Appendix A4.4.2

Chemistry
**FLORIDA A&M UNIVERSITY**  
**COLLEGE of ARTS and SCIENCES**  
**Questions from Governor Rick Scott**  
**Response Document for Academic Deans**

Name of DEPARTMENT: **CHEMISTRY**  

*Note: The listing of questions A through Q has gaps in the lettering because they correspond to the Governor’s request, and the deans are not being asked to respond to every question. Please use the lettering as they appear below for each of your responses.*

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<th>QUESTION</th>
<th>RESPONSE</th>
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| A. **What studies has your university done in the last three years to ensure your graduates are meeting the needs of employers?** | *The B.S. Chemistry Program at FAMU is accredited by the American Chemical Society (ACS), and is currently undergoing reevaluation. The Chemistry Program teaches competencies in the different areas of chemistry as stipulated in the national, state and ACS standards. The Department also makes annual reports to ACS, the accrediting body.*  
*Florida A&M University invites industries every semester to the school to educate the students on the requirements and skills necessary for success in the workforce. The Industries include Proctor and Gamble, Eli Lily, Pfizer, Heinz, etc. These industries interview students, and make them aware of their strengths and weaknesses. This type of feedback is very valuable to the Department of Chemistry in particular because it helps the Department to direct its focus to the areas of its program learning outcomes where students are lacking competence.*  
*Professional schools such as medical, dental, veterinary and pharmacy schools usually visit on a regular basis to conduct workshops on admission requirements and the requirements for success in these schools.*  
*Faculty members take graduate and undergraduate students to visit graduate schools to learn about the different programs and research activities and opportunities in other schools.*  
*Our students go on summer internships to for hands-on laboratory experience and to learn research skills as applied to industries.*  
*Use of common tests using test questions selected from approved testbanks prepared by nation-wide, reputable publishers of chemistry texts. In this way, we provide content knowledge and skills necessary for success in the workforce.*  
*Past FAMU chemistry graduates that work in industries visit our Department on a regular basis to educate our students on the goings-on in the industries to prepare them for jobs in the industries. Examples include Dabrisha Thomas (DOE), Dr. Makeba S. Earst, D.D.S. (All About Smiles Dental Center, Tallahassee); Dr. Namory Bagayoko (university of Virginia); Joy Taylor (American Chemical Society).*  
*The Chemistry Department has developed partnerships with a number of companies (Pfizer, Eli Lilly), research laboratories and other academic institutions.* |
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| B. Do you have measurable goals to meet employers’ current needs? If so, please provide them. How often are these goals updated? | The ACS standards are revised periodically by the ACS committee on professional training to ensure that professional needs are met. ACS reviews programs yearly using annual reports, and reevaluates programs every five years. Outcomes are based on the ACS standards.  
1. Content knowledge: The graduates will demonstrate a thorough knowledge of the fundamental concepts of general chemistry, organic chemistry, analytical chemistry, biochemistry, physical chemistry, and inorganic chemistry.  
2. Quantitative Reasoning: The graduates will demonstrate the ability to analyze and solve chemical problems using basic chemical principles.  
3. Laboratory skills: Upon completion of the required laboratory classes, the graduates will demonstrate the ability to apply fundamental and advanced laboratory techniques and use modern scientific instrumentation for collection, analysis, evaluation and interpretation of chemical data.  
4. Critical thinking skills: The graduate will demonstrate the ability to solve chemical problems, read, comprehend, apply, analyze, evaluate, and interpret chemical and general scientific information.  
5. Proficiency in written and oral communications: Upon completion of the capstone seminar course, all chemistry laboratory courses, and ACS-required research-based student thesis, the graduates will demonstrate proficiency in written and oral communications of chemical concepts and principles.  
6. Ability to make effective use of information resources and technology: Upon completion of the capstone seminar course, all chemistry laboratory courses, and ACS-required research-based student thesis, the graduates will demonstrate the ability to make effective use of information resources and technology in chemistry applications. |
| C. Do you have measurable goals for each graduate in the areas of writing proficiency and critical thinking? If so, please send them to me with the goals and include the results for the last five to ten years. | Critical thinking skills: The graduate will demonstrate the ability to solve chemical problems, read, comprehend, apply, analyze, evaluate, and interpret chemical and general scientific information.  
Proficiency in written and oral communications: Upon completion of the capstone seminar course, all chemistry laboratory courses, and ACS-required research-based student thesis, the graduates will demonstrate proficiency in written and oral communications of chemical concepts and principles.  
See attached assessment graphs for labs and seminars. Short courses (research-based student thesis) is a very recent addition by ACS. |
| E. Are professors required to integrate writing proficiency and critical thinking into all courses? If so, what oversight is provided to ensure that these skills are being taught? How are these skills integrated into course assessments? | The chemistry professors are required to integrate writing proficiency and critical thinking into all courses at all levels, as reflected in common syllabi and assessment (common homework assignments, quizzes and exams) in each of the chemistry courses. The Department also administers the standardized ACS exams on completion of the required courses.  
See attached ACS standards for the different branches of chemistry. |
| F. Do you have measurable goals for student success after graduation? If so, please send me the goals and the results for the last five to ten years. | The Mission of the Department of Chemistry is to provide students with a strong background in the fundamental concepts, theories, and problem solving methodologies and skills to prepare students for pursuing advanced degrees and careers in a variety of professional and technical settings.  
See attached list of FAMU chemistry graduates in graduate schools and professional schools. |
M. **What programs do you have to educate students regarding job opportunities?** What are your measureable goals for each program? Do you use information similar to the data available from the Florida education and Training Placement Information Program (FETPIP) to prepare students prior to admission and prior to selection of major? Please provide me the results for the last five to ten years.

