Mission / Purpose

The chemical and biological engineering program at The University of Alabama derives its education and scientific purpose from its responsibilities to and relationship with the citizens of Alabama and the international community of chemical engineering professionals. Our mission is to provide the technical workforce and expertise needed by the chemical and related industries. This mission is fulfilled through three visions, which are: To provide students with a multidisciplinary undergraduate/graduate education of the highest standard of excellence, recognized by both industry and the national academic community, enabling them to perform to their maximum potential in a technologically-based and environmentally-sensitive society; and to sustain an international position of leadership in dynamic scientific and technological research that is engaged by students and faculty and that is focused on global issues of significance to the interests of Alabama; and to contribute to the economic and technical well being of the state and nation through innovative educational, professional, and informational service. Program Objectives: To sustain a nationally-accredited undergraduate program, internationally-recognized research and a graduate program focused on doctoral level achievements. To attain leadership in innovative educational and research areas that recognized the diversity of Alabama's human and natural resources. To place all graduates in meaningful, challenging and rewarding careers that impact the strength of the technological and industrial base. To provide outreach activities for those within Alabama and the nation who can benefit from the unique educational and professional opportunities offered by our program.

Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 4: Demonstrate competency
To demonstrate competency beyond the BS level in chemical engineering

**Connected Documents**
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

**Related Measures**

**M 1: Criterion based grading**
Criterion based grading for the core graduate ChE classes
Source of Evidence: Academic direct measure of learning - other

**M 2: Prospectus exam**
Pass/Fail outcome of the prospectus exam
Source of Evidence: Academic direct measure of learning - other

SLO 5: Demonstrate breadth of knowledge
To demonstrate breadth of content knowledge above the BS level in the general field of chemical engineering

**Connected Documents**
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

**Related Measures**

**M 1: Criterion based grading**
Criterion based grading for the core graduate ChE classes
Source of Evidence: Academic direct measure of learning - other

**M 3: Comprehensive exam**
Pass/Fail outcome of comprehensive exam for MS
Source of Evidence: Academic direct measure of learning - other

**M 4: Department seminar**
Delivery of a satisfactory department seminar, evaluated with a rubric.
Source of Evidence: Academic direct measure of learning - other

SLO 6: Solve complex problems
To solve complex problems above the BS ChE level and communicate the results in a clear concise manner

**Connected Documents**
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

**Related Measures**

**M 1: Criterion based grading**
Criterion based grading for the core graduate ChE classes
Source of Evidence: Academic direct measure of learning - other

**M 5: Thesis defense**
Pass/Fail outcome of the thesis defense
Other Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

**OthOtcn 1: Program Quality**
The program will improve and sustain a high level of recognized quality

**OthOtcn 2: Program Optimum Enrollment**
The program will build and sustain an optimal level of annual program enrollments and degree completions

**OthOtcn 3: Program Highly Valued**
The program will be highly valued by its program graduates and other key constituencies it serves.

**M 6: Peer reviewed publications**
Number of peer reviewed publications and presentations at scientific meetings.

Source of Evidence: Academic direct measure of learning - other
Mission / Purpose

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Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 4: Demonstrate competency
To demonstrate competency beyond the BS level in chemical engineering

Connected Documents
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

Related Measures

M 1: Criterion based grading
Criterion based grading for the core graduate ChE classes
Source of Evidence: Academic direct measure of learning - other

M 2: Prospectus exam
Pass/Fail outcome of the prospectus exam
Source of Evidence: Academic direct measure of learning - other

SLO 5: Demonstrate breadth of knowledge
To demonstrate breadth of content knowledge above the BS level in the general field of chemical engineering

Connected Documents
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

Related Measures

M 1: Criterion based grading
Criterion based grading for the core graduate ChE classes
Source of Evidence: Academic direct measure of learning - other

M 3: Comprehensive exam
Pass/Fail outcome of comprehensive exam for MS
Source of Evidence: Academic direct measure of learning - other

M 4: Department seminar
Delivery of a satisfactory department seminar, evaluated with a rubric.
Source of Evidence: Academic direct measure of learning - other

SLO 6: Solve complex problems
To solve complex problems above the BS ChE level and communicate the results in a clear concise manner.

