

# GRADUATE STUDENT HANDBOOK



**Biological Systems Engineering**  
UNIVERSITY OF WISCONSIN-MADISON

| August-November 2019/2020

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## I. Program Overview

### Introduction

Graduate students in Biological Systems Engineering (BSE) Department strive to better understand the current theories, principles, and issues in wide-ranging biologically related fields of engineering. The students focus on better understanding how research helps generate new knowledge and how knowledge is applied to address both practical and fundamental problems. Through this process, graduate students improve their ability to think critically and creatively and to synthesize, analyze, and integrate ideas for decision-making and problem solving.

The graduate programs in BSE are "tailor-made" to meet the specific needs and interests of a student and his/her major professor. The graduate students have the primary responsibility for developing their program of study, conducting research, and preparing a thesis. However, the students must maintain close contact with their major professors for advice and supervision in all phases of research.

The departmental admission requirements are often more rigorous than the minimum set by the Graduate School. However, the department may be flexible on some requirements based on an individual student's background and the faculty needs. This handbook provides an overview of the requirements, policies and resources for graduate study in the BSE Department at the University of Wisconsin-Madison.



*Photo by Jeff Miller/University of Wisconsin-Madison*

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## Graduate Faculty

Robert P. Anex	Ph.D. Professor, also Nelson Institute for Environmental Studies - Energy Analysis and Policy Program, Environment & Resources Program
Christopher Choi	Ph.D. Professor
Matthew Digman	Ph.D. Assistant Professor
Sundaram Gunasekaran	Ph.D. Professor, also Director of CALS Global, Food Science, Materials Science & Engineering
Krishnapuram Karthikeyan	Ph.D. Professor, also Civil & Environmental Engineering, Environmental Chemistry & Technology Program, Nelson Institute for Environmental Studies
Rebecca Larson	Ph.D. Associate Professor and Extension Specialist, also Nelson Institute for Environmental Studies
Brian Luck	Ph.D. Associate Professor and Extension Specialist
Xuejun Pan	Ph.D. Professor
Douglas J. Reinemann	Ph.D. Professor and Extension Specialist and CALS Associate Dean for Outreach and Extension, also Dairy Science, Institute for Environmental Studies – Energy Analysis and Policy, Agroecology, Center for Integrated Agricultural Systems, American Indian Studies, Wisconsin Energy Institute
Troy M. Runge	Ph.D. Professor, also Nelson Institute for Environmental Studies
Kevin J. Shinnars	Ph.D. Professor, also Mechanical Engineering
John Shutske	Ph.D. Professor and Extension Specialist, also affiliate Professor in Department of Family Medicine, School of Medicine & Public Health
Paul Stoy	Ph.D. Associate Professor
Anita M. Thompson	Department Chair, Ph.D. Professor, also Chair of Nelson Institute's Water Management Program
Zhou Zhang	Ph.D. Associate Professor, also affiliate in Electrical and Computer Engineering

## Adjunct Faculty

Richard W. Hartel	Ph.D. Professor, Food Science
John Ralph	Ph.D. Professor, Biochemistry

## Emeritus Faculty

David R. Bohnhoff	Ph.D. Professor
Brian Holmes	Ph.D. Professor
David W. Kammel	Ph.D. Professor and Extension Specialist
Richard J. Straub	Ph.D. Professor, also CALS Senior Associate Dean, Mechanical Engineering

## Department Staff

Sue Reinen	Department Administrator
Julie Garvin	Graduate Coordinator
Betsy Wood	Student Services Coordinator and Undergraduate Advisor
Josh Blaydes	Financial Specialist
Kirsten Martin	Research Administrator
Kody Habeck	Associate Instrumentation Innovation Instructor / Shop Supervisor

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## BSE Graduate Programs

BSE Department offers graduate programs leading to Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

**Master of Science:** Two options are available for the M.S. degree in BSE: a thesis option and a non-thesis option (i.e., an independent study). The thesis option requires a final thesis be deposited to the Graduate School. *If your objective is to pursue a Ph.D. degree or a research-oriented career, you are strongly encouraged to select the thesis option.* Graduate research assistantships are generally not awarded to students pursuing the non-thesis option. Admission to M.S. degree program typically requires a bachelor's degree (B.S.) in an engineering or related discipline. See page 4 for more information.

**Doctor of Philosophy:** Students in the Ph.D. degree program prepare for an independent research careers in the public and private sectors. Admission to Ph.D. typically requires an M.S. degree in engineering or closely related field of science. Students with a B.S. degree can also be admitted to pursue a Ph.D. degree without earning an M.S. degree. See page 6 for more information.



## II. Master's Degree Program

### Program Basics

Graduates of the M.S. program help fill the need for highly educated engineers in industry, consulting firms, government agencies, and educational institutions.

BSE students pursuing an M.S. degree are expected to achieve the following learning goals by the end of their degree work.

- Articulate, critique, or elaborate the theories, research methods, and approaches to inquiry or schools of practice in the field of study.
- Identify sources and assemble evidence pertaining to questions or challenges in the field of study.
- Demonstrate understanding of the primary field of study in a historical, social, or global context.
- Select and / or utilize the most appropriate methodologies and practices.
- Evaluate or synthesize information pertaining to questions or challenges in the field of study.
- Communicate clearly in ways appropriate to the field of study.
- Recognize and apply principles of ethical and professional conduct.

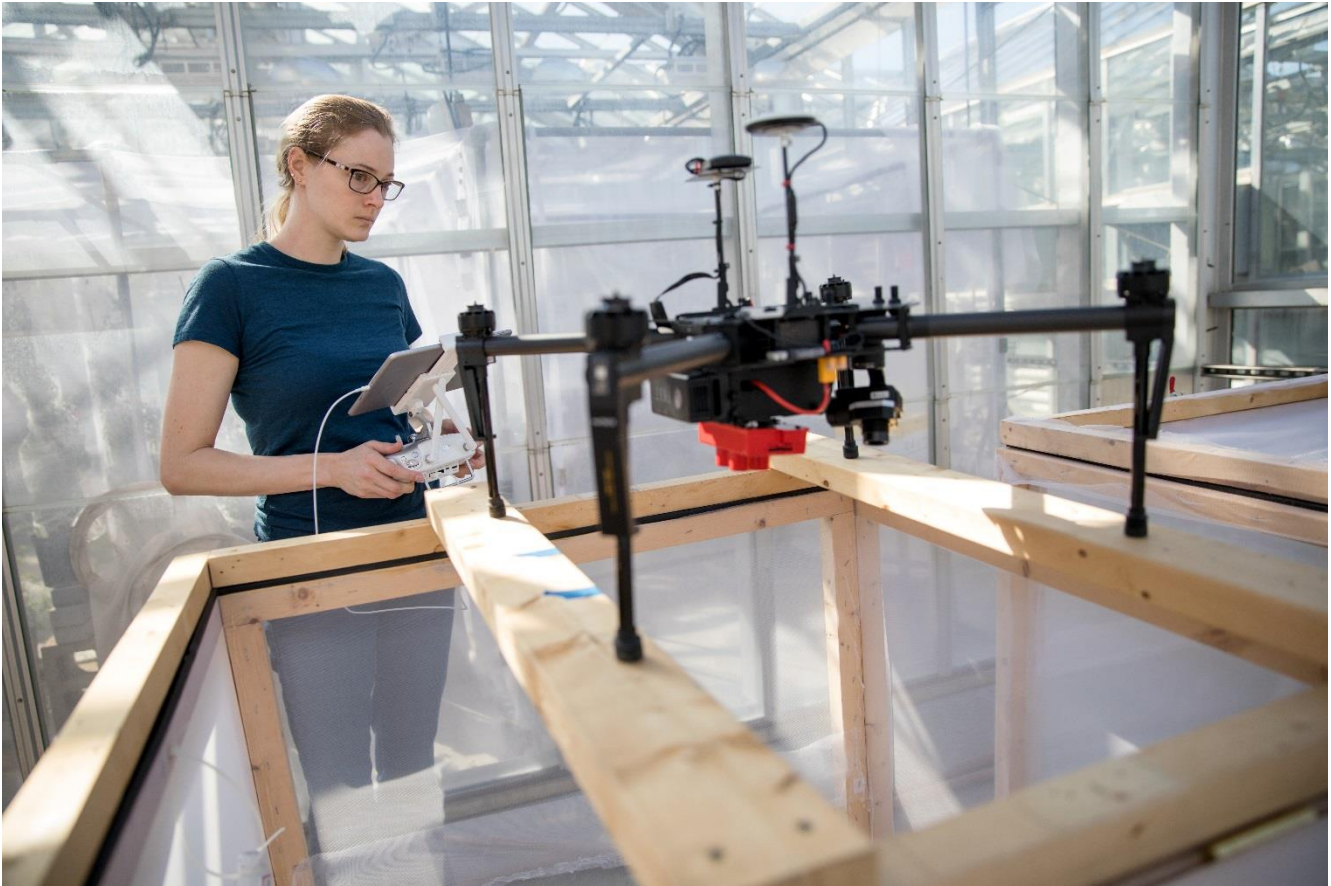


Photo by Michael P. King/UW-Madison CALS

### Admission Requirements

All STEM-background students are invited to apply. The BSE Department stipulates that applicants should have a B.S. degree from an Accreditation Board for Engineering and Technology (ABET)-accredited engineering program. Applicants who do not have an ABET-accredited engineering B.S. degree may be eligible for admission if they have completed the following basic engineering course work:

- *Thirteen* credits of mathematics (calculus, analytical geometry, and differential equations);
- *Six* credits in statics, mechanics of materials, material sciences;
- *Nine* credits in one of the following groups of courses depending on the area of graduate research:
  - Machinery systems engineering: dynamic, fluid dynamics, and thermodynamics.
  - Food and bioprocess engineering: fluid dynamics, heat transfer, and thermodynamics.
  - Natural resources and environmental engineering: soil science, fluid mechanics, and soil and water engineering.
  - Agro-based chemistry and materials: analytical, organic and physical chemistry and basic materials science.
- Upon the request by graduate advisor, up to *six* prerequisite course credits (from the above list) can be waived for students admitted without an ABET-accredited B.S. degree in engineering. The graduate advisor will decide which courses (for six credits) are being waived. This request should

be made at the time of admission and approved by the BSE Graduate Instruction and Research Committee (GIRC).

International students are required to submit English proficiency test scores in addition to meeting the academic requirements. For more information about English proficiency requirements, please visit <https://grad.wisc.edu/apply/>.

### Master's Degree Requirements

All students must meet BSE graduate program requirements in addition to those of the Graduate School, which include a minimum overall GPA of 3.0 and a minimum of 15 credits of graduate-level coursework.

<i>Minimum Credit Requirements</i>	<i>Thesis Option</i>	<i>Non-Thesis Option</i>
A-F letter-graded UW-Madison courses <sup>1</sup>	18	24
Graduate courses <sup>2</sup>	15	15
Thesis research	6	--
Independent study	--	3
Graduate seminars (BSE 900 & 901) <sup>3</sup>	2	2
BSE Courses <sup>4</sup>	8	8
<b>Total<sup>5</sup></b>	<b>30</b>	<b>30</b>

<sup>1</sup> Not including course credits taken to satisfy admission requirements.

<sup>2</sup> At least 6 credits must be from at the 500-level and above science/engineering classes; can include up to 6 credits of 400-level and above science/engineering classes taken as UW-Madison undergraduates.

<sup>3</sup> BSE 900 (Fall semester only, typically taken during the first Fall semester of the graduate study) and BSE 901 (Spring semester only, typical during the last Spring semester before graduation).

<sup>4</sup> Includes research/independent study and seminar credits

<sup>5</sup> BSE 699 credits for thesis option MS students are limited to 3 credits and are required to be separate from the work the student is doing for 990 Research credit and shall be taken under the direction of an instructor other than the major advisor.

For other general requirements of completing your M.S. degree, visit <https://grad.wisc.edu/current-students/masters-guide/#what-you-need-to-do>.

BSE graduate students are required to be enrolled during *all three semesters*; fall, spring, and summer. However, summer enrollment may be waived with advisor approval.

### BSE Seminars

BSE 900 Seminar - Introductory seminar offered in fall semesters. Students new to the BSE graduate program should take this semester during the first semester available during their program of study. This one credit course is graded A-F and may not be repeated.

BSE 901: Graduate Research Seminar - This final seminar is offered in spring semesters. Students who anticipate completing their degree should enroll in this seminar during their final one of two semesters in the program. This seminar requires a research presentation. This one credit course is graded A-F and may not be repeated.

BSE 902: Graduate Seminar – All BSE graduate students are expected to enroll every spring. This seminar meets with the BSE 901: Graduate Research Seminar. Students enrolled in the one credit 902

section will be graded Unsatisfactory/Satisfactory based on participation in attending seminar and providing feedback to 901 student presenters.

