Mission / Purpose
Our mission, as aligned with the university, college, and department vision, is teaching, research, and service. The Department of Mechanical Engineering will: 1. Provide high-quality undergraduate, graduate, and continuing education in mechanical engineering that will prepare our graduates for professional careers and a lifetime of learning; 2. Conduct high-quality research programs that support the undergraduate and graduate education objectives, assist in economic development of the state and nation, and advance the general state of knowledge; 3. Serve individual practicing engineers, industry, government, educational entities, and technical societies through active involvement with these groups and by providing professional expertise; and 4. Ensure that our students are well educated technically, have some practical training, and have actively participated in professional society activities.

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

SLO 1: Proficiency in specialization
(Discipline Knowledge) Graduates are expected to demonstrate proficiency in their chosen area of specialization
Connected Document
  Doctorate Mechanical engineering Curriculum Map II

Related Measures
M 1: Preliminary Exam—proficiency in specialization
Preliminary Exam—The student's dissertation committee evaluates the candidate's proficiency using a 1 (poor) to 5 (excellent) numerical score on a survey instrument.
Source of Evidence: Faculty pre-test / post-test of knowledge mastery
Target:
  > 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

M 2: Dissertation defense—specialization
Dissertation defense—The student's dissertation committee evaluates the candidate's proficiency using a 1 (poor) to 5 (excellent) numerical score on a survey instrument.
Source of Evidence: Academic direct measure of learning - other
Target:
  > 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

M 3: Portfolio—specialization
the student prepares a portfolio of work from 4 or 5 courses in his/her specialization. Completed or draft publications on research work can also be included. The dissertation committee reviews this portfolio at the time of the preliminary exam and scores for proficiency from 1 (poor) to 5 (excellent) on a survey instrument.
Source of Evidence: Portfolio, showing skill development or best work
Target:
  > 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

SLO 2: Ability to think critically
(Skills/Abilities) Graduates are expected to possess the ability to think critically as well as analyze data
Connected Document
  Doctorate Mechanical engineering Curriculum Map II
Related Measures

M 4: Preliminary Exam--think critically
Preliminary Exam—the dissertation committee evaluates these skills and abilities using a 1 (poor) to 5 (excellent) score on a survey instrument.

Source of Evidence: Faculty pre-test / post-test of knowledge mastery

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 5: Dissertation defense--think critically
Dissertation defense—The student's dissertation committee evaluates these skills and abilities using a 1 (poor) to 5(excellent) numerical score on a survey instrument.

Source of Evidence: Academic direct measure of learning - other

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 6: Portfolio--think critically
Portfolio—the student prepares a portfolio of work from 4 or 5 courses in his/her specialization. Completed or draft publications on research work can also be included. The dissertation committee reviews this portfolio at the time of the preliminary exam and scores for these skills and abilities from 1 (poor) to 5 (excellent) on a survey instrument

Source of Evidence: Portfolio, showing skill development or best work

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

SLO 3: An Improvement Outcome
An Improvement Outcome Derived From their 2010-11 Assessment Findings

Connected Document
Doctorate Mechanical engineering Curriculum Map II

SLO 4: Novel problems and situations
Graduates are expected to apply knowledge gained during the course of their studies to undertake novel problems and situations

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 7: Dissertation proposal--novel problems
Dissertation proposal—at the time of the preliminary exam the candidate prepares and submits a dissertation research proposal. The dissertation committee scores the candidate's ability to undertake novel problems and situations on a scale of 1 (poor) to 5 (excellent) on a survey instrument

Source of Evidence: Academic direct measure of learning - other

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 8: Dissertation--novel problems
Dissertation—by definition the dissertation is an undertaking of novel problems and situations.

