# Program Assessment Plan 2013

## Program: B. S. Chemistry  
Academic Unit: Department of Chemistry

<table>
<thead>
<tr>
<th>Student Learning Outcomes (SLO)</th>
<th>SLO Measures</th>
<th>Review of SLO Data</th>
<th>Outcome Target</th>
</tr>
</thead>
</table>
| Students will demonstrate conceptual understanding of inorganic, organic, analytical, biological, and physical chemistry. Curricular guidelines are those suggested by the American Chemical Society (ACS). | 1. ACS Standardized Exams are administered every semester for the general chemistry series.  
2. ACS Standardized Exams are administered in the five subdisciplines of chemistry.  
3. The ACS DUCK (Diagnostic of Undergraduate Chemistry Knowledge) exam will be administered at the end of the undergraduate career.  
4. An exit survey with questions regarding undergraduate course content is administered at the end of the undergraduate career. | 1. Results of standardized exams are reviewed annually by faculty.  
2. Exit survey responses are reviewed annually by department chair. | 80% of students taking the ACS DUCK exam will score at the 40th percentile or higher.  
Rationale: The ACS DUCK exam is an interdisciplinary scenario based exam. This exam encompasses material from all five subdisciplines of chemistry. All students in the Bachelor of Science in Chemistry program are required to take coursework in the areas of analytical, organic, and physical chemistry. Biological and inorganic chemistry are electives. Therefore, not all of the students taking the DUCK exam will have completed coursework in all five subdisciplines. |

| Students will demonstrate critical thinking and problem solving skills related to the discipline. | 1. Laboratory projects in which students design and execute experiments, utilize and integrate both classical laboratory techniques and modern instrumentation, and analyze and interpret results. | 1. Laboratory projects and reports are evaluated by faculty members in the given subdiscipline. | 100% of students enrolled in CHEM 4450L-Instrumental Analysis Laboratory will earn a grade of 70% or better on their individual laboratory project.  
Rationale: A minimum grade of “C” is required for completion of the B.S. in Chemistry. |
<table>
<thead>
<tr>
<th>Student Learning Outcomes (SLO)</th>
<th>SLO Measures</th>
<th>Review of SLO Data</th>
<th>Outcome Target</th>
</tr>
</thead>
</table>
| Students will demonstrate effective communication of technical information. | 1. Laboratory reports in advanced chemistry courses are required to be in ACS publication format.  
2. Written and oral presentations in advanced chemistry courses.  
3. Written and oral presentations in Chemistry Seminar II course. | 1. Laboratory reports are evaluated by faculty members in the given subdiscipline.  
2. Student presentations in advanced chemistry courses are evaluated by the faculty members in the given subdiscipline.  
3. Student presentations in Chemistry Seminar II course are evaluated by all faculty members in the department. | 100% of students enrolled in CHEM 4492-Chemistry Seminar II will earn a grade of 70% or better on their oral presentation.  
Rationale: A minimum grade of “C” is required for completion of the B.S. in Chemistry. |
| Students will demonstrate proficiency in using computers to solve problems in chemistry. | 1. Students are required to use standard computer programs, specialized computer programs, and on-line research strategies in advanced chemistry lecture and laboratory courses. | 1. Laboratory reports are evaluated by faculty members in the given subdiscipline.  
2. Student presentations in Chemistry Seminar II course are evaluated by all faculty members in the department. |  |
| Students will be able to characterize chemical compounds, perform accurate and precise quantitative measurements using proper techniques and modern instruments, and properly execute common laboratory practices (such as laboratory safety, waste management, record keeping, and preparing solutions and dilutions). | 1. Students in all chemistry laboratory courses are taught proper safety protocol. Students in the general chemistry laboratory courses complete a laboratory exercise on practicing safety in the laboratory. | 1. Laboratory safety is monitored by all faculty members. | 100% of students enrolled in CHEM 4450L-Instrumental Analysis Laboratory will earn a grade of 70% or better on their individual laboratory project.  
Rationale: A minimum grade of “C” is required for completion of the B.S. in Chemistry. |
<table>
<thead>
<tr>
<th>Student Learning Outcomes (SLO)</th>
<th>SLO Measures</th>
<th>Review of SLO Data</th>
<th>Outcome Target</th>
</tr>
</thead>
</table>
| Students will be able to characterize chemical compounds, perform accurate and precise quantitative measurements using proper techniques and modern instruments, and properly execute common laboratory practices (such as laboratory safety, waste management, record keeping, and preparing solutions and dilutions). | 2. Students in advanced chemistry laboratory courses exercise proper record keeping through the use of laboratory notebooks.  
3. Laboratory projects in which students design and execute experiments, utilize and integrate both classical laboratory techniques and modern instrumentation, and analyze and interpret results. | 2. Laboratory notebooks are evaluated by faculty members in the given subdiscipline.  
3. Laboratory projects are evaluated by faculty members in the given subdiscipline. | |
| Students will have an understanding of the career opportunities available in chemistry. | 1. Modules in Chemistry Seminar I involve career opportunities, career preparation, and a visit to Career Services.  
2. Attendance at research talks by invited speakers.  
3. Attendance at Southwest Georgia sectional meetings of the American Chemical Society.  
4. An exit survey with questions regarding career aspirations is administered at the end of the undergraduate career. | 1. Exit survey responses are reviewed annually by department chair.  
2. Informal discussions with seniors by faculty members. | |