### III. Doctoral Degree Program

#### Program Basics

The department offers students opportunities to undertake independent research-based advanced study in different specializations, which include but not limited to the following: environmental quality and natural resource engineering, waste management, food and bioprocess engineering, machinery systems, bioresources and biorefining, and agricultural safety and health.

BSE students pursuing a Ph.D. degree are expected to achieve the following learning goals by the end of their degree work.

1. Articulates research problems, potentials, and limits with respect to theory, knowledge, or practice within the field of study.
2. Formulates ideas, concepts, designs, and/or techniques beyond the current boundaries of knowledge within the field of study.
3. Creates research, scholarship, or performance that makes a substantive contribution.
4. Demonstrates breadth with their learning experiences.
5. Advances contributions to the field of study to society.
6. Communicates complex ideas in a clear and understandable manner.
7. Recognize and apply principles of ethical and professional conduct.



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#### Doctoral Degree Program Requirements

<i>Minimum Credit Requirements</i>	<i>Credits</i>
Minimum graduate courses <sup>2</sup>	42
Thesis research	12
Graduate seminars <sup>3</sup>	2
BSE courses <sup>4</sup>	8
Teaching preparatory/professional communications course <sup>5</sup>	3
<b>Total<sup>1, 6</sup></b>	<b>72</b>

<sup>1</sup>At least 32 credits of graduate credits must be completed in residence.

<sup>2</sup>At least 36 of the course credits must be taken in physical sciences (see Appendix F). At least 9 credits must be from the 600- to 800-level classes from an engineering department and/or comparable technical area. A maximum of 18 course credits and 6 research credits can be used from an MS degree obtained elsewhere. All course credits should be letter-graded, unless course is only offered for credit/no-credit, which must get prior approval from advisor. Only 1 credit/no-credit of the 9 credits can be used to fulfill 600- to 800-level classes.

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<sup>3</sup>BSE 900 (Fall semester only, typically taken during the first Fall semester of the graduate study) and BSE 901 (Spring semester only, typical during the last Spring semester before graduation). BSE 900 is waived for students who have taken it for their M.S. degree.

<sup>4</sup>Includes research, seminar, and independent study work.

<sup>5</sup> Some possible courses are EPD 654 or BSE 799. The teaching course credits cannot be used to fulfill 9 credits of 600 to 800 level classes from an engineering department and/or comparable technical area. Teaching preparatory courses and seminar courses do not count towards the required 24 (42) course credits.

<sup>6</sup> BSE 699 credits are limited to 3 credits and are required to be separate from the work the student is doing for 990 Research credit and shall be taken under the direction of an instructor other than the major advisor.

## **BSE Seminars**

*BSE 900 Seminar* - Introductory seminar offered in fall semesters. Students new to the BSE graduate program should take this semester during the first semester available during their program of study. This one credit course is graded A-F and may not be repeated.

*BSE 901: Graduate Research Seminar* - This final seminar is offered in spring semesters. Students who anticipate completing their degree should enroll in this seminar during their final one of two semesters in the program. This seminar requires a research presentation. This one credit course is graded A-F and may not be repeated.

*BSE 902: Graduate Seminar* – All BSE graduate students are expected to enroll every spring. This seminar meets with the BSE 901: Graduate Research Seminar. Students enrolled in the one credit 902 section will be graded Unsatisfactory/Satisfactory based on participation in attending seminar and providing feedback to 901 student presenters.

## **Doctoral Minor or a Graduate/Professional Certificate**

Breadth is a required component of doctoral training at UW-Madison. Given there are multiple paths to breadth, the Graduate School leaves the choice of whether students achieve breadth through a doctoral minor, Graduate/Professional certificate, or other means up to the student's doctoral major program. Options are as follows:

- **Option A (external doctoral minor):** Requires a minimum of 9 credits in a doctoral minor program (single disciplinary or multi-disciplinary) outside of the student's doctoral major program. Fulfillment of this option requires the approval of the doctoral minor program. In the BSE Department, a Ph.D. student may include a doctoral minor field(s) of study selected in consultation with the major professor. The minor should be chosen from a field that will both diversify and strengthen the student's research program. The plan of study for the minor should be developed in consultation with the minor professor and the minor department.
- **Option B (distributed doctoral minor):** Requires a minimum of 9 credits in one or more programs forming a coherent topic and can include coursework in the student's doctoral major program. Fulfillment of this option requires the approval of the student's doctoral major program.
- **Option C (Graduate/Professional certificate):** Requires successful completion of a Graduate/Professional certificate in a program outside of the student's doctoral major program.

The purpose of the minor is to add breadth to a Ph.D. major. Monitoring the course content and credit requirements for Ph.D. minors is the responsibility of the minor department/program. Major departments/programs are responsible for indicating the expected minor (either Option A or B, see below) at the time of the preliminary warrant request.

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The Graduate School's minimum course requirements for the doctoral minor and Graduate/Professional certificate to meet the breadth requirement include:

- An average GPA of 3.00 on all course work.
- Course work must be graduate level (the equivalent of UW-Madison courses 300 level or above; no audits or pass/fail).
- Coursework may not double count for major requirement.
- Maximum three (3) credits of independent study (e.g., 699, 799, 899, 999).
- Research and thesis cannot be used to satisfy the minor or Graduate/Professional certificate (e.g., 790, 890, 990).
- No more than five (5) credits of course work completed more than 5 years prior to admission to the doctoral program; coursework taken 10 years ago or more may not be used.

### Examinations

- **Qualifying examination:** It is an *optional* requirement for BSE students, required at the discretion of the student's graduate advisor. Please discuss with your advisor to determine if it is required of you.
- **Preliminary Examination:** The Graduate School does not formally recognize a student as a Ph.D. candidate until he/she has passed the comprehensive Preliminary Examination (Prelims). The purpose of this examination is to establish that the student has gained an appropriate level of knowledge in Biological Systems Engineering and related fields and is able to apply this knowledge in pursuing independent research.

The Prelims may be written and/or oral, as desired by the Guidance and Examining Committee. The minor department may require that the student take an additional examination in the minor field, depending upon the policies and regulations of the minor department. If required, the minor department examination must be passed before the student takes the Comprehensive Preliminary Examination. After completing the preliminary examinations and course work, the candidate takes on the status of dissertator which results in reduced fees (dissertators register for only 3 credits every semester).