Source of Evidence: Academic direct measure of learning - other

Target:
> 3.5/5

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Improve Collection of PhD Program Assessment Data**
*Established in Cycle: 2011-2012*
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

**SLO 5: State of the art research**
Graduates are expected to possess the ability to perform independent state-of-the-art research in mechanical engineering

**Connected Document**
Doctorate Mechanical engineering Curriculum Map II

**Related Measures**

**M 9: Dissertation–state of the art research**
—by definition the dissertation is a performance of independent state-of-the-art research.
Source of Evidence: Academic direct measure of learning - other

**Target:**
>3.5/5

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Improve Collection of PhD Program Assessment Data**
*Established in Cycle: 2011-2012*
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

**M 10: Articles–state of the art research**
Research articles and papers authored and co-authored by the student on mechanical engineering research—along with the dissertation, the candidate will submit a portfolio of research articles and papers, including published articles and papers and drafts of articles and papers based on the dissertation. The dissertation committee will score the draft articles and papers on a scale of 1 (poor) to 5 (excellent) on a survey instrument. The instrument will also document the number of published peer-reviewed articles and papers.

Source of Evidence: Academic direct measure of learning - other

**Target:**
>3.5/5

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Improve Collection of PhD Program Assessment Data**
*Established in Cycle: 2011-2012*
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

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

**OthOtcm 6: Recognized quality**
The program will improve and sustain a high level of recognized quality.

**Connected Document**
Doctorate Mechanical engineering Curriculum Map II

**Related Measures**

**M 11: UA Office of Academic Affairs Program Reviews**
UA Office of Academic Affairs Program Reviews
Source of Evidence: Academic indirect indicator of learning - other

**M 12: National Research Council Data of Research**
National Research Council Data of Research-Doctorate Programs
Source of Evidence: Academic indirect indicator of learning - other

**OthOtcm 7: Optimal level**
The program will build and sustain an optimal level of annual program enrollments and degree completion

**Connected Document**
Doctorate Mechanical engineering Curriculum Map II

**Related Measures**

**M 13: UA Graduate School statics on Ph.D. enrollment**
UA Graduate School statics on Ph.D. enrollment; achieve an average of 2 Ph.D. students per tenured or tenure-track faculty member

Source of Evidence: Academic indirect indicator of learning - other

**M 14: UA Graduate School statics on Ph.D. graduation**
UA Graduate School statics on Ph.D. graduation; achieve 8 graduates per year.

Source of Evidence: Academic indirect indicator of learning - other
**OthOtcm 8: Program value**
The program will be highly valued by its program graduates and other key constituencies it serves.

**Connected Document**
Doctorate Mechanical engineering Curriculum Map II

**Related Measures**

**M 15: Success of graduates in private sector**
Success of graduates in private sector and national laboratory employment near the time of graduation.
Source of Evidence: Academic indirect indicator of learning - other

**M 16: Success of graduates in academic sector**
Success of graduates in academic sector employment.
Source of Evidence: Academic indirect indicator of learning - other

**Details of Action Plans for This Cycle (by Established cycle, then alpha)**

**Improve Collection of PhD Program Assessment Data**
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with necessary assessment data. The data include (1) a scoring rubric to be filled out by committee members attending proposal defenses and dissertation defenses, (2) a copy of all submitted, accepted, and published refereed journal and conference papers for which the graduating PhD student is the author or a co-author, and (3) a graduate course portfolio.

To solve this problem we have created a tally sheet that is to be turned into the department before the student will be approved for graduation. The tally sheet is to be signed by the student's advisor, who must attach to the sheet all required assessment documents. The department head must see and approve the tally sheet before signing the dissertation final exam pass form for the Graduate School.

We will institute this corrective action plan immediately.

**Established in Cycle:** 2011-2012
**Implementation Status:** Finished
**Priority:** High

**Relationships (Measure | Outcome/Objective):**
- Measure: Articles--state of the art research | Outcome/Objective: State of the art research
- Measure: Dissertation defense--specialization | Outcome/Objective: Proficiency in specialization
- Measure: Dissertation defense--think critically | Outcome/Objective: Ability to think critically
- Measure: Dissertation proposal--novel problems | Outcome/Objective: Novel problems and situations
- Measure: Dissertation--novel problems and situations | Outcome/Objective: Novel problems and situations
- Measure: Dissertation--state of the art research | Outcome/Objective: State of the art research
- Measure: Portfolio--specialization | Outcome/Objective: Proficiency in specialization
- Measure: Portfolio--think critically | Outcome/Objective: Ability to think critically
- Measure: Preliminary Exam--proficiency in specialization | Outcome/Objective: Proficiency in specialization
- Measure: Preliminary Exam--think critically | Outcome/Objective: Ability to think critically