*The Department of Chemistry offers six semesters of Special Topics courses for chemistry majors, from freshman to junior year. These courses are used as platforms to educate students regarding job opportunities, summer research internships, as well as ensure that students master the competencies and skills necessary for success in these areas. As a result, chemistry majors from Florida A&M University usually are recognized at local, state and national scientific conferences. For example (Deborah Bryant and Lindsey Carter) won first places in oral and poster presentations respectively at the National Annual Biomedical Research Conference for Minority Students (ABRCMS); Dr. Namory Bagayoko and Jessica Mukes, both chemistry majors, were the first and second African American students to win the Pfizer undergraduate research award; Brittney Newby, 2009 FAMU chemistry graduate, is the first African American female to be admitted into the University of Florida MD-Ph.D. Program.*

Q. **Please provide me with any additional information you think may be helpful, including your thought process to make sure we are headed in the right direction.**
Department of Chemistry Alumni (for the past 10 years)

Ph.D.s

1. Dr. Edith Onyeozili
2. Dr. Bereket Mochona
3. Dr. Margaret Lyles
4. Dr. Anthony Adeuya
5. Dr. Esther Babady
6. Dr. Lambert Ayuk-Takem
7. Dr. Tryphon Mazu
8. Dr. Arion Kennedy
9. Dr. Sepan Amadi

M.D.s

1. Dr. Namory Bagayoko
2. Dr. Chrishonda Curry
3. Dr. Visanio Mukes
4. Dr. Rebecca Nikerson
5. Dr. Kandis Johnson

Working in Industries

1. Florence Pierre (Industry, Orlando)
2. Osadolor Okungbowa (USDA)
3. Deatra Tilman (Elli Lilly)
4. Debrisha Thomas
5. Jamel Robinson
6. Mercedes Jackson (K12 teaching)
7. Sharon Jones (EPA)
8. Johanna Hannah
9. Hongtao Chen (EPA)
10. Antionette Addison (FAMU)
11. Arian White (FAMU)
12. Lindsay Carter (USDA)
13. Brittni Pitts (Eli Lilly)
14. Chevrin Jones; Department of Education, STEM Coordinator, Miami
15. Catrina Ford (USDA)

In Ph.D. Programs

1. Francis Agama (UF)
2. Luis Miranda (USF)
3. Youcelyn Larose (USF)
4. Adonis McQueen (USF)
5. Tara Ward (USF)
6. Tamelia Julien (USF)
7. Said Farah (FAMU)
8. Jared Tate (UF)
9. McGee Dwight (UF)
10. Christiana Layode (FAMU)
11. Jason Caldwell (FAMU)
12. Latoya Lartey (UM)
13. Makini Duval (FAMU)
14. Sandy Gassette (FAMU)
15. Cynthia Figgers (FAMU)
16. Jillian Pope (Vanderbilt)
17. Devora Simons (FAMU)
18. Michael Cato (University of Alabama)
19. Courtney Fredrick (Vanderbilt)
20. Hannah Uckelmann (Germany)
21. Jessica Mukes (Iowa)
22. Deiab, Shihab (FAMU)
23. Edikan Archibong (USF)