The Prelims may not be taken until the student has:

1. Passed the Qualifying Examination, when required
2. Cleared all incomplete grades
3. Completed or is in the final term to complete all major and minor coursework requirements other than research and seminar credits
4. Prepared and submitted a detailed research plan to the Guidance and Examination Committee at least four weeks before the examination.

**Note:** Before the Preliminary Examination is taken, a warrant must be obtained from the Graduate School. The student should request a warrant through the Department's Student Services Coordinator, minimum four weeks prior to the examination.

- **Final Oral Examination:** The Final Oral Examination covers the thesis and general fields of the major and minor studies. The major professor schedules the examination at a time agreed upon by the candidate, the Guidance and Examining Committee, and the Graduate Schools' Deadlines. The

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Graduate School's policies and procedures for the Final Oral Examination may be found in the *Academic Policies and Procedures* section entitled Final Oral Examination.

### **Guidance and Examination Committee**

Committees advise and evaluate satisfactory progress, administer preliminary and final oral examinations, evaluate a thesis or dissertation, and/or sign a degree warrant. A student's program arranges a committee with appropriate expertise to afford the breadth and depth needed in degree examinations. The responsibilities of individual committee members are determined by the program. The executive committee (or its equivalent) of a program/department is responsible for approving the composition of all graduate committees. The final warrant request which includes committee membership must be submitted to the Graduate School at least three weeks before the examination date. Students should consult their advisor and their program's student handbook for the specific function of degree committees in their program. For more information about guidance and examination committees, visit the graduate school's website at <https://grad.wisc.edu/documents/committees/>.

- **Graduate Examination Committee make-up:** Minimum Graduate School requirements for graduate committees are as follows:
  1. The chair or co-chair of the committee must be Graduate Faculty from the student's program. The UW-Madison Faculty Policies and Procedures 3.05A stipulates that "the faculty of the Graduate School includes all university faculty defined in 1.02 holding professional rank (professor, associate professor, assistant professor or instructor) in any department with graduate program authority, including those with zero-time appointments in such departments." Committee members who have retired or resigned from the University automatically retain Graduate Faculty status for one year; after one year they are permitted to serve as co-chair or another non-Graduate Faculty committee member.
  2. Doctoral committees/final oral examination committee (Ph.D. and DMA) must have at least 4 members representing more than one graduate program, 3 of whom must be UW–Madison graduate faculty or former UW–Madison graduate faculty up to one year after resignation or retirement. At least one of the 4 members must be from outside of the student's major program or major field (often from the minor field).
  3. MFA final committees must have at least 4 members, 3 of whom must be graduate faculty or former graduate faculty up to one year after resignation or retirement.
  4. Master's thesis committees must have at least 3 members, 2 of whom must be graduate faculty or former graduate faculty up to one year after resignation or retirement.
  5. Non-thesis master's committees must have at least one graduate faculty member from the student's program.
  6. The required 4th member of a doctoral committee/final oral examination committee, 4th member of an MFA committee, or 3rd member of a Master's thesis committee, as well as any additional members, all retain voting rights. They may be from any of the following categories, as approved by the program executive committee (or its equivalent): graduate faculty, faculty from a department without a graduate program, academic staff (including emeritus faculty), visiting faculty, faculty from other institutions, scientists, research associates, and other individuals deemed qualified by the executive committee (or its equivalent).
  7. To receive a Ph.D. or Master's degree, students must receive no more than one dissenting vote from their committee.



*Photo by Jeff Miller/University of Wisconsin-Madison*

## **IV. Timelines and Deadline Requirements**

### **The Warrant Process**

A warrant is a document issued to your program by the Graduate School at your program's request after you have met all degree requirements. Warrants are valid for one semester, and are signed by the program chair, advisor, or your committee. By signing the warrant, programs indicate that all program degree requirements have been met. **It is crucial that all students allocate enough time for themselves to complete the warrant process and graduate on time.** A warrant is required for MS and PhD thesis defense as well as for PhD preliminary examination.

This is the BSE department process for obtaining a warrant and a general timeline of the process:

1. Send a draft of thesis to your advisor at least six weeks prior to warrant request
2. After the draft is reviewed by your advisor, fill out a warrant request form (Appendices A, B) available from the BSE Graduate Coordinator
3. Have your advisor initial it
4. Submit the warrant request document to BSE graduate coordinator at least four weeks before your intended exam date
5. After the BSE Graduate Committee Chair approves the warrant request, it will be submitted to the Graduate School at least *three weeks* before the exam date
6. BSE Graduate Coordinator will route the warrant for committee signature

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The BSE Department follows Graduate School's guidelines. Students are encouraged to consult the following links. Questions should be directed to their advisor and/or BSE Graduate Coordinator.

M.S. degree students: <https://grad.wisc.edu/current-students/masters-guide/>

Ph.D. degree students: <https://grad.wisc.edu/current-students/doctoral-guide/>

The Graduate School degree deadlines: <https://grad.wisc.edu/deadlines/>



*Luke S W/Shutterstock.com*

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## V. Advising

### Advisor / Advisee Roles

Advisor: The advisor serves a dual role: first, assists the student in acquiring the highest level of knowledge and competence in the field that is possible; and second, chairs the committee that will determine whether the student has performed acceptably at each of his/her degree milestones. Advisors may often play a role in tracking the student's progress toward degree completion, assisting with course selection and academic planning, and helping students identify possible research mentors, committee members, and opportunities.

Advisee: The main roles of the advisee are to absorb their advisor's information in order to complete their degree(s). Since the advisor's role can vary, students should discuss roles and expectations with their advisors or prospective advisors. Additionally, the department requires a written annual progress report for all graduate students. This reflection and discussion allow for graduate students to receive valuable feedback from their advisors.

Both the student and the advisor have a responsibility to make their expectations clear to each other.



*Photo by Michael P. King/UW-Madison CALS*

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### **Additional Advising Contacts**

The BSE Graduate Coordinator serves as an excellent resource for graduate students on various matters of BSE Graduate Program and UW Graduate School policies. To set up an appointment with our Graduate Coordinator, use Starfish on MyUW or email [BSEGradCoordinator@mailplus.wisc.edu](mailto:BSEGradCoordinator@mailplus.wisc.edu). Drop-in appointments are also welcome. Students should first refer to the BSE Graduate Program website (<https://bse.wisc.edu/graduate-studies/>), this Handbook, the UW Graduate School website (<https://grad.wisc.edu/>), and the Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/academic-policies/>) for answers on various program-related questions.

### **Career Advising Resources**

The University of Wisconsin-Madison offers a wide variety of career advising and professional development resources. For more information about these resources, please see pg. 17.