**Implementation Description:** A tally sheet has been developed. Tally sheet is attached in the document list.

**Projected Completion Date:** 08/2012
**Responsible Person/Group:** Dr. K. Clark Midkiff, Mechanical Engineering Department Head
**Connected Document**
Tally Sheet for Graduating Ph.D. students
Mission / Purpose

Our mission, as aligned with the university, college, and department vision, is teaching, research, and service. The Department of Mechanical Engineering will: 1. Provide high-quality undergraduate, graduate, and continuing education in mechanical engineering that will prepare our graduates for professional careers and a lifetime of learning; 2. Conduct high-quality research programs that support the undergraduate and graduate education objectives, assist in economic development of the state and nation, and advance the general state of knowledge; 3. Serve individual practicing engineers, industry, government, educational entities, and technical societies through active involvement with these groups and by providing professional expertise; and 4. Ensure that our students are well educated technically, have some practical training, and have actively participated in professional society activities.

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

SLO 1: Proficiency in specialization
(Discipline Knowledge) Graduates are expected to demonstrate proficiency in their chosen area of specialization

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 1: Preliminary Exam–proficiency in specialization
Preliminary Exam—The student's dissertation committee evaluates the candidate's proficiency using a 1 (poor) to 5 (excellent) numerical score on a survey instrument.

Source of Evidence: Faculty pre-test / post-test of knowledge mastery

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 2: Dissertation defense–specialization
Dissertation defense—The student's dissertation committee evaluates the candidate's proficiency using a 1 (poor) to 5 (excellent) numerical score on a survey instrument.

Source of Evidence: Academic direct measure of learning - other

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 3: Portfolio–specialization
The student prepares a portfolio of work from 4 or 5 courses in his/her specialization. Completed or draft publications on research work can also be included. The dissertation committee reviews this portfolio at the time of the preliminary exam and scores for proficiency from 1 (poor) to 5 (excellent) on a survey instrument.

Source of Evidence: Portfolio, showing skill development or best work

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

SLO 2: Ability to think critically
(Skills/Abilities) Graduates are expected to possess the ability to think critically as well as analyze data

Connected Document
Doctorate Mechanical engineering Curriculum Map II
Related Measures

M 4: Preliminary Exam--think critically
Preliminary Exam—the dissertation committee evaluates these skills and abilities using a 1 (poor) to 5 (excellent) score on a survey instrument.

Source of Evidence: Faculty pre-test / post-test of knowledge mastery

Target: > 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 5: Dissertation defense--think critically
Dissertation defense—The student's dissertation committee evaluates these skills and abilities using a 1 (poor) to 5(excellent) numerical score on a survey instrument.

Source of Evidence: Academic direct measure of learning - other

Target: > 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 6: Portfolio--think critically
Portfolio—the student prepares a portfolio of work from 4 or 5 courses in his/her specialization. Completed or draft publications on research work can also be included. The dissertation committee reviews this portfolio at the time of the preliminary exam and scores for these skills and abilities from 1 (poor) to 5 (excellent) on a survey instrument

Source of Evidence: Portfolio, showing skill development or best work

Target: > 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

SLO 3: An Improvement Outcome
An Improvement Outcome Derived From their 2010-11 Assessment Findings

Connected Document
Doctorate Mechanical engineering Curriculum Map II

SLO 4: Novel problems and situations
Graduates are expected to apply knowledge gained during the course of their studies to undertake novel problems and situations

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 7: Dissertation proposal--novel problems
Dissertation proposal—at the time of the preliminary exam the candidate prepares and submits a dissertation research proposal. The dissertation committee scores the candidate's ability to undertake novel problems and situations on a scale of 1 (poor) to 5 (excellent) on a survey instrument

Source of Evidence: Academic direct measure of learning - other

Target: > 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wit...