In Dental/Medical Schools
1. April Anderson (Howard)
2. Brittney Newby (UF)
3. Cleo Stafford (Howard)
4. Anthony Murphy (Indiana)
5. Johnny Williams (UF)
6. David Mosley (Washington University)
7. Kevon Rennie (Howard)
8. Tiarra Byrd (Baylor)
Department of Chemistry
Florida A&M University
Exit Survey for Undergraduate - Chemistry Majors

Statistical (Demographic)

Graduation Date_______________________
First Name_____________________________
Last Name_____________________________
Middle Initial_____
Street Address______________________________________
Address (cont.)______________________________________
City_______________________________
State/Province_______________
Zip/Postal Code______________
Country_______________
E- mail______________________________________

Summary of your undergraduate experience at FAMU

Degree Program (select one):
______B.S. in Chemistry/ACS Certification
______B.S. in Chemistry/Pre-Med
______B.S. in Chemistry/Biochemistry or Molecular Biology
_______B.S. in Chemistry/Teacher Education

Other Participation

If you have another major, what is it?

If you have another minor, other than math, what is it?

Did you receive Department or College Awards? If yes, please list

Did you participate in Undergraduate Research?

_____Yes _____ No

Faculty Research Director's Name:______________________________
Duration of Work

How many semesters _____ and how many summer sessions _____ were required for you to graduate?

If more than 8 semesters, excluding summers, then the reason is (check all that apply):

_____ You wanted to take more courses than required
_____ You took a light class load because you were employed
_____ You preferred to take a lighter class load (fewer than 15 hours/semester)
_____ You changed your academic goal (i.e., you changed major or program)
_____ You were enrolled in more programs than required (two majors, minors, etc.)
_____ You were in Cooperative Education or other programs
_____ You repeated courses for a better grade or failed one or more courses
_____ Other

Source of Financial Assistance (if any) while at FAMU
Funding Source (check all that apply)

_____ College Scholarship
_____ Chemistry Scholarship
_____ Part-time Employment Academic
_____ Part-time Employment Non-Academic
_____ Full-time Employment
_____ Other

About what percentage of your expenses did the above funding provide?

_____ 0%
_____ 10%
_____ 20%
_____ 30%
_____ 40%
_____ 50%
_____ 60%
_____ 70%
_____ 80%
_____ 90%
_____ 100%
Changes in Program:

Did you change your major from another department? If yes, explain:

Did you change from one chemistry program to another? If yes, explain:

**Evaluation of Your Undergraduate Experience:**

Course Offerings:

<table>
<thead>
<tr>
<th>Course Offerings</th>
<th>Well Prepared</th>
<th>Under Prepared</th>
<th>Didn't Take</th>
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<tbody>
<tr>
<td>BCH 4033, 4034 Biochemistry I, II</td>
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<tr>
<td>BCH 4033L, 4034L Biochemistry I, II Lab</td>
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<tr>
<td>BCH 4042 Enzymology</td>
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<td>BCH 4044 Nucleic Acids</td>
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<td>CHM 1000 Chemistry Orientation</td>
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<td>CHM 1045, 1046 General Chemistry I, II</td>
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<td>CHM 1045L, 1046L General Chemistry I, II Lab</td>
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<tr>
<td>CHM 2210, 2211 Organic Chemistry I, II</td>
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<td>CHM 2210L, 2211L Organic Chemistry I, II Lab</td>
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<tr>
<td>CHM 3120 Quantitative Analysis</td>
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<td>CHM 3120L Quantitative Analysis Lab</td>
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<td>CHM 3121 Advanced Analytical Chemistry</td>
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<td>CHM 3121L Advanced Analytical Chemistry Lab</td>
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<tr>
<td>CHM 4130 Instrumental Analysis</td>
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<td>CHM 4130L Instrumental Analysis Lab</td>
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<td>CHM 4220 Advanced Organic Chemistry</td>
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<td>CHM 4230 Qualitative Organic Analysis</td>
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<td>CHM 4230L Qualitative Organic Analysis Lab</td>
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<td>CHM 4410, 4411 Physical Chemistry I, II</td>
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<td>CHM 4410L, 4411L Physical Chemistry I, II Lab</td>
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<td>CHM 4501 Biophysical Chemistry</td>
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<td>CHM 4610 Advanced Inorganic Chemistry</td>
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<tr>
<td>CHM 4610L Advanced Inorganic Chemistry Lab</td>
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<tr>
<td>CHM 4905 Directed Individual Study</td>
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<tr>
<td>CHM 4930 Chemistry Seminar</td>
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Feedback Programs:

