Iowa State University
Department of Agricultural and Biosystems Engineering
2021-2026 STRATEGIC PLAN

Our Vision

The vision of ISU's Department of Agricultural and Biosystems Engineering is to be the premier comprehensive Agricultural and Biosystems Engineering department in the world *serving society* through innovative engineering and technology to sustainably advance agriculture, industry, and living systems.

Our Mission

The mission of the Agricultural and Biosystems Engineering Department is to:

- Promote undergraduate student learning in agricultural and biological systems engineering and industrial and agricultural systems technology,
- Promote graduate student learning in agricultural and biosystems engineering and industrial and agricultural technology,
- Discover, adapt, advance, and manage new engineering, technology, and scientific ideas for all stakeholders,
- Provide engineering and technology expertise to the state, nation, and world.
- Engage, serve, and lead the agricultural and biosystems engineering and applied engineering and technology management professions globally.

Guiding Principles

As the Agricultural and Biosystems Engineering Department works toward achieving our mission, all members of the department are expected to act in accordance with Iowa State University's core values and the identified departmental values and guiding principles. The ABE departmental values and guiding principles are:

- Diversity and inclusion of students, staff, faculty, stakeholders, and viewpoints
- Meaningful and collaborative partnerships with domestic and global stakeholders
- Excellence in the scholarship of learning, discovery and outreach
- A systems approach that increases sustainability
- Culture of lifelong learning

Value Statements and KPIs

Teaching

Value Statement	Key Performance Indicators with Goal
A. Teaching faculty are highly engaged with our educational programs	• Number of faculty known per graduating undergraduate student (senior exit survey) ≥ 3.0 • Fraction of ABE lecture hours taught by faculty ≥ 70% in all options • 100% of graduate students with teaching assignments receive formal teaching mentoring
B. Our programs educate hands-on problem solvers who can blend theory and practice	• Ratio of lab to lecture hours ≥ 25% in all undergraduate options
C. Our programs are rigorous	• 100% of undergraduate programs and/or options accredited by external accrediting bodies
D. Students are supported in their educational and career goals	• Overall ABE course quality reported by graduating undergraduate and graduate students in each program ≥ 4.0 out of 5 • Overall quality of ABE advising and mentoring reported by graduating undergraduate and graduate students ≥ 4.0 out of 5 • No students are delayed in graduating due only to availability of seats in required courses • 6-month placement rates for undergraduate students are in the top third of respective College placement data • Average not greater than 4.5 years to graduation for full-time PhD students and 2 years for full-time MS students.
E. ABE is a welcoming learning atmosphere for all interested students	• 100% of undergraduate curricula have diversity, equity, and inclusion (DEI) learning outcomes in each year of the four-year plan • 100% of student club leaders, peer mentors, undergraduate and graduate TAs receive DEI training every year • 100% of faculty participate in 2+ hours of DEI training every year

Research

Value statement	Key Performance Indicators with Goal
A. Faculty participate in active programs from diverse funding portfolios.	• Maintain a minimum of 20% departmental funding from federal, state/non-profit, and industry sources, respectively. • $14.5M in annual ABE expenditures (FY21) with a 3% annual increase. • 90% of faculty with a research appointment annually submit a proposal as PI.

	• 70% of faculty with a research appointment with annual individual program expenditures exceeding $300k per *Research FTE*.
B. Faculty are conducting world-class research to address societal issues.	• 100% of faculty produce 6 refereed publications, patents, or licensed technology transfer agreements per year per *research faculty FTE*. • 35% of faculty recognized for their expertise by serving on national or international scientific advisory committee, task force, program review panel, as an external PhD examiner, or invited keynote speaker at national and international events. • 25% of faculty providing leadership to significant research / infrastructure initiatives on campus, such as centers, complexes, and $10M+ programs
C. Faculty are highly engaged with graduate and postdoc advising, education, and professional preparation.	• 70% of faculty serving as the major professor or co-major professor for six or more graduate students per research FTE. • 90% of faculty actively participating in graduate committees. • 30% of faculty hosting postdoctoral or visiting scholars • 80% of PhD students publish a refereed publication, patent, or licensed technology transfer agreement prior to graduation • 50% of graduate faculty involved in teaching graduate courses as defined by regular meeting times and enrollment by students from outside of the faculty member's research group • 80% of PhD students gain proposal writing experience prior to graduation • 100% of PhD students have a mentored teaching or extension experience before graduation • 100% of graduate students have 2+ hours of DEI training or experience per year