M 8: Dissertation--novel problems
Dissertation—by definition the dissertation is an undertaking of novel problems and situations.

Source of Evidence: Academic direct measure of learning - other

Target:
Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

SLO 5: State of the art research
Graduates are expected to possess the ability to perform independent state-of-the-art research in mechanical engineering

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 9: Dissertation—state of the art research
—by definition the dissertation is a performance of independent state-of-the-art research.
Source of Evidence: Academic direct measure of learning - other

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

M 10: Articles—state of the art research
Research articles and papers authored and co-authored by the student on mechanical engineering research—along with the dissertation, the candidate will submit a portfolio of research articles and papers, including published articles and papers and drafts of articles and papers based on the dissertation. The dissertation committee will score the draft articles and papers on a scale of 1 (poor) to 5 (excellent) on a survey instrument. The instrument will also document the number of published peer-reviewed articles and papers.
Source of Evidence: Academic direct measure of learning - other

Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

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

OthOtcn 6: Recognized quality
The program will improve and sustain a high level of recognized quality.

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 11: UA Office of Academic Affairs Program Reviews
UA Office of Academic Affairs Program Reviews
Source of Evidence: Academic indirect indicator of learning - other

M 12: National Research Council Data of Research
National Research Council Data of Research-Doctorate Programs
Source of Evidence: Academic indirect indicator of learning - other

OthOtcn 7: Optimal level
The program will build and sustain an optimal level of annual program enrollments and degree completion

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 13: UA Graduate School statics on Ph.D. enrollment
UA Graduate School statics on Ph.D. enrollment; achieve an average of 2 Ph.D. students per tenured or tenure-track faculty member
Source of Evidence: Academic indirect indicator of learning - other

M 14: UA Graduate School statics on Ph.D. graduation
UA Graduate School statics on Ph.D. graduation; achieve 8 graduates per year.
Source of Evidence: Academic indirect indicator of learning - other
**OthOtcm 8: Program value**
The program will be highly valued by its program graduates and other key constituencies it serves.

**Related Measures**

**M 15: Success of graduates in private sector**
Success of graduates in private sector and national laboratory employment near the time of graduation.
Source of Evidence: Academic indirect indicator of learning - other

**M 16: Success of graduates in academic sector**
Success of graduates in academic sector employment.
Source of Evidence: Academic indirect indicator of learning - other

**Details of Action Plans for This Cycle (by Established cycle, then alpha)**

**Improve Collection of PhD Program Assessment Data**
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with necessary assessment data. The data include (1) a scoring rubric to be filled out by committee members attending proposal defenses and dissertation defenses, (2) a copy of all submitted, accepted, and published refereed journal and conference papers for which the graduating PhD student is the author or a co-author, and (3) a graduate course portfolio.

To solve this problem we have created a tally sheet that is to be turned into the department before the student will be approved for graduation. The tally sheet is to be signed by the student’s advisor, who must attach to the sheet all required assessment documents. The department head must see and approve the tally sheet before signing the dissertation final exam pass form for the Graduate School.

We will institute this corrective action plan immediately.

**Established in Cycle:** 2011-2012
**Implementation Status:** Finished
**Priority:** High

**Relationships (Measure | Outcome/Objective):**
- **Measure:** Articles--state of the art research | **Outcome/Objective:** State of the art research
- **Measure:** Dissertation defense--specialization | **Outcome/Objective:** Proficiency in specialization
- **Measure:** Dissertation defense--think critically | **Outcome/Objective:** Ability to think critically
- **Measure:** Dissertation proposal--novel problems | **Outcome/Objective:** Novel problems and situations
- **Measure:** Dissertation--novel problems | **Outcome/Objective:** Novel problems and situations
- **Measure:** Dissertation--state of the art research | **Outcome/Objective:** State of the art research
- **Measure:** Portfolio--specialization | **Outcome/Objective:** Proficiency in specialization
- **Measure:** Portfolio--think critically | **Outcome/Objective:** Ability to think critically
- **Measure:** Preliminary Exam--proficiency in specialization | **Outcome/Objective:** Proficiency in specialization
- **Measure:** Preliminary Exam--think critically | **Outcome/Objective:** Ability to think critically

