Muise, Michael R

From: Stone, Michael P.
Sent: Monday, February 06, 2012 2:29 PM
To: Muise, Michael R
Subject: Re: Proposed edits to chemistry major

Yes

On Feb 6, 2012, at 2:25 PM, Muise, Michael R wrote:

Dear Professor Stone,
Does this proposal have your approval as Chair of Chemistry?
Thank you
Michael

Michael Muise  
College of Arts and Science Registrar’s Office  
Vanderbilt University  
Phone: 615-343-3156  
Email: michael.r.muise@Vanderbilt.Edu

From: List, Adam K  
Sent: Monday, February 06, 2012 1:50 PM  
To: Muise, Michael R  
Cc: Stone, Michael P.  
Subject: Proposed edits to chemistry major

Michael,

I've attached a revised memo for the CEP which now includes an exact vote count from the chemistry department faculty meeting. I've also attached the catalog documents in Word form. I'm copying Prof. Stone so that he can verify the documents and confirm/OK the changes to the chemistry major program.

Thanks,
Adam

Adam List  
Dir. Undergraduate Studies in Chemistry  
Vanderbilt University  
VU Station B 351822  
2301 Vanderbilt Place  
Nashville, TN 37235  
Office: SC 5501  
Phone: (615)322-4895
THE Department of Chemistry seeks to provide a sound education in the fundamentals of modern chemistry as well as exposure to cutting-edge research and contemporary instrumentation in the field. This is accomplished by providing students with a solid background in the disciplines of organic, analytical, inorganic, biological, and physical chemistry. The core courses in these areas, which are supported by a variety of practical experimental experiences in the laboratory, provide students with the skills needed to think critically about chemistry. After these core courses, students delve deeper into an area of their choice. Recognizing the importance of research, which integrates and makes sense of our collective body of knowledge, we encourage students to participate in undergraduate research. The chemistry major at Vanderbilt University meets the guidelines for the American Chemical Society approved program of study in chemistry.

Program of Concentration in Chemistry

The chemistry program is organized into four parts. The first part is a general chemistry course sequence (Chem 102a–102b and 104a–104b or AP credit) to serve as an entry point into the major. The second part consists of foundation courses in the five major disciplines of chemistry: analytical (210), biochemistry (BSCI 220), inorganic (203), organic (220a–220b or 218a–218b), and physical (230 or 231). The third part of the chemistry major consists of completing 8 credit hours of laboratory past 104a–104b. Four hours are from laboratory courses (219a–219b, 212a, and 236) associated with foundation courses. There are also 4-6 credit hours of a capstone laboratory (295a–295b) designed to provide advanced laboratory experience. The fourth part of the major consists of completing a minimum of 6 credit hours of in-depth chemistry courses. These in-depth courses build upon the content of foundation courses or integrate concepts from these foundational disciplines.

Concentration in Chemistry

Required Non-chemistry Courses One year of calculus (MATH 155a–155b is preferred)

PHYS: Both 116a–116b and 118a–118b, or 121a–121b

Required Chemistry Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours toward major</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chem 102a–102b &amp; 104a–104b or AP credit</td>
<td>0</td>
</tr>
<tr>
<td>Chem 220a–220b (or 218a–218b) &amp; 219a–219b</td>
<td>8</td>
</tr>
<tr>
<td>Chem 210 &amp; 212a</td>
<td>4</td>
</tr>
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<td>Chem 230 or 231</td>
<td>3</td>
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<td>Chem 236</td>
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<td>BSCI 220</td>
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</tr>
<tr>
<td>Chem 203</td>
<td>3</td>
</tr>
<tr>
<td>Two in-depth chemistry courses</td>
<td>6</td>
</tr>
<tr>
<td>Chem 295a–295b</td>
<td>4-6</td>
</tr>
<tr>
<td>Minimum Hours for Chemistry Major</td>
<td>32-34</td>
</tr>
</tbody>
</table>

* In-depth chemistry courses include all 200-level chemistry courses not explicitly required, except for Chem 250 and 292a–292b–292c. Other in-depth chemistry courses are Chemical and Biomolecular Engineering 223 and 225, and Earth and Environmental Sciences 260, and any 300-level chemistry lecture courses. (Qualified seniors interested in 300-level courses must obtain approval from the course instructor, their adviser, and the director of graduate studies in chemistry. Further details are found in the Academic Policies for the College of Arts and Science.) A maximum of 3 credit hours of chemistry research (282) may be counted as in-depth chemistry course hours.

Additional math courses, such as Math 175 and Math 218, are highly recommended for the chemistry major.

Options for Concentration in Chemistry

In-depth chemistry courses can be chosen so as to define a focus area within chemistry. Students should consult with their major adviser about focus area options, or to formulate an individualized focus area option. Further descriptions of these options and other recommended courses can be found in the chemistry major handbook on the chemistry department homepage.