Extension and Outreach

Value statement	Key Performance Indicators
A. Extension and outreach programs resulting in proven benefits	• A minimum of 10/yr extension and outreach programs documenting change in clientele behavior based on program evaluation
B. Integration of extension and applied research enhances both aspects.	• A minimum of 10/yr actively integrated extension and applied research grants, service agreements and stakeholder projects
C. Innovative outreach programs and services leverage faculty expertise and department facilities	• A minimum of 10/yr distance learning course offerings for domestic and international non-degree seeking clients utilizing faculty and staff expertise. • A minimum of 10/yr on-site hands-on trainings for domestic and international clients utilizing department classroom, laboratory, pilot plant, and other facilities.

	• Fee-for-service labs generating $300K/yr (FY22) with a 3% increase annually

Service

Value statement	Key Performance Indicators
A. **Faculty and staff are engaged in public leadership that enhance the recognition and impact of the department.**	• 75% of ABE faculty are providing leadership in national and/or international professional societies/organizations, on boards for strategic partners, on science advisory boards, and/or actively engaged in policy discussion.

Strategic Thrusts 2021-26

Initiative	Example Activities	Responsible party
Develop a recruiting and marketing strategy for our BS options, MS, and PhD programs	• Recruiting and Marketing committee provides quarterly updates at faculty meetings to keep this top of mind for the rest of us	R&M Committee
	• Amplify role of focus groups in this process	R&M Committee
	• Identify effective ways to engage with faculty and leverage college activities in this process	R&M Committee, All faculty
	• Identify subgroups of student where retention is not as strong (e.g. Pell-eligible students) and develop plans to address	R&M Committee
	• Look at and discuss enrollment numbers (including demographics) annually	Chair Student Services R&M Committee
Perform a comprehensive review of undergraduate and graduate curricula and course offerings	• Initiate and industry survey to inform curriculum reform	ECC TCC Grad Programs
	• Review course descriptions through a DEI lens	ECC, TCC DEI Committee
	• Evaluate graduate course catalog & offerings/curriculum as well as our ability to staff	Chair ECC, TCC Grad Programs
Foster an inclusive culture for students, staff, and faculty	• As part of curriculum review, consider where DEI learning outcomes can be incorporated	ECC TCC
	• Track faculty, staff and student demographics just to know	Student services Admin Asst
	• Consider a climate survey that happens earlier than the exit survey; perhaps	Student Services Chair

	include some DEI assessment in the advisor surveys	DEI Committee
Increase research productivity	• Develop a strategy for Research professor positions	Research Committee
	• Develop a strategy for TA allocations and assignments that allows for using this funding as a way to recruit excellent students outside of the timing and restrictions of grants	Chair ACT
	• In hiring priorities, include new tenure track faculty positions with a minimum of 45% research appointments.	Chair
	• Advocate for ISU policy change regarding MS tuition on federal grants	DOGE
	• Develop strategies to encourage industry partnerships leading to funding	Chair ACR ACO
Enhance a culture of mentoring	• Develop a mentoring strategy to ensure new faculty have multiple mentors as needed	Chair Leadership Team
	• Encourage earlier and more interactions between graduate students and their committee members	DOGE
	• Work with ABEGO to enhance faculty-student interaction across and outside of research groups.	DOGE Grad Programs
	• Develop a formal mentoring process for graduate students in their teaching assignments.	Chair DOGE ACT
	• Add a reporting element for faculty doing graduate student teaching or extension mentoring outside their own program (acknowledge and encourage for this type of engagement including PFF, Grad ELA).	Chair
Annually review and update priorities for faculty hiring and critical departmental staff	• Maintain transparency with department and college leadership on key hiring needs and future opportunities.	Chair
	• Define priorities across degree options and focus groups to ensure strategic needs for the department are met and	Chair Leadership Team Focus Groups

	that emerging opportunities are considered.	
Develop a strategy/plan for building capacity in extension and outreach	• Initiate a department-level proposal for a National Needs Fellowships in ABE extension development.	Chair ACR
	• Create an Extension & Outreach Committee to work on a department strategy for Extension and responsiveness to public needs	Chair