**Implementation Description:** A tally sheet has been developed. Tally sheet is attached in the document list.

**Projected Completion Date:** 08/2012
**Responsible Person/Group:** Dr. K. Clark Midkiff, Mechanical Engineering Department Head

**Connected Document**
[Tally Sheet for Graduating Ph.D. students](#)
University of Alabama

Detailed Assessment Report
2011-2012 Mechanical Engineering Ph.D
As of: 7/19/2014 12:05 PM CENTRAL

Mission / Purpose
Our mission, as aligned with the university, college, and department vision, is teaching, research, and service. The Department of Mechanical Engineering will: 1. Provide high-quality undergraduate, graduate, and continuing education in mechanical engineering that will prepare our graduates for professional careers and a lifetime of learning; 2. Conduct high-quality research programs that support the undergraduate and graduate education objectives, assist in economic development of the state and nation, and advance the general state of knowledge; 3. Serve individual practicing engineers, industry, government, educational entities, and technical societies through active involvement with these groups and by providing professional expertise; and 4. Ensure that our students are well educated technically, have some practical training, and have actively participated in professional society activities.

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

SLO 1: Proficiency in specialization
(Discipline Knowledge) Graduates are expected to demonstrate proficiency in their chosen area of specialization

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 1: Preliminary Exam--proficiency in specialization
Preliminary Exam—The student's dissertation committee evaluates the candidate's proficiency using a 1 (poor) to 5 (excellent) numerical score on a survey instrument.

Source of Evidence: Faculty pre-test / post-test of knowledge mastery

Target:
> 3.5/5

Finding (2011-2012) - Target: Not Reported This Cycle
Not assessed this cycle.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wi...

M 2: Dissertation defense--specialization
Dissertation defense—The student's dissertation committee evaluates the candidate's proficiency using a 1 (poor) to 5(excellent) numerical score on a survey instrument.

Source of Evidence: Academic direct measure of learning - other

Target:
> 3.5/5

Finding (2011-2012) - Target: Met
Score 4.73/5. Target met.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee wi...

M 3: Portfolio--specialization
The student prepares a portfolio of work from 4 or 5 courses in his/her specialization. Completed or draft publications on research work can also be included. The dissertation committee reviews this portfolio at the time of the preliminary exam and scores for proficiency from 1 (poor) to 5 (excellent) on a survey instrument.

Source of Evidence: Portfolio, showing skill development or best work

Target:
> 3.5/5

Finding (2011-2012) - Target: Met
Score 4.0/5. Target met.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Improve Collection of PhD Program Assessment Data
Established in Cycle: 2011-2012
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

**SLO 2: Ability to think critically**  
(Skills/Abilities) Graduates are expected to possess the ability to think critically as well as analyze data

**Connected Document**  
[Doctorate Mechanical engineering Curriculum Map II](#)

**Related Measures**

**M 4: Preliminary Exam--think critically**  
Preliminary Exam—the dissertation committee evaluates these skills and abilities using a 1 (poor) to 5 (excellent) score on a survey instrument.

Source of Evidence: Faculty pre-test / post-test of knowledge mastery  
**Target:**  
> 3.5/5  

**Related Action Plans (by Established cycle, then alpha):**  
For full information, see the [Details of Action Plans](#) section of this report.

**Improve Collection of PhD Program Assessment Data**  
Established in Cycle: 2011-2012  
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

**M 5: Dissertation defense--think critically**  
Dissertation defense—The student's dissertation committee evaluates these skills and abilities using a 1 (poor) to 5 (excellent) numerical score on a survey instrument.

Source of Evidence: Academic direct measure of learning - other  
**Target:**  
> 3.5/5  

**Finding (2011-2012) - Target: Met**  
Score 4.29/5.00. Target Met.  

**Related Action Plans (by Established cycle, then alpha):**  
For full information, see the [Details of Action Plans](#) section of this report.

