University of Central Florida

Chemistry B.S. Degree Program Assessment Plan

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University of Central Florida
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UCF

Mission of UCF Chemistry B.S.

- to educate students in the fundamental skills, knowledge, and laboratory practice of chemistry in order to:
  - prepare them for employment in various chemistry related industries, and
  - to prepare them to pursue advanced degrees in chemistry, chemistry related fields, or health related professional schools

Student Learning Outcomes Assessment in the State University System

University: UCF		Degree Program: Chemistry BS		
Assessment Instruments and Procedures	Discipline Knowledge and Skills:	Communication Skills:	Critical Thinking Skills:	Goals:
Nationally Normed Exam: Educational Testing Service Field Exam in Chemistry	X		X	**Outcome 1:** Will have knowledge of chemistry, which compares favorably to that of students nationally. Notes: Exam given in senior year. Performance on the exam and the sub scores that cover four fundamental areas of chemistry and two Assessment Indicators: (1) Biochemistry and (2) Critical Thinking and Reasoning will be used to evaluate student learning on an individual and total group basis.

Nationally Normed Exam

- students take the Educational Testing Service Field Exam in chemistry during their senior year
- performance on the exam and the sub- scores cover four fundamental areas of chemistry used to evaluate student learning on an individual and total group basis

The ETS Field Exam

- includes:
  - physical chemistry
  - organic chemistry
  - inorganic chemistry
  - analytical chemistry
  - biochemistry (added 2002)
  - critical thinking and reasoning

Student Learning Outcomes Assessment in the State University System

University: UCF		Degree Program: Chemistry BS		
Assessment Instruments and Procedures	**Discipline Knowledge and Skills:**	**Communication Skills:**	**Critical Thinking Skills:**	**Goals:**
Departmental survey to measure acceptance into advanced degree programs	**X**			**Outcome 1:** Note: Administered during last semester of senior year.

Student Learning Outcomes Assessment in the State University System *Continued…*

University: UCF		Degree Program: Chemistry BS		
Assessment Instruments and Procedures	**Discipline Knowledge and Skills:**	**Communication Skills:**	**Critical Thinking Skills:**	**Goals:**
Seminar Preparation – Direct evaluation of preparation	**X**	**X**	**X**	**Outcome 2:** Will critically read the chemical literature, grasp and outline the pertinent information, and be able to present it orally to an audience of peers and faculty members.

Student Learning Outcomes Assessment in the State University System *Continued…*

University: UCF		Degree Program: Chemistry BS		
Assessment Instruments and Procedures	**Discipline Knowledge and Skills:**	**Communication Skills:**	**Critical Thinking Skills:**	**Goals:**
Faculty panel to evaluate presentation using a standard evaluation form	**X**	**X**	**X**	**Outcome 2:** Note: Eighty percent of the preparations or presentations will receive an overall evaluation of a "4" or "5" on a 5-point scale as determined by a faculty panel.

Student Learning Outcomes Assessment in the State University System *Continued…*

University: UCF		Degree Program: Chemistry BS		
Assessment Instruments and Procedures	**Discipline Knowledge and Skills:**	**Communication Skills:**	**Critical Thinking Skills:**	**Goals:**
Faculty Committee will evaluate the research project and paper using a 20-point scoring scale (A predetermined evaluation scheme (1 to 5pts. each) for categories that includes Style, Literature Review, Content, and Critical Evaluation)	**X**	**X**		**Outcome 3:** Will be able to use the scientific method to solve original chemical problems, review appropriate literature, collect data, and analyze results and successfully complete an undergraduate research project to be considered for submission to an appropriate journal.

ETS Field Test Percentiles

Composite Scores	2001	2002	2003
composite scores (physical, organic, inorganic, analytical)	92	99	95
critical thinking	95	99	95
biochemistry	92	99	98

ETS Field Test Percentiles

	2001	2002	2003
physical	85	99	84
organic	68	85	98
inorganic	72	99	95
analytical	91	98	90
critical thinking	95	99	95
biochemistry	92	99	98

Research Article Writing Results
measure 3.b. data collected 2002-2003

- after revisions, 90% received at or above the 16 point score of a possible 20 points by the Faculty Undergraduate Research Panel

Student Seminar Evaluation Form

Undergraduate Student Presenter: Date:_____

Faculty Evaluator:_____ (Use back of page if needed.)