The B.S. in Chemistry degree program at FAMU is American Chemical Society (ACS) certified. Did you know that?

____Yes   ____No

Is it important to you?

____Yes   _____No

What additional courses or special topics were you interested in that were not offered in this department while you have been here?

Are there any additional programs or services (concentrations, social activities, etc.) that might have significantly enhanced your experience in the chemistry department at FAMU?

Upper Division Courses

In your opinion, were any of the required courses for your degree unnecessary or of little use to your later goals?

_____Yes   ____No

Which courses?

In your opinion, were any of the prerequisite courses (including math and physics) unnecessary or of little use toward the later courses?

_____Yes   ____No

Which courses?

Which upper division chemistry course(s) do you believe did the most to prepare you for your post graduation goals?
**Working Conditions**

1. Do you consider that the working conditions and facilities were safe?
   _____Yes    _____No

2. Do you believe that you were trained adequately in safe laboratory procedures?
   _____Never
   _____At least one safety presentation
   _____Regular safety presentations

3. Was adequate laboratory desk space provided?
   _____Yes     _____No

4. Were teaching assistants knowledgeable?
   _____Yes     _____No

5. Were classroom conditions adequate?
   _____Yes     _____No

6. Was sufficient basic lab apparatus provided?
   _____Yes     _____No

**Departmental Resources**

Instrumentation: Were you exposed to modern instruments in a hands-on matter at some point in your education?

_____Yes     _____No

If yes, please indicate

_____NMR
_____IR Spectroscopy
_____UV and VIS Spectroscopy
_____Chromatography
_____Other
Computational Facilities: Were you exposed to computer data processing and graphing programs?

_____ Yes     _____ No

If yes, please indicate
_____ Spreadsheet (Excel)
_____ Mathcad/Mathematica
_____ Word Processor (WORD)
_____ BASIC or FORTRAN
_____ MOPAC, GAUSSIAN, etc.
_____ Kinetics (Enzyme)

How often did you use the chemistry department computer laboratories?

Library: Were you exposed to the Chemistry Literature and searching procedure?

_____ Yes     _____ No

If yes, please indicate

_____ Chemical Abstracts
_____ Research Journals
_____ On-Line searching (Chem. Abstracts)

How often did you use the library?

Are you satisfied with your level of computer proficiency?

_____ Yes     _____ No

**Advising**

Who was your chemistry or science advisor?

How often did you meet with your advisor?

_____ Every semester
_____ Rarely
_____ Never
How well did the total advising process at FAMU serve your needs?

_____Excellent
_____Very Good
_____Good
_____Fair
_____Poor

Opinion

Please rate the overall quality of teaching in the chemistry department (check one):

_____Excellent
_____Very Good
_____Good
_____Fair
_____Poor

Please rate the overall quality of your research experience in this department (check one):

_____Excellent
_____Very Good
_____Good
_____Fair
_____Poor

Would you recommend Florida A & M University to friends or family members who are about to enter college and major in chemistry?

_____Yes  _____No

Why or why not?

Additional favorable comments about your chemistry program at FAMU.

Additional Unfavorable comments about your chemistry program at FAMU.
Future Plans (Check all that apply to your future career plans).

_____Graduate school
_____Other professional school
_____Work in the private sector in chemistry
_____Work in the private sector in another area
_____Teaching
_____Non-teaching college or university employment
_____Other public sector or government employment
_____Other – Specify _________________________

Thank you.

Please mail the completed survey to:

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Tallahassee, FL
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CHM 3120L Grade Distribution 2006-2007 to 2010-2011

CHM 4130L Grade Distribution 2006-2007 to 2010-2011