**Improve Collection of PhD Program Assessment Data**  
Established in Cycle: 2011-2012  
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

**M 6: Portfolio--think critically**  
Portfolio—the student prepares a portfolio of work from 4 or 5 courses in his/her specialization. Completed or draft publications on research work can also be included. The dissertation committee reviews this portfolio at the time of the preliminary exam and scores for these skills and abilities from 1 (poor) to 5 (excellent) on a survey instrument.

Source of Evidence: Portfolio, showing skill development or best work  
**Target:**  
> 3.5/5  

**Related Action Plans (by Established cycle, then alpha):**  
For full information, see the [Details of Action Plans](#) section of this report.

**Improve Collection of PhD Program Assessment Data**  
Established in Cycle: 2011-2012  
We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with...

**SLO 3: An Improvement Outcome**  
An Improvement Outcome Derived From their 2010-11 Assessment Findings

**Connected Document**  
[Doctorate Mechanical engineering Curriculum Map II](#)

**SLO 4: Novel problems and situations**  
Graduates are expected to apply knowledge gained during the course of their studies to undertake novel problems and situations

**Connected Document**  
[Doctorate Mechanical engineering Curriculum Map II](#)

**Related Measures**

**M 7: Dissertation proposal--novel problems**  
Dissertation proposal—at the time of the preliminary exam the candidate prepares and submits a dissertation research proposal. The dissertation committee scores the candidate's ability to undertake novel problems and situations on a scale of 1 (poor) to 5 (excellent) on a survey instrument.

Source of Evidence: Academic direct measure of learning - other  
**Target:**  
> 3.5/5  

**Related Action Plans (by Established cycle, then alpha):**  
For full information, see the [Details of Action Plans](#) section of this report.
M 8: Dissertation--novel problems
Dissertation—by definition the dissertation is an undertaking of novel problems and situations.
Source of Evidence: Academic direct measure of learning - other
Target:
> 3.5/5

Finding (2011-2012) - Target: Met
Score 4.64/5.00. Target Met.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

M 9: Dissertation--state of the art research
—by definition the dissertation is a performance of independent state-of-the-art research.
Source of Evidence: Academic direct measure of learning - other
Target:
> 3.5/5

Finding (2011-2012) - Target: Met
Score 4.39/5.00. Target Met.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

M 10: Articles--state of the art research
Research articles and papers authored and co-authored by the student on mechanical engineering research—along with the dissertation, the candidate will submit a portfolio of research articles and papers, including published articles and papers and drafts of articles and papers based on the dissertation. The dissertation committee will score the draft articles and papers on a scale of 1 (poor) to 5 (excellent) on a survey instrument. The instrument will also document the number of published peer-reviewed articles and papers.
Source of Evidence: Academic direct measure of learning - other
Target:
> 3.5/5

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

M 11: UA Office of Academic Affairs Program Reviews
UA Office of Academic Affairs Program Reviews
Source of Evidence: Academic indirect indicator of learning - other

M 12: National Research Council Data of Research
National Research Council Data of Research-Doctorate Programs
Source of Evidence: Academic indirect indicator of learning - other
Optimal level

The program will build and sustain an optimal level of annual program enrollments and degree completion.

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 13: UA Graduate School statics on Ph.D. enrollment
UA Graduate School statics on Ph.D. enrollment; achieve an average of 2 Ph.D. students per tenured or tenure-track faculty member.
Source of Evidence: Academic indirect indicator of learning - other

M 14: UA Graduate School statics on Ph.D. graduation
UA Graduate School statics on Ph.D. graduation; achieve 8 graduates per year.
Source of Evidence: Academic indirect indicator of learning - other

Program value

The program will be highly valued by its program graduates and other key constituencies it serves.