Connected Documents
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

Related Measures

M 1: Criterion based grading
Criterion based grading for the core graduate ChE classes
Source of Evidence: Academic direct measure of learning - other

M 5: Thesis defense
Pass/Fail outcome of the thesis defense
Source of Evidence: Senior thesis or culminating major project

**M 6: Peer reviewed publications**
Number of peer reviewed publications and presentations at scientific meetings.
Source of Evidence: Academic direct measure of learning - other

### Other Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

**OthOtcn 1: Program Quality**
The program will improve and sustain a high level of recognized quality

**OthOtcn 2: Program Optimum Enrollment**
The program will build and sustain an optimal level of annual program enrollments and degree completions

**OthOtcn 3: Program Highly Valued**
The program will be highly valued by its program graduates and other key constituencies it serves.
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Student Learning Outcomes, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Demonstrate competency
To demonstrate competency in their chosen area of specialty

Connected Documents
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

Related Measures
- M 1: Criterion based grading
  Criterion based grading for the core graduate ChE classes
  Source of Evidence: Academic direct measure of learning - other
- M 2: Prospectus exam
  Pass/Fail outcome of the prospectus exam
  Source of Evidence: Academic direct measure of learning - other

SLO 2: Demonstrate breadth of knowledge
To demonstrate breadth of knowledge in the general field of chemical engineering

Connected Documents
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

Related Measures
- M 3: Qualifying exam
  Pass/Fail outcome qualifying exam
  Source of Evidence: Academic direct measure of learning - other
- M 4: Department seminar
  Delivery of a satisfactory department seminar, evaluated with a rubric.
  Source of Evidence: Academic direct measure of learning - other

SLO 3: Solve complex problems
To solve complex problems and communicate the results in a clear concise manner

Connected Documents
- chemical engineering mastersCurriculum Map I
- chemical engineering mastersCurriculum Map II

Related Measures
- M 5: Thesis defense
  Pass/Fail outcome of the thesis defense
  Source of Evidence: Senior thesis or culminating major project
- M 6: Peer reviewed publications
  Number of peer reviewed publications and presentations at scientific meetings.
  Source of Evidence: Academic direct measure of learning - other
### Curriculum Map 1 (Student Learning Outcomes)

<table>
<thead>
<tr>
<th>Course 1</th>
<th>Course 2</th>
<th>Course 3</th>
<th>Required Experience</th>
<th>Common Experience</th>
<th>Required Task</th>
<th>Common Assignment</th>
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**Activity 1**
- Prospectus
- X

**Activity 2**
- Peer reviewed Publications
- X

**Activity 3**
- Presentations at professional symposia
- X

**Activity 4**
- Thesis Defense
- X
### Curriculum Map II (Assessment Measures)

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<thead>
<tr>
<th>Competency in area of specialty</th>
<th>Student Learning Outcome 1</th>
<th>Student Learning Outcome 2</th>
<th>Student Learning Outcome 3</th>
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<td>Prospectus</td>
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<td>At least one 1st authorship</td>
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<td>Presentations at professional symposia</td>
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### Optional Additional Narrative (Use this space to provide any additional detail concerning the 2010-11 Department Assessment Plan)

Criterion-based grading or CBG is an assessment tool that measures the performance against an agreed set of criteria. This "norm-referenced" grading compares one student performance with the whole student class. In other words, students are graded on “the curve.” In CBG, there is an absolute quantity of whatever is being measured and the grade reflects how much of that quantity each student has attained. Assignment of grades under this system identifies those students who achieve our outcomes. There are a fixed number of points available to be earned. If earning 90% corresponds to an “A”, then everyone could make an “A.” Likewise all students could make an “F” and fail the course which would rarely, if ever happen. We use analytical CBG, where several critical exam answers can be assigned various levels of achievement. Passing the CBG course named “thermodynamics,” with a “C” or better, guarantees the outcome “thermodynamics.” The grade “C” means 70% attainment of a normalized standard. Therefore, students must meet the same standard year after year regardless of the instructor.