Chemical Biology Focus. The role of chemical processes in biological systems is fundamental to chemical biology. The journal Nature Chemical Biology defines chemical biology as “the use of chemistry to advance a molecular understanding of biology and the harnessing of biology to advance chemistry.”
Chemical biology builds upon the disciplines of medicinal chemistry, biochemistry, pharmacology, genetics, bioorganic and organic chemistry. Suggested in-depth chemistry electives: 202, 220c, 224, 226, 282.

**Chemical Sciences Focus.** This option provides a broad foundation of chemistry, permitting flexibility in future career pathways and providing an excellent preparation for positions in chemical industry and for graduate programs in chemistry. Suggested in-depth chemistry electives: 211, 230, 231, 282.

**Environmental Chemistry Focus.** Environmental chemistry concerns the chemical phenomena that occur in nature. Environmental chemistry spans atmospheric, aquatic, and soil chemistry with a reliance on analytical chemistry for methods of analysis. Environmental chemistry can be applied to the understanding of issues such as ground water pollution, wastewater treatment, ozone depletion, and greenhouse gas emissions. Suggested in-depth chemistry electives: 211, 230, 231, 282, EES 260.

**Materials Chemistry Focus.** Materials chemistry is concerned with designing and synthesizing new materials with specific useful properties and determining the relationships between physical properties and the composition and structure of these new materials. Materials chemistry encompasses all size regimes from bulk to nanoscale. Synthetic chemistry (inorganic and organic), physical chemistry, and analytical chemistry are all important components of this field. Suggested in-depth chemistry electives: 211, 222, 230, 231, 235, 240, 282, 338, 350.

**Minor in Chemistry**
The minor in chemistry requires 18 hours of course work, including 4 hours from 102b and 104b or AP credit, and 14 hours selected from any of the courses acceptable for the major in chemistry.

**Honors in Chemistry**
Students with an overall GPA of at least 3.0 and a GPA of at least 3.4 in chemistry courses at the start of their junior year wishing to do honors will register for the honors research courses (Chem 292a, 292b, 292c—each is 2 credit hours) beginning spring semester junior year. The Chem 295a and 295b requirements are waived in lieu of the Chem 292a, 292b and Chem 292c registrations. Honors candidates must present a thesis on the research done under 292a–292b–292c and pass an oral examination. Additional information may be found in the chapter on Special Programs in the College.

**Licensure for Teaching**
Candidates for teacher licensure in chemistry at the secondary level should refer to the chapter on Licensure for Teaching in the Peabody College section of this catalog. One semester of the Chem 295a–295b sequence will be considered fulfilled by completing the Peabody student teaching requirements.

**Introductory Courses**
Introductory chemistry is offered in three different sequences, each with its own laboratory. Only one set of these courses may be taken for credit. For Chem 102a–102b and 218a–218b, successful completion of the first semester of the sequence is a prerequisite for the second semester of that sequence.

1. Chemistry 101a–101b. Intended for liberal arts students who are not planning to take any additional chemistry courses. It treats chemistry in a nonmathematical fashion, with some historical and philosophical features. Not for science and engineering students.

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Chemistry

CHAIR Michael P. Stone
DIRECTOR OF UNDERGRADUATE STUDIES Adam K. List
DIRECTOR OF GRADUATE STUDIES Charles M. Lukehart

PROFESSORS EMERITI Robert V. Dilts, Larry C. Hall, Thomas M. Harris, David M. Hercules, Melvin D. Joesten, Mark M. Jones, David L. Tuleen, David J. Wilson


RESEARCH PROFESSORS Thomas M. Harris, David M. Hercules

ADJOINT PROFESSOR Lidia Smentek

ASSOCIATE PROFESSORS Brian O. Bachmann, David E. Cliffel, Eva M. Harth, Piotr Kaszynski, Jens Meiler, Sean B. Seymore, David W. Wright

ADJUNCT ASSOCIATE PROFESSORS Norma K. Dunlap, Joshua T. Moore

ASSISTANT PROFESSORS Janet E. Macdonald, John A. McLean


ADJOINT ASSISTANT PROFESSORS Natalie Y. Arnett, Andrienne C. Friedli

SENIOR LECTURERS Adam K. List, Shawn T. Phillips, Michelle M. Sulikowski, Grace Zoorob

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<tbody>
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<td>Math 155a–155b preferred</td>
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Minimum Hours for Chemistry Major 34

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Dear Jonathan and Timothy,

Please find attached two proposals that were passed by votes of 3 in favor, 0 opposed, 0 abstaining, at the CEP meeting of February 24, 2012.

Thank you,
Leonard Folgarait
Professor of History of Art
Vanderbilt University
Box 0274 GPC
230 Appleton Place
Nashville, TN 37203