Connected Document
Doctorate Mechanical engineering Curriculum Map II

Related Measures

M 15: Success of graduates in private sector
Success of graduates in private sector and national laboratory employment near the time of graduation.
Source of Evidence: Academic indirect indicator of learning - other

M 16: Success of graduates in academic sector
Success of graduates in academic sector employment.
Source of Evidence: Academic indirect indicator of learning - other

Details of Action Plans for This Cycle (by Established cycle, then alpha)

Improve Collection of PhD Program Assessment Data

We have experienced difficulty in getting faculty advisors and graduating PhD students to provide our assessment committee with necessary assessment data. The data include (1) a scoring rubric to be filled out by committee members attending proposal defenses and dissertation defenses, (2) a copy of all submitted, accepted, and published refereed journal and conference papers for which the graduating PhD student is the author or a co-author, and (3) a graduate course portfolio.

To solve this problem we have created a tally sheet that is to be turned into the department before the student will be approved for graduation. The tally sheet is to be signed by the student's advisor, who must attach to the sheet all required assessment documents. The department head must see and approve the tally sheet before signing the dissertation final exam pass form for the Graduate School.

We will institute this corrective action plan immediately.

Established in Cycle: 2011-2012
Implementation Status: Finished
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: Articles—state of the art research | Outcome/Objective: State of the art research
Measure: Dissertation defense—specialization | Outcome/Objective: Proficiency in specialization
Measure: Dissertation defense—think critically | Outcome/Objective: Ability to think critically
Measure: Dissertation proposal—novel problems | Outcome/Objective: Novel problems and situations
Measure: Dissertation—novel problems | Outcome/Objective: Novel problems and situations
Measure: Dissertation—state of the art research | Outcome/Objective: State of the art research
Measure: Portfolio—specialization | Outcome/Objective: Proficiency in specialization
Measure: Portfolio—think critically | Outcome/Objective: Ability to think critically
Measure: Preliminary Exam—proficiency in specialization | Outcome/Objective: Proficiency in specialization
Measure: Preliminary Exam—think critically | Outcome/Objective: Ability to think critically

Implementation Description: A tally sheet has been developed. Tally sheet is attached in the document list.

Projected Completion Date: 08/2012
Responsible Person/Group: Dr. K. Clark Midkiff, Mechanical Engineering Department Head
Connected Document
Tally Sheet for Graduating Ph.D. students
Curriculum Map II  (What assessment measures will be employed in which courses/activities/assignments for each Student learning Outcome)

<table>
<thead>
<tr>
<th></th>
<th>Student Learning Outcome 1</th>
<th>Student Learning Outcome 2</th>
<th>Student Learning Outcome 3</th>
<th>Student Learning Outcome 4</th>
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</thead>
<tbody>
<tr>
<td>Preliminary Exam</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Portfolio</td>
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<td>The dissertation</td>
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<tr>
<td>Articles</td>
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</table>

Optional Additional Narrative: The data collection methods for the graduate assessment has been improved by developing instruments to document the committees assessments at different points in the program and by the addition of the portfolio of course work materials that is independently assessed by the dissertation committee.
Assessment Data Tally Sheet for Graduating PhD Students

Student Name: ___________________________________________________________

Advisor(s) Name(s): _______________________________________________________

Enter year for correct graduation semester:  Fall _______ Spring _______ Summer _______

<table>
<thead>
<tr>
<th>Proposal Defense Scoring Rubrics Attached for Committee Members (enter names):</th>
<th>Scoring Rubric Attached (Enter “yes” or “no”)</th>
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<tbody>
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<table>
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<tr>
<th>Dissertation Defense Scoring Rubrics Attached for Committee Members (enter names):</th>
<th>Scoring Rubric Attached (Enter “yes” or “no”)</th>
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</thead>
<tbody>
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</tbody>
</table>

Attach to this sheet a copy of all papers authored or co-authored by your PhD student, and complete the table below by filling in the number of papers in each category.

<table>
<thead>
<tr>
<th></th>
<th>Refereed Journal</th>
<th>Refereed Conference</th>
<th>Conference</th>
<th>Other</th>
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<tbody>
<tr>
<td>Number published:</td>
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<tr>
<td>Number accepted:</td>
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<td>Number submitted:</td>
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</table>

I certify that the above information is correct, and that the (1) proposal and dissertation defense scoring rubrics, (2) the coursework portfolio and (3) requested copies of all papers are attached.

Committee chair signature ____________________________________  Date: _______________