# Annual Academic Assessment Report

## PhD / Biological Engineering

## September 12, 2023

The following summarize the assessment measures used for this report. Results of last three years (Fall 2020 – Spring 2023) after our Graduate Program Comprehensive Review in October 2019 are given below and discussed about the student leaning outcomes.

1. *Graduating student cumulative GPA*: SLO-1
2. *Annual graduate student academic reviews and progress reports*: SLO-1
3. *Number of publications and conference*: SLO-5
4. *Proposal defense – PhD dissertation proposal defense*: SLO-3 and 5
5. *PhD preliminary/candidacy examination*: SLO-2 and 5
6. *Final examination – PhD dissertation defense*: SLO-4 and 5
7. *Exit reviews*: all outcomes

## 1. Cumulative GPA

PhD:    SLO-1 – Progress toward the degree and preparation of conducting independent dissertation research (*i.e.*, academic progress)

**Table 1** provides the cumulative GPA for all students graduating with PhD degrees since 2020 (over the last 3 years). The data are given in chronological order of graduating term. The metric for success is for 100% students to achieve at least 3.0 cumulative GPA. According to the data in **Table 1**, we have achieved the stated criterion.

**Table 1. Cumulative GPA for graduating BENG students for 2020 – 2023.**

| Student Count | Degree | Graduating Term | Cumulative GPA |
|---|---|---|---|
| 1 | PhD BENG | 1199 | 3.903 |
| 2 | PhD BENG | 1203 | 3.792 |
| 3 | PhD BENG | 1216 | 3.981 |
| 4 | PhD BENG | 1216 | 4.00 |
| 5 | PhD BENG | 1216 | 4.00 |
| 6 | PhD BENG | 1219 | 3.75 |
| 7 | PhD BENG | 1229 | 3.625 |
| 8 | PhD BENG | 1236 | 3.88 |
| 9 | PhD MSEN | 1236 | 3.728 |

## 2. Annual Graduate Student Academic Reviews and Progress Reports

> PhD: SLO-1 – Progress toward the degree and preparation of conducting independent dissertation research (*i.e.*, academic progress)

**Table 2** provides the results from the annual graduate student academic reviews and progress reports for Fall 2022 – Spring 2023. The reports could not be collected for 2020 – 2022 due to the pandemic. Also, note that there are 5 additional PhD students in ENDY and MSEN whose annual reviews were done through the interdisciplinary programs.

This form, administered by the UA Graduate School, provides for a rating of satisfactory or unsatisfactory. The metric for success is 100% of students to achieve a "satisfactory" outcome. According to the data in **Table 2**, all students achieved "satisfactory" outcomes. Hence, there appears to be no issues or concerns through review of this measure.

**Table 2. Annual graduate student academic reviews and progress reports for 2022 – 2023.**

| Academic Year | Number "Satisfactory" | Number "Unsatisfactory" |
|---|---|---|
| 2022 – 2023 | 6 | 0 |

## 3. Number of Publications and Conference Presentations

> PhD: SLO-5 – Communicate effectively (both oral and writing)

**Table 3** provides the number of peer-reviewed publications and conference presentations for all students in PhD programs since 2020 (over the last 3 years). The metric for success is (1) for 100% students to present at least one presentation in international/national/state conferences and meetings before their graduations and (2) for 100% PhD students to publish at least one peer-reviewed publication (*i.e.*, refereed journal article or refereed conference proceeding) before their graduations. 7 out of 9 (78%) graduating PhD students since 2020 presented at least one presentation in international/national/state conferences and meetings and published at least one peer-reviewed articles. Two students could not fulfil the requirement due to the restrictions caused by the pandemic. Improvements will be made to achieve this measure by working with faculty.

**Table 3. Number of publications and conference presentations for BENG students for 2020 – 2023.**

| Student Count | Degree | Graduating Term | Number of Peer-Reviewed Publications | Number of Conference Presentations |
|---|---|---|---|---|
| 1 | PhD BENG | Fall 2019 | 2 | 9 |
| 2 | PhD BENG | Spring 2021 | 0 | 0 |
| 3 | PhD BENG | Summer 2021 | 2 | 6 |
| 4 | PhD BENG | Summer 2021 | 8 | 3 |
| 5 | PhD BENG | Summer 2021 | 2 | 1 |
| 6 | PhD BENG | Fall 2021 | 6 | 16 |

| 7 | PhD BENG | Fall 2021 | 0 | 0 |
| 8 | PhD BENG | Summer 2023 | 3 | 2 |
| 9 | PhD MSEN | Summer 2023 | 7 | 8 |

