

# Assessment Plan

2017-18

## Program (CENG) - Engineering

**University Mission:** George Fox University, a Christ-centered community, prepares students spiritually, academically, and professionally to think with clarity, act with integrity, and serve with passion.

**Program Mission:** Prepare technically competent and broadly educated engineers for a life of responsible service emerging from a Christian worldview.

**Alignment of Program Mission to GFU Mission:** The Engineering Program mission aligns with the GFU mission in the following ways:

- Embraces the Christian mission
- Promotes academic excellence
- Emphasizes importance of practical knowledge, ethical behavior and critical thinking
- Prepares students for a life of responsible service

**Assessment Coordinator:** Mike Foster

## Annual Reflections

### 2016 - 2017

**Summary of the Past Year:** Engineering Innovation Center opened (equipment and personnel support needed). First implementations of KEEN (engineering entrepreneurship) modules into select class (Spivey & Foster). Human-Centered Design implemented into Servant Engineering for the first time.

## Outcome: Outcome a

: An ability to apply knowledge of mathematics, science, and engineering

**Outcome Status:** Active

## Assessment Tools

**Exam/Quiz - In Course** - Rubric for a2 (instructor developed) (Active)

**Target:** 80% of rubric results are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Related Documents:**

[ENGM 211 Final Exam - Outcome \(a\) - Student 1.pdf](#)

[ENGM 211 Final Exam - Outcome \(a\) - Student 2.pdf](#)

[ENGM 211 Final Exam - Outcome \(a\) - Student 3.pdf](#)

[ENGM 211 Final Exam - Outcome \(a\) Results.xlsx](#)

[ENGM 320 Final Exam - Outcome \(a\) - Student 1.pdf](#)

[ENGM 320 Final Exam - Outcome \(a\) - Student 2.pdf](#)

[ENGM 320 Final Exam - Outcome \(a\) - Student 3.pdf](#)

[ENGM 320 Final Exam - Outcome \(a\) Results.xlsx](#)

**Survey** - Senior Survey (Active)

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Exam/Quiz - National/State** - FE Exam (Mathematics section) (Active)

**Target:** > ABET Comparator

# Program (CENG) - Engineering

**Schedule for Data Analysis & Reporting:** Annual

**Exam/Quiz - National/State - FE Exam ("Engineering" sections) (Active)**

**Target:** > ABET Comparator

**Schedule for Data Analysis & Reporting:** Annual

**Exam/Quiz - In Course - Rubric for a1 (instructor developed) (Active)**

**Target:** 80% of rubric scores 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Exam/Quiz - In Course - Rubric for a3 (instructor developed) (Active)**

**Target:** 80% of rubric scores 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

## Related Goals

Core Themes

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

## Outcome: Outcome b

: An ability to design and conduct experiments, as well as to analyze and interpret data

**Outcome Status:** Active

## Assessment Tools

**Survey - Senior Survey (Active)**

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Laboratory Assignment - Rubric for b1 "Design an Experiment" (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Laboratory Assignment - Rubric for b2 "Conduct an Experiment" (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Laboratory Assignment - Rubric for b3 "Analyze and Interpret Data" (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

## Related Goals

# Program (CENG) - Engineering

## Core Themes

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

## Outcome: Outcome c

: An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

**Outcome Status:** Active

### Assessment Tools

#### Survey - Senior Survey (Active)

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

#### Capstone Assignment - Senior Design - Rubric for Outcome c (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

#### Capstone Assignment - Servant Engineering - Rubric for Outcome c (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

### Related Goals

## Core Themes

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

**Core Theme 4.1** - GFU students, faculty, and staff/administrators apply their leadership knowledge and skills in communities, both local and global

**Core Theme 4.2** - GFU students, faculty, staff & administrators demonstrate engagement in improving the human condition by serving people both locally and globally

## Outcome: Outcome d

: An ability to function on multidisciplinary teams

**Outcome Status:** Active

### Assessment Tools

#### Survey - Senior Survey (Active)

**Target:** 80% of responses are 3 or 4

# Program (CENG) - Engineering

**Schedule for Data Analysis & Reporting:** Annual

**Survey - CATME in Servant Engineering (Active)**

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Survey - CATME in Senior Design (Active)**

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

## Related Goals

Core Themes

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

## Outcome: Outcome e

: An ability to identify, formulate, and solve engineering problems

**Outcome Status:** Active

## Assessment Tools

**Survey - Senior Survey (Active)**

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Exam/Quiz - In Course - Rubric (instructor developed) for e1 (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Exam/Quiz - In Course - Rubric (instructor developed) for e2 (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

## Related Goals

Core Themes

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

## Outcome: Outcome f

: An understanding of professional and ethical responsibility

**Outcome Status:** Active

# Program (CENG) - Engineering

## Assessment Tools

**Survey - Senior Survey (Active)**

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Exam/Quiz - National/State - FE Exam (Ethics and Professional Practice section) (Active)**

**Target:** > ABET Comparator

**Schedule for Data Collection:** End of calendar year (fall of current academic year)

**Schedule for Data Analysis & Reporting:** Annual

**Survey - EERI (Active)**

**Target:** Cumulative average N2\_100 Score of 60 or higher

**Schedule for Data Analysis & Reporting:** Annual

## Related Goals

Core Themes

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

**Core Theme 2.3** - GFU students demonstrate an ethical orientation, shaped by Christian values, in their professional practice

## Outcome: Outcome g

: An ability to communicate effectively

**Outcome Status:** Active

## Assessment Tools

**Survey - Senior Survey (Active)**

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Laboratory Assignment - Rubric for g1 (Writing) (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Presentation/Performance - Rubric g2 (Present to group) - SD team presents to client (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Presentation/Performance - Rubric g3 (Comm. in meetings) - SD Students (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

# Program (CENG) - Engineering

**Presentation/Performance** - Rubric g2 (Present to group) - presentations in various courses (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Presentation/Performance** - Rubric g2 (Present to group) - SE team year-end presentation (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Presentation/Performance** - Rubric g3 (Comm. in meetings) - SE Students (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

## Related Goals

Core Themes

**Core Theme 1.1** - General Education. Undergraduates complete a general education package that helps them develop foundational skills, acquire knowledge in a breadth of disciplinary domains, and interact productively across differences.

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

## Outcome: Outcome h

: The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

**Outcome Status:** Active

## Assessment Tools

**Survey** - Senior Survey (Active)

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Capstone Assignment** - Rubric h1 in SD (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Capstone Assignment** - Rubric h2 in SD (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Capstone Assignment** - Rubric h1 in SE (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

# Program (CENG) - Engineering

## Capstone Assignment - Rubric h2 in SE (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

## Related Goals

### Core Themes

**Core Theme 1.1** - General Education. Undergraduates complete a general education package that helps them develop foundational skills, acquire knowledge in a breadth of disciplinary domains, and interact productively across differences.

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

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**Core Theme 4.1** - GFU students, faculty, and staff/administrators apply their leadership knowledge and skills in communities, both local and global

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## Outcome: Outcome i

: A recognition of the need for, and an ability to engage in life-long learning

**Outcome Status:** Active

## Assessment Tools

### Survey - Senior Survey (Active)

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

### Student Self Assessment - 3 questions on EVA using a Likert-like scale (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

### Capstone Assignment - Rubric i2 in SD (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

### Capstone Assignment - Rubric i2 in SE (Active)

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

### Presentation/Performance - Rubric i2 in various classes (Active)

**Target:** 80% of rubric scores 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

# Program (CENG) - Engineering

## Related Goals

Core Themes
<b>Core Theme 1.1</b> - General Education. Undergraduates complete a general education package that helps them develop foundational skills, acquire knowledge in a breadth of disciplinary domains, and interact productively across differences.
<b>Core Theme 2.1</b> - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.
<b>Core Theme 2.2</b> - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

## Outcome: Outcome j

: A knowledge of contemporary issues

**Outcome Status:** Active

## Assessment Tools

<b>Survey</b> - Senior Survey (Active)
<b>Target:</b> 80% of responses are 3 or 4 <b>Schedule for Data Analysis &amp; Reporting:</b> Annual
<b>Writing Assignment</b> - Faculty review of Senior Survey responses (Active)
<b>Target:</b> 80% of scores are 3 or 4 <b>Schedule for Data Analysis &amp; Reporting:</b> Annual
<b>Writing Assignment</b> - Rubric j1 (Active)
<b>Target:</b> 80% of rubric scores are 3 or 4 <b>Schedule for Data Analysis &amp; Reporting:</b> Annual

## Related Goals

Core Themes
<b>Core Theme 1.1</b> - General Education. Undergraduates complete a general education package that helps them develop foundational skills, acquire knowledge in a breadth of disciplinary domains, and interact productively across differences.
<b>Core Theme 2.1</b> - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.
<b>Core Theme 2.2</b> - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field

## Outcome: Outcome k

: An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

**Outcome Status:** Active

## Assessment Tools

<b>Survey</b> - Senior Survey (Active)
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# Program (CENG) - Engineering

**Target:** 80% of responses are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Laboratory Research Project - Rubric k1 (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

**Laboratory Research Project - Rubric k2 (Active)**

**Target:** 80% of rubric scores are 3 or 4

**Schedule for Data Analysis & Reporting:** Annual

## *Related Goals*

Core Themes

**Core Theme 2.1** - GFU students demonstrate competence in their respective fields of study by obtaining licensure or credentials needed to practice.

**Core Theme 2.2** - GFU students apply professional competence by successfully obtaining entrance to graduate school, additional preparation, and/or successful employment in the field