A. **Overall Evaluation** - Rate from 5 (high) to 1 (low), with one decimal place if needed.

B. **Evaluate** each item below and **comment** on those areas you consider especially strong or weak.

1. Comprehension of Subject (Consider seminar and answers to questions.)
2. Content - Quality & Accuracy
3. Content & References - How Current
4. Sufficient Chemistry Content & Detail
5. Organization of Ideas
6. How Well Illustrated
7. Clarity of Illustrations
8. Length of Seminar (15 minutes)
9. Quality of Delivery)
10. Professionalism

C. **Comments on this Student's Seminar**

D. **Comments on:**

1) The Seminar Course (Give both strengths and suggested changes.)
2) The Chemistry Curriculum suggested by the student seminars you have evaluated
3) The content and layout of this Form

Evaluation of Undergraduate Research Reports

The following represent areas of proficiency that will be evaluated when the final Undergraduate Research Report submitted by a student enrolled in their fourth semester hour of credit is evaluated by the department Undergraduate Research Evaluation Committee.

A rating scale of 1 to 5 (highest) will be used and a total score of 16(20 maximum) will be used as an acceptable/unacceptable guideline. The student must write the report under the direction of the appropriate faculty member who will approve the report before it is sent to the review committee. The faculty member, not the student, will forward the report.

Student Name:

Faculty Approval:_____ Date

(signature required before submission to review committee)

RATING AREA OF-PROFICIENCY

_____ Style - The format and style used to prepare the final report must conform to that acceptable for publication in a peer reviewed scientific journal. The American Chemical Society Style Guide can be used or as an alternative the style required by a specific journal can be used.

_____ Literature Review - The final report must show evidence that the student has performed a review of the current scientific literature. The text of the report must be prepared to demonstrate that the results of that literature review have been assimilated into the study as appropriate.

_____ Content of the Report - Key components of the report shall included as a minimum requirement the following: Introduction, Experimental, Results and Discussion, and Literature Citations. The report will accurately reflect the nature and scope of the study and will concisely summarize the final results and conclusions. The student must demonstrate through the written report that he/she has a firm grasp of the topic that is the focus of the study.

_____ Critical Evaluation of Data/Results - Experimental procedures, collected data and results must be presented in a clear and concise fashion and the significance of those procedures/data/results will be interpreted in a fashion that demonstrates the significance and usefulness of the study.

_____ Total Score, Signature of Evaluator_____

Use of results: The research report is intended to be the culmination of a research endeavor that involves the individual student and faculty mentor. Should the student submit an unacceptable final report then an I grade will be issued and corrective action will be implemented. The student will work closely with the faculty mentor and a representative from the Undergraduate Research Committee to identify weaknesses and to implement corrective action as appropriate.

Student Seminar Evaluation Form

(detail)

Undergraduate Student Presenter:

Date:_____

Faculty Evaluator:_____

(Use back of page if needed.)

A. **Overall Evaluation** - Rate from 5 (high) to 1 (low), with one decimal place if needed.

Student Seminar Evaluation Form

Detail continued…

B. ***Evaluate*** each item below and ***comment*** on those areas you consider especially strong or weak.

1. comprehension of subject (consider seminar *and* answers to questions.)
2. content - quality and accuracy
3. content and references - how current
4. sufficient chemistry content and detail
5. organization of ideas
6. how well illustrated
7. clarity of illustrations
8. length of seminar (15 minutes)
9. quality of delivery)
10. professionalism

Student Seminar Evaluation Form

Detail continued…

C. Comments on this Student's Seminar

D. Comments on:

1) the seminar course (Give both strengths and suggested changes.)

2) the chemistry curriculum suggested by the student seminars you have evaluated

3) the content and layout of this form

Evaluation of Undergraduate Research Reports

(detail)

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Evaluation of Undergraduate Research Reports *Detail Continued…*

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Faculty Approval: _____ Date

(signature required before submission to review committee)

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Evaluation of Undergraduate Research Reports *Detail Continued…*

RATING AREA OF-PROFICIENCY

_____Literature review - The final report must show evidence that the student has performed a review of the current scientific literature. The text of the report must be prepared to demonstrate that the results of that literature review have been assimilated into the study as appropriate.

Evaluation of Undergraduate Research Reports *Detail Continued…*

RATING	AREA OF-PROFICIENCY
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Evaluation of Undergraduate Research Reports *Detail Continued…*

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