## 4. Proposal Defense

PhD:  SLO-3 & 5 – Contribute new and fundamentally important knowledge to Biological Engineering (*i.e.*, understanding of field and contribution to new knowledge); communicate effectively (oral and writing)

**Tables 4** provides the students' performances in PhD dissertation proposal defenses since 2020 (over the last 3 years). The evaluation rubrics for thesis proposals or dissertation proposals, which were completed by the committee members, were supposed to be used to assess the student learning outcomes. However, rubrics of several graduating PhD students were not collected, except one, during the pandemic; hence, verification of progress or success is accessed by the fact that the student graduated. All the students either graduated or scored an average score of ≤ 3 and passed the proposal defense. Hence, there appears to be no issues or concerns through review of this measure. However, improvements will be made for timely collections of rubrics by working with faculty.

**Table 4. Performance of students in PhD dissertation proposal defense for 2020 – 2023.**

| Student Count | Term | Result | Evaluation Score (Average) |
|---|---|---|---|
| 1 | 1199 | Graduated | - |
| 2 | 1203 | Graduated | - |
| 3 | 1216 | Graduated | - |
| 4 | 1216 | Graduated | - |
| 5 | 1216 | Graduated | - |
| 6 | 1219 | Pass | 2.1 |
| 7 | 1229 | Graduated | - |
| 8 | 1236 | Graduated | - |
| 9 | 1236 | Graduated | - |

## 5. PhD Candidacy/Preliminary Examination

PhD:  SLO-2 & 5 – Prepare for independent research in Biological Engineering (*i.e.*, understanding of field); communicate effectively (oral and writing)

**Table 5** provides the students' performances in PhD candidacy/preliminary examination since 2020 (over the last 3 years). Rubrics of several graduating PhD students were not collected, except two, during the pandemic; hence, verification of progress or success is accessed by the fact that the student graduated. All the students either graduated or scored an average score of ≤ 3 and passed the examination. Hence, there appears to be no issues or concerns through review

of this measure. However, improvements will be made for timely collections of rubrics by working with faculty.

**Table 5. Performance of students in PhD candidacy/preliminary examination for 2020 – 2023.**

| Student Count | Term | Result | Evaluation Score (Average) |
|---|---|---|---|
| 1 | 1199 | Pass | 1.53 |
| 2 | 1203 | Graduated | - |
| 3 | 1216 | Graduated | - |
| 4 | 1216 | Graduated | - |
| 5 | 1216 | Pass | 1.63 |
| 6 | 1219 | Graduated | - |
| 7 | 1229 | Graduated | - |
| 8 | 1236 | Graduated | - |
| 9 | 1236 | Graduated | - |

## 6. Final Examination: PhD Dissertation Defense

PhD:      SLO-4 & 5 – Contribute new and fundamentally important knowledge to Biological Engineering or significantly modify, amplify, or interpret existing knowledge in a new and important manner (*i.e.*, understanding of field and contribution to new knowledge); communicate effectively (oral and writing)

**Tables 6** provides the students' performances in PhD final examination (*i.e.*, dissertation defense) since 2020 (over the last 3 years). All the students either graduated or scored an average score of 3 or less and passed the examination. Hence, there appears to be no issues or concerns through review of this measure. However, improvements will be made for timely collections of rubrics by working with faculty.

**Table 6. Performance of students in PhD dissertation defense for 2020 – 2023.**

| Student Count | Degree | Result | Evaluation Score (Average) |
|---|---|---|---|
| 1 | 1199 | Pass | 1.00 |
| 2 | 1203 | Pass | 1.30 |
| 3 | 1216 | Graduated | - |
| 4 | 1216 | Pass | 1.13 |
| 5 | 1216 | Graduated | - |
| 6 | 1219 | Graduated | - |
| 7 | 1229 | Graduated | - |
| 8 | 1236 | Graduated | - |
| 9 | 1236 | Graduated | - |

## 7. Exit Review

PhD:     All outcomes

Exit reviews were not done during the pandemic and those for the graduating PhD students in 2022-2023 terms are currently being performed after the new department head joined in August 2023.

## 8. Conclusion

Several assessment data, especially evaluation rubrics, were not collected during the pandemic, preventing accurate assessments of the student learning outcomes (SLO). However, based on the given assessment measures, even if they are not complete, it appears that SLO were met by the BAEG graduate program at PhD levels for 2020 – 2023. Future assessments will be strengthened through the timely implementation of the evaluation rubrics as well as the the graduate student exit reviews.

## 9. Assessment Process Changes

Faculty will discuss consequential assessment process changes for the timely implementation and completion of the required assessments during faculty meetings.