Academic Program Assessment Report

Agricultural Engineering Technology

University of Wisconsin – River Falls

Updated: Fall 2017
Overview

Agricultural Engineering Technology (AET) is a field of engineering technology, which is closely related to, but separate from the field of Agricultural Engineering. Agricultural Engineering (also called Biological Engineering, Biological Systems Engineering, Agricultural and Biological Engineering, or Agricultural and Biological Systems Engineering) is the application of mathematics, biology, physics, and other sciences to solve problems relating to production and processing of food, fiber, timber, renewable energy, and biological systems in a way that is environmentally sustainable and cost effective. As such, Agricultural Engineering has notable overlap with Civil Engineering, Environmental Engineering, Mechanical Engineering, and Chemical Engineering, since engineering in general involves creation of devices, structures and processes to solve real-world problems. Agricultural Engineering Technology is a companion to Agricultural Engineering and involves the application of elements of engineering to the outside world. Agricultural Engineering Technologists work with professional engineers on the one side and sales persons, technicians, customers, trades people, production workers, etc. on the other side as they solve problems relating to production and processing of food, fiber, timber, renewable energy, and biological systems.

Assessment Activities in Report Cycle / Assessment Plan Elements

Agricultural Engineering Technology encompasses careers that apply agricultural and biosystems engineering principles to the world around us. These careers offer starting salaries in the $40,000 to $50,000 range with no prior experience and in the $45,000 to $60,000 range with prior internship or other relevant experience. As the scope of issues encountered in these fields expands, the field of agricultural engineering continues to expand as well. In 2005, our professional society changed its name from the American Society of Agricultural Engineers (ASAE) to the American Society of Agricultural and Biological Engineers (ASABE).

ASABE, our governing professional society, works with the Accreditation Board for Engineering and Technology (ABET) to establish outcomes for engineering technology education. The AET department uses these outcomes as a guide for the AET program, but has not encountered a demand from employer stakeholders for ABET accreditation of the AET program.

The previous AET program review was done in 2012-13. After that review, significant change to the department occurred. Additional faculty were hired, student numbers expanded, UWRF’s first professional engineering degree was added to the department, remodeling of department classroom and lab facilities was initiated, and industry partnerships expanded. An indication of AET department’s new relevancy is the fact that the UW System President Dr. Ray Cross has visited the department two times from 2012 through 2017.

This report covers the time period from AY 2013-14 to 2016-17. Learning outcome assessments were made for seniors in 2013-14, 2014-15, 2015-16, and 2016-17. Learning outcome assessments were made for freshmen in 2014-15, 2015-16, and 2016-17. Senior exit interviews are conducted each year in late April. Here we assess satisfaction with the students’ experience
in the AET department at UWRF. Data are presented covering years 2013-14, 2014-15, 2015-16, and 2016-17. Assessments were performed each Spring Semester, i.e. Spring 2014, Spring 2015, Spring 2016, and Spring 2017.

AET learning outcomes, as abstracted from ABET, are as follows:

1. An Agricultural Engineering Technology graduate will have an ability to “apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities” (ABET a).

2. An Agricultural Engineering Technology graduate will be able to “select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies” (ABET b).

3. An Agricultural Engineering Technology graduate will be able to “conduct standard tests and measurements; conduct, analyze and interpret experiments and apply experimental results to improve processes” (ABET c).

4. An Agricultural Engineering Technology graduate will be able to “design systems, components or processes for broadly-defined engineering technology problems appropriate to program objectives” (ABET d).

5. An Agricultural Engineering Technology graduate will have an “ability to function effectively as a member or leader on a technical team” (ABET e).

6. An Agricultural Engineering Technology graduate will be able “to identify, analyze and solve broadly-defined engineering technology problems” (ABET f).

7. An Agricultural Engineering Technology graduate will have the ability to “apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature” (ABET g).

8. An Agricultural Engineering Technology graduate will have “an understanding of the need for, and have the ability to engage in self-directed continuing professional development” (ABET h).

9. An Agricultural Engineering Technology graduate will have an “understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity” (ABET i).

10. An Agricultural Engineering Technology graduate will have “knowledge of the impact of engineering technology solutions in a societal and global context” (ABET j).

11. An Agricultural Engineering Technology graduate will be able to show “a commitment to quality, timeliness, and continuous improvement” (ABET k).

ABET outcomes are shown in Appendix 1. Senior exit interviews measure students’ perceived experience with the AE major at that particular point in their life. Questions asked deal with classes within and outside the AET department, AET facilities, AET faculty and staff. The following is the survey document:
The AET program values internal and external stakeholder engagement. Internal stakeholders can provide unique insight on teaching, lab activities, UWRF classes, AET course specifics, and the like relative to other UWRF programs. External stakeholders can provide valuable feedback on current industry needs, skillset of current graduates, and overall feedback on the university. AET faculty meet external stakeholders on a regular basis. AET faculty try to connect with as many as possible when they are in River Falls for the career fair. Four AET alumni are invited to speak at AET Seminar series every Monday during the first six weeks of class. AET faculty use this opportunity to get feedback on how to better achieve our learning outcomes, and make our laboratory activities relevant to skills and abilities expected in industry.
The Introