PROGRAM EDUCATIONAL OBJECTIVES

Bioresource Science and Engineering
University of Washington
Mission Statement
The Bioresource Science and Engineering Program at the University of Washington will be a national and international leader in the preparation of undergraduate and graduate students for the bioresource segment of the world economy. In particular, our students will be prepared for careers in industries – direct and supporting – that produce fibers and fiber productions, high value molecules, and fuels and energy from biomass.

Mission Realization
To carry out the mission of the BSE program, an excellent instructional program will be maintained to provide the best possible educational experience for undergraduate and graduate students. In addition to acquiring pertinent skills and facts, students will be asked to take the initiative to analyze and find solutions for open-ended problems in order to develop their ability to exercise good professional judgment. A strong research program, dedicated to creating new knowledge in the field of bioresource science and engineering, will be maintained by the BSE faculty to support the instructional mission. Moreover, solid ties to industrial contacts, as well as to publicly employed professionals associated with the bioresource industry, will be sought after and maintained to insure program relevance and faculty vitality.

Program Educational Objectives
The BSE program has three broad educational objectives. These objectives are the long term goals that we set for our students. Each objective is supported by a number of program outcomes which are those skills and abilities we expect our students to have when they graduate from our program so they can achieve the objectives. The BSE Educational Objectives are the following:

- **Engineering excellence**
  Our graduates will engage in successful careers demonstrating engineering excellence.

- **Industry leaders**
  Our graduates will be leaders in identifying and creatively resolving – using sound professional judgment – significant bioresource issues.

- **Intellectual maturity**
  Our graduates will develop the intellectual maturity to serve their profession and community.
Program Student Outcomes

The following are the Bioresource Science and Engineering student outcomes that prepare our graduates to attain the Program Educational Objectives listed above.

Outcome 1: Students will have the ability to apply knowledge of mathematics, science, and engineering.

Outcome 2: Students will have the ability to apply knowledge of fiber and paper physics, chemistry, and engineering as it pertains to the bioresource, paper, and allied industries.

Outcome 3: Students will have the ability to design and conduct experiments, as well as to statistically analyze and interpret data.

Outcome 4: Students will have the 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 5: Students will have the ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Outcome 6: Students will have the ability to communicate effectively, orally and written.

Outcome 7: Students will be able to identify, formulate, and solve engineering problems including open-ended tasks, such as designing processes or solving product and production problems.

Outcome 8: Students will have an ability to function on and lead multidisciplinary teams.

Outcome 9: Students will have an understanding of professional and ethical responsibilities.

Outcome 10: Students will have the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
Outcome 11: Students will have knowledge of contemporary issues relevant to their careers.

Outcome 12: Students will recognize the need for, and an ability to engage in life-long learning.
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 150
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 201/202
Meeting Program Student Outcomes

Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.

e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 248
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE XXX (WRITING CLASS)
Meeting Program Student Outcomes

Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.

e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 391
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.

e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 392
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 406
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how
the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that
requires students to formulate the design problem, apply engineering
principles to develop viable process alternatives, apply sound engineering
judgement to select the preferred alternative, and do a detailed design on
the preferred alternative.

BSE 420
Meeting Program Student Outcomes

Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.

E.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 421
Meeting Program Student Outcomes

Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.

E.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 422
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 426
Meeting Program Student Outcomes

Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.

e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 430
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.

E.g.: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 436
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 480
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how
the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that
requires students to formulate the design problem, apply engineering
principles to develop viable process alternatives, apply sound engineering
judgement to select the preferred alternative, and do a detailed design on
the preferred alternative.

BSE 481
Meeting Program Student Outcomes
Please state which of the program outcomes your course contributes to how the material in that course helps students achieve that outcome.
e.g: Objective 7. BSE 480 has an open-ended design requirement that requires students to formulate the design problem, apply engineering principles to develop viable process alternatives, apply sound engineering judgement to select the preferred alternative, and do a detailed design on the preferred alternative.

BSE 497