## **VI. Satisfactory Progress – Academic Expectations**

As stated above, graduate students in BSE must maintain a minimum overall B average (3.0 GPA) during their graduate studies. Seminars, research, or other special problems credits may not be used to offset BC or C grades. No grade below a C will be accepted for fulfilling coursework requirements for the degree.

In addition to grading standards, students are evaluated by their advisor using a graduate evaluation form (Appendix E). Discuss the standards and expectations in greater detail with your advisor.

## **VII. Satisfactory Progress – Conduct Expectations**

The Department of Biological Systems Engineering is a professional learning environment where all students can prosper in academics and advance their careers. ALL students are expected to proceed in a dignified manner in terms of academia, communication, and professionalism. Failure to act in this manner will result in disciplinary action and/or dismissal from the program.

## **VIII. Disciplinary Action and Dismissal**

Misconduct in the Department of Biological Systems Engineering Department is treated very seriously. Any evidence of misconduct discovered during a graduate student's tenure in the department will result in immediate disciplinary action and/or dismissal from the graduate program. For more information about disciplinary policy, please visit the graduate school's website for a comprehensive list of policies and procedures (<https://grad.wisc.edu/academic-policies/>).

## **IX. Grievance Procedures & Reporting Misconduct and Crime**

In the College of Agricultural and Life Sciences any student who feels unfairly treated by a member of the College of Ag & Life Sciences (CALS) faculty or staff has the right to complain about the treatment and to receive a prompt hearing. Some complaints may arise from misunderstandings or communication breakdowns and be easily resolved; others may require formal action. Complaints may concern any matter of perceived unfairness.

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To ensure a prompt and fair hearing of any complaint, and to protect the rights of both the person complaining and the person at whom the complaint is directed, the following procedures are used in the College of Agricultural and Life Sciences. Any student, undergraduate or graduate, may use these procedures, except employees whose complaints are covered under other campus policies.

1. The student should first talk with the person at whom the complaint is directed. Most issues can be settled at this level. Others may be resolved by established departmental procedures.
2. If the student is unsatisfied, and the complaint involves any unit outside CALS, the student should seek the advice of the dean or director of that unit to determine how to proceed.
  - a. If the complaint involves an academic department in CALS the student should proceed in accordance with item 3 below.
  - b. If the grievance involves a unit in CALS that is not an academic Department, the student should proceed in accordance with item 4 below.
3. The student should contact the department's grievance advisor within 120 calendar days of the alleged unfair treatment. The departmental administrator can provide this person's name. The grievance advisor will attempt to resolve the problem informally within 10 working days of receiving the complaint, in discussions with the student and the person at whom the complaint is directed.
  - a. If informal mediation fails, the student can submit the grievance in writing to the grievance advisor within 10 working days of the date the student is informed of the failure of the mediation attempt by the grievance advisor. The grievance advisor will provide a copy to the person at whom the grievance is directed.
  - b. The grievance advisor will refer the complaint to a department committee that will obtain a written response from the person at whom the complaint is directed, providing a copy to the student. Either party may request a hearing before the committee. The grievance advisor will provide both parties a written decision within 20 working days from the date of receipt of the written complaint.
  - c. If the grievance involves the department chairperson, the grievance advisor or a member of the grievance committee, these persons may not participate in the review.
  - d. If not satisfied with departmental action, either party has 10 working days from the date of notification of the departmental committee action to file a written appeal to the CALS Equity and Diversity Committee (Room 116 Agriculture Hall). A subcommittee of this committee will make a preliminary judgement as to whether the case merits further investigation and review. If the subcommittee unanimously determines that the case does not merit further investigation and review, its decision is final. If one or more members of the subcommittee determine that the case does merit further investigation and review, the subcommittee will investigate and seek to resolve the dispute through mediation. If this mediation attempt fails, the subcommittee will bring the case to the full committee. The committee may seek additional information from the parties or hold a hearing. The committee will present a written recommendation to the dean who will provide a final decision within 20 working days of receipt of the committee recommendation.
4. If the alleged unfair treatment occurs in a CALS unit that is not an academic department, the student should, within 120 calendar days of the alleged incident, take his/her grievance directly to the associate dean of academic and student affairs. The dean will attempt to resolve the problem informally within 10 working days of receiving the complaint. If this mediation attempt does not succeed the student may file a written complaint with the dean who will refer it to the CALS

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Equity and Diversity Committee. The committee will seek a written response from the person at whom the complaint is directed, subsequently following other steps delineated in item 3d above.

Matters of interpretation of academic requirements not primarily involving questions of fairness should come via the student's advisor to the college's Scholastic Policies and Actions Committee.

### **Reporting Misconduct and Crime**

The campus has established policies governing student conduct, academic dishonesty, discrimination, and harassment/abuse as well as specific reporting requirements in certain cases. If you have a grievance regarding unfair treatment towards yourself, please reference the procedures and resources identified above. If you learn about, observe, or witness misconduct or other wrongdoing you may be required to report that misconduct or abuse. Depending on the situation, it may be appropriate to consult with your advisor, Graduate Program Coordinator, or other campus resources (such as the UW Office of Equity and Diversity, Graduate School, McBurney Disability Resource Center, Employee Assistance Office, Ombuds Office, and University Health Services).

### **Research Misconduct Reporting**

The University of Wisconsin-Madison strives to foster the highest scholarly and ethical standards among its students, faculty, and staff. Graduate students and research associates are among the most vulnerable groups when reporting misconduct because their source of financial support and the progress in their careers may be at risk by raising questions of wrongdoing. They are also often the closest witnesses to wrongdoing when it occurs and therefore must be appropriately protected from the consequences of reporting wrongdoing and be informed of their rights. Please find full details at <https://research.wisc.edu/compliance-policy/research-ethics/>.

### **Academic Misconduct Reporting**

Being part of a university community, you are expected to uphold the standards of the university. Academic misconduct negatively impacts the integrity of students and the entire graduate program. Please report any evidence of misconduct immediately.

### **Sexual Assault Reporting**

UW-Madison prohibits sexual harassment, sexual assault, dating violence, domestic violence, and stalking. These offenses violate UW-Madison policies and are subject to disciplinary action. Sanctions can range from reprimand to expulsion from UW-Madison. In many cases, these offenses also violate Wisconsin criminal law and could lead to arrest and criminal prosecution.

Students who experience sexual harassment, sexual assault, domestic violence, dating violence, and/or stalking have many options and services available to them on and off campus, including mental health counseling, victim advocacy and access to the criminal and campus disciplinary systems. For a list a confidential support and reporting options, please visit <https://www.uhs.wisc.edu/prevention/violence-prevention/resources/>.

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Faculty, staff, teaching assistants, and others who work directly with students at UW-Madison are required by law to report first-hand knowledge or disclosures of sexual assault to university officials for statistical purposes. In addition, disclosures made to certain university employees, such as academic advisors or university administrators, may be forwarded to the campus Title IX coordinator for a response. For more information, please visit <https://doso.students.wisc.edu/sexual-assault-dating-and-domestic-violence/>.

### **Reporting and Response to Incidents of Hate / Bias**

The University of Wisconsin-Madison values a diverse community where all members can participate fully in the Wisconsin Experience. Incidents of Bias/Hate affecting a person or group create a hostile climate and negatively impact the quality of the Wisconsin Experience for community members. UW-Madison takes such incidents seriously and will investigate and respond to reported or observed incidents of bias/hate. Please find full details at <https://doso.students.wisc.edu/bias-or-hate-reporting/>.

### **Specific Statement Example – Extensions Requests**

Students who have not completed the degree on schedule may request extensions. Requests for a one-semester/year extension can be made to the Exceptions Committee. The Exceptions Committee is authorized to approve these requests upon written justification from the student and their advisor. The student must describe the reasons for the request and provide a proposed timetable for completing all program requirements. The major professor must sign the request form and write comments endorsing the request. The request should be made as soon as the need for an extension becomes apparent. The Exceptions Committee may request additional documentation as needed. Appeals or requests for additional extensions must be approved by the full program faculty.

## **X. Funding and Financial Information**

### **Research and/or Teaching Assistantships:**

#### **Research Assistantships**

Appointment as a Research Assistant (RA) is the most common type of appointment in BSE. RAs are generally appointed on an annual basis for a 12-month period with compensation established on a university-wide basis each year. Research Assistantships are typically 50%, but may range from 33.33% to 50%. The renewal of assistantship is contingent upon satisfactory progress made both in coursework and research responsibilities, as determined by the student's graduate advisor. RAs are required to carry a full graduate load of at least eight credits in Fall and Spring semesters and two credits in the Summer. The Department of Biological Systems Engineering requires advising faculty to provide at least 60-days written notice for any break in TA/RA/PA appointment offers. This offer is



*Photo by Bryce Richter/University of Wisconsin-Madison*

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contingent upon the student's ability to begin, in-person by the appointment start date unless alternate arrangements are made with the advising faculty member.

### **Teaching/Project Assistantships**

When available, BSE may offer teaching assistantships or project assistantships. The teaching assistants (TA) or project assistants (PA) assist in classroom instruction under the direction of a faculty member with duties that include preparing of instructional materials, directing labs, grading lab exercises and exams, etc.

### **Funding for Conference / Research Travel**

The Graduate School provides a limited amount of funding for dissertators whose research has been accepted for presentation at a conference. For more information about this funding, visit the Student Research Grants Competition website (<https://grad.wisc.edu/funding/grants-competition/>).

In addition, the Graduate School runs the Travel Research Grants competition which provides funds to support travel related to your dissertation/thesis research. Students must be dissertators. For more information about this funding, visit the Student Research Grants Competition website (<https://grad.wisc.edu/funding/grants-competition/>).

## **XI. Professional Development and Career Planning**

There is a plethora of on-campus resources for graduate students to assist with professional development outside of the department. We encourage all our students to take advantage of these options, as they complement the development of students quite well. DiscoverPD is an online program that assesses graduate students' strengths and weaknesses and offers useful feedback for students. Along with DiscoverPD, you can find resources like The Versatile Ph.D. (for doctoral students), National Center for Faculty Development & Diversity (NCFDD) and more.

For more information, visit the graduate school's website for professional development: <https://grad.wisc.edu/professional-development/>

Additionally, be sure to check out these other options for supplemental development:

- UW Writing Center: <http://www.writing.wisc.edu/>
- Grants Information Collection: <http://grants.library.wisc.edu/>
- Student Technology Training (STS): <http://sts.doit.wisc.edu/>
- Delta Program: <http://www.delta.wisc.edu>
- UW Center for the Humanities: <http://humanities.wisc.edu>

## **XII. Opportunities for Student Involvement**

Student organizations provide plenty of opportunities for graduate students to enhance their academic experience while gaining professional development. The Department of Biological Systems Engineering hosts a chapter of the American Society for Agricultural and Biological Engineers, better known as ASABE. More information can be found here: <https://win.wisc.edu/organization/asabe>.

Additionally, follow them on Facebook at

<https://www.facebook.com/asabestudentchapterofuwmadison/>

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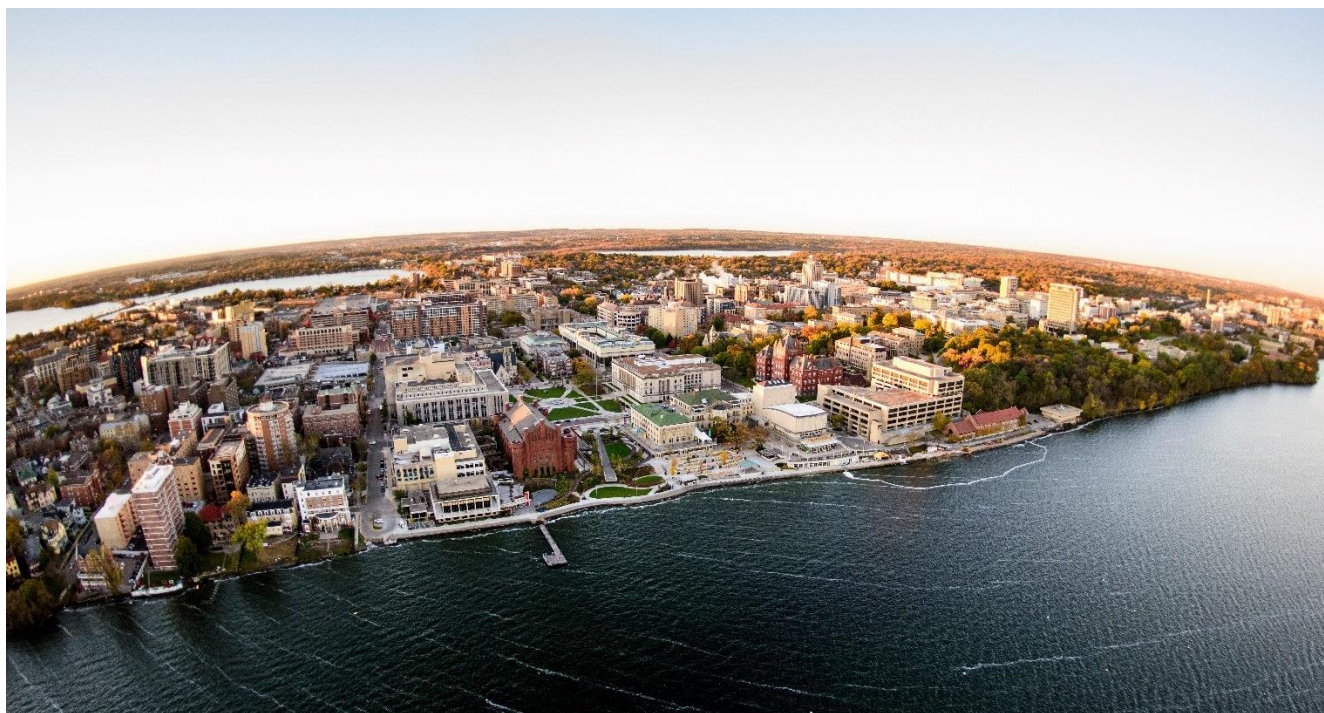
For more information about student organizations on campus, visit the Wisconsin Involvement Network at <https://win.wisc.edu/>. Graduate students pursuing Food and Bioprocess Engineering research may also find it useful to connect with food industry and the academia through the Institute of Food Technologists (IFT). Follow Wisconsin Section IFT activities here: <http://wisconsinift.org/>

### **XIII. Student Health and Wellness**

UW-Madison has a holistic resource for everything wellness related called “UWell”. The site includes information and opportunities for wellness for your work/school, financial, environmental, physical, emotional, spiritual, and community. More information can be found at <https://uwell.wisc.edu/>. Students who pay segregated fees are eligible for University Health Services (<https://www.uhs.wisc.edu/>). There is no charge to students for many basic services including counseling sessions, because services are paid through tuition and fees. Personal health and wellness services are also available in addition to medical services.

University Health Services (UHS) is the primary mental health provider for students on campus. UHS Counseling and Consultation Services offers a wide range of services to the diverse student population of UW-Madison. UHS offers immediate crisis counseling, same day appointments and ongoing treatment. Go to <https://www.uhs.wisc.edu/mental-health> or call 608-265-5600. UHS service costs are covered for students through tuition and fees.

There are many mental health resources throughout the Madison community, but UHS Counseling and Consultation Services is the best resource for referrals to off-campus providers. Call 608-265-5600 for assistance in finding an off-campus provider.



*Photo by Bryce Richter/University of Wisconsin-Madison*

## XIV. Appendices

### Appendix A. Warrant Request Form (M.S. Biological Systems Engineering)

Student Name \_\_\_\_\_ Campus ID: \_\_\_\_\_ Date of Exam: \_\_\_\_\_  
First M.I. Last mm/dd/yyyy

Check one: <input type="checkbox"/> Thesis <input type="checkbox"/> Non-thesis	Thesis/Independent Study Title:
Will you be continuing for a Ph.D. in this department? Check one: <input type="checkbox"/> Yes <input type="checkbox"/> No	

#### Prior coursework (You may include up to 6 credits from a B.S. in engineering earned at UW-Madison)

Term	Course #	Course Title	Grade	Credits

#### Current coursework (List 6 credits of 500+ level Science/Engineering coursework completed in your MS program at UW-Madison, or 6 credits of 400+ level Science/Engineering coursework completed as an undergraduate at UW-Madison)

Term	Course #	Course Title	Grade	Credits

#### Committee Members (Thesis MS: Must consist of at least 3 members, 2 of whom must be graduate faculty or former graduate faculty up to one year after resignation or retirement; Non-thesis MS: must consist of 3 members, 1 of whom must be graduate faculty from the student's program)

Name	Title	Department/Affiliation	NetID (Office use)

Prior to returning this form to the Graduate Coordinator, you must give a draft copy of your thesis to your advisor and have your advisor initial and date this form. \_\_\_\_\_  
(Advisor initials) (Date)

Graduate Committee Approval: \_\_\_\_\_

## Appendix B. Warrant Request Form (Ph.D Biological Systems Engineering)

Student Name \_\_\_\_\_ Campus ID: \_\_\_\_\_ Date of Exam: \_\_\_\_\_  
First M.I. Last mm/dd/yyyy

Check one: <input type="checkbox"/> Prelim Exam <input type="checkbox"/> Final Defense	Thesis/Independent Study Title:
Minor or Graduate/Professional certificate: <input type="checkbox"/> External <input type="checkbox"/> Distributed <input type="checkbox"/> Certificate If External or Certificate, please list department name:	
Completion date of minor/certification (last day of term you took the final class:	

### Prior coursework (A max. of 18 course credits and 6 research credits can be used from an MS degree obtained elsewhere.)

Term	Course #	Course Title	Grade	Credits

### Current coursework (List at least 9 credits from the 600- to 800-level classes from engineering and/or comparable technical area)

Term	Course #	Course Title	Grade	Credits

**Committee Members** Must have at least 4 members representing more than one graduate program, 3 of whom must be UW–Madison graduate faculty or former UW–Madison graduate faculty up to one year after resignation or retirement. At least one of the 4 members must be from outside of the student’s major program or major field (often from the minor field).

Name	Title	Department/Affiliation	NetID (Office use)

Prior to returning this form to the Graduate Coordinator, you must give a draft copy of your thesis to your advisor and have your advisor initial and date this form. \_\_\_\_\_  
(Advisor initials) (Date)

Graduate Committee Approval: \_\_\_\_\_

## Appendix C – Post-Thesis Exam Assessment Form (M.S.)

<b>Department of Biological Systems Engineering</b> <i>To be filled in by the student's thesis/independent study committee</i>	
Student Name: _____	Date: _____
ID: _____	Evaluator Name: _____
Area of _____	Area of _____
Specialization: _____	Specialization: _____
<b>MS Thesis Defense</b>	
<p>Please indicate the level of student's competency in his/her field of study with regards to the following learning goals by checking a box numbered 1 through 5 as noted below.</p> <p>1 <i>Needs improvement</i> -- The student is lacking in many aspects.  <i>Developing</i> -- The student has a grasp on the required elements, but needs to make additional  2 progress.  3 <i>Satisfactory</i> -- The student has adequately met the minimum expectations.  4 <i>Above average</i> -- The student's performance has exceeded minimum expectation in many aspects.  5 <i>Excellent</i> -- the student's performance far exceeded expectations in all aspects.</p>	
Learning Goals	Competency
Articulates, critiques, or elaborates the theories, research methods, and approaches to inquiry or schools of practice in the field of study.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Identifies sources and assembles evidence pertaining to questions or challenges.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Demonstrates understanding of the primary field of study in a historical, social or global context.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Selects and/or utilizes the most appropriate methodologies and practices.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Evaluates or synthesizes information pertaining to questions or challenges in the field of study.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Communicates clearly in ways appropriate to the field of study.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Recognizes and applies principles of ethical and professional conduct.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Additional comments (optional):  	

## Appendix D – Post-Thesis Exam Assessment Form (Ph.D.)

Department of Biological Systems Engineering	
<i>To be filled in by the student's thesis/independent study committee</i>	
Student Name: _____	Date: _____
ID: _____	Evaluator Name: _____
Area of _____	Area of _____
Specialization: _____	Specialization: _____
<b>PhD Thesis Defense</b>	
Please indicate the level of student's competency in his/her field of study with regards to the following learning goals by checking a box numbered 1 through 5 as noted below.	
1 <i>Needs improvement</i> -- The student is lacking in many aspects. <i>Developing</i> -- The student has a grasp on the required elements, but needs to make additional 2 progress. 3 <i>Satisfactory</i> -- The student has adequately met the minimum expectations. 4 <i>Above average</i> -- The student's performance has exceeded minimum expectation in many aspects. 5 <i>Excellent</i> -- the student's performance far exceeded expectations in all aspects.	
Learning Goals	Competency
Articulates research problems, potentials, and limits with respect to theory, knowledge, or practice within the field of study.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Formulates ideas, concepts, designs, and/or techniques beyond the current boundaries of knowledge within the field of study.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Creates research, scholarship, or performance that makes a substantive contribution.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Demonstrates understanding of the primary field of study in a historical, social, or global context.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Advances contributions of the field of study to society.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Communicates complex ideas in a clear and understandable manner.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Fosters ethical and professional conduct.	1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/>
Additional comments (optional):  	

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## Appendix E – Annual Graduate Student Performance Review Form

### Department of Biological Systems Engineering Annual Graduate Student Performance Review

*Student name:* \_\_\_\_\_ *Degree: MS/PhD*      *Date:* \_\_\_\_\_

1. What motivates you to pursue graduate studies? If you are in your second year or later, describe if there have been any changes since you started your work, and how?
  
2. How do you find your classes in terms of their relevance, workload etc.? Would you like additional or different set of classes, if yes what are they?
  
3. How do you find the research climate in the lab, department, and on campus?
  
4. What are your goals for your thesis research for the coming year?
  
5. What are your professional growth and career aspirations? How have you explored those opportunities?
  
6. Is the student making satisfactory progress towards degree? (be descriptive and provide suggestions for improvement)

**Overall progress/performance score (circle one): 1      2      3      4      5**  
**1: Needs improvement; 2: Developing; 3: Satisfactory; 4: Above average; 5: Excellent**

\_\_\_\_\_  
Student signature

\_\_\_\_\_  
date

\_\_\_\_\_  
Advisor signature

\_\_\_\_\_  
date

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## **Appendix F – Physical Science Courses**

Coursework done in the following subject areas account for the Physical Science course requirement designation:

- Agronomy
- Astronomy
- Atmospheric and Oceanic Sciences
- Biochemistry
- Biological Systems Engineering
- Biomedical Engineering
- Biomolecular Chemistry
- Biostatics & Medical Informatics
- Cell & Regenerative Biology
- Chemical & Biological Engineering
- Chemistry
- Civil & Environmental Engineering
- Computer Science
- Electrical and Computer Engineering
- Engineering Physics
- EPD
- Food Sciences
- Forest & Wildlife Ecology
- Geography
- GeoScience
- Human Ecology, School of
- Industrial and Systems Engineering
- LaFollette School of Public Affairs
- Materials Science & Engineering
- Math
- Mechanical Engineering
- Medical Physics
- Nelson Institute for Environmental Studies
- Pharmacy, School of
- Physics
- Soil Science
- Statistics

## **Appendix G – Mental Health Resources**

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**Graduate and Professional Student Assistance Specialist:** [Elaine Goetz-Berman](#) is a staff member whose role focuses on graduate student needs, including support, advocacy, and resource referral.

**University Health Services:**

- [24-hour Crisis Service](#) - for risk of suicide or concern about well-being of a student, speak with an on-call counselor at 608-265-5600, option 9
- [Psychiatry](#) - outpatient care focused on medication management and evaluation
- [Individual Counseling](#) - opportunities to improve mental health, where counselors use relational and solution-focused methods and attend to the developmental, identity-related, and mental health concerns of students
- [Group Counseling](#) - connection with others in safe, confidential, and supportive spaces, where participants share experiences and learn new ideas and behaviors
- [Survivor Services](#) - confidential support for survivors of sexual assault, sexual harassment, dating violence, domestic violence, and/or stalking
- [Substance Abuse](#) - alcohol and other drug assessment and recovery support
- [Let's Talk](#) - informal drop-in consultations with a counselor
- [Processing Spaces](#) - confidential support and consultation with peers and counselors
- [Workshops](#) - designed to share tips and tools for thriving on various topics
- [Healthy Academics Instructional Toolkit](#) - evidence-based strategies and campus resources for faculty and instructors, as well as campus prevalence data and information related to student attitudes toward mental health and its impact on academics

**Dean of Students Office:** This office is committed to fostering a caring environment for all students. Responsibilities include the [Student of Concern Report](#), the [Bias Reporting Process](#), addressing [Sexual Assault, Dating, and Domestic Violence](#), as well as many [other issues affecting student wellbeing](#). Drop-in hours are Monday through Friday 8:30am-4:00pm, room 70 Bascom Hall.

**Ombuds Office:** University employees, including graduate students, can [seek guidance](#) regarding workplace concerns without fear of reprisal and at no cost to them.

**Employee Assistance Office** – Graduate students who hold assistantships are eligible to [utilize this confidential resource](#) that provides counseling and consultation at no cost.

**Employment Benefits** - In addition to utilizing UHS's services, graduate students who hold assistantship appointments may seek mental health services covered by their [health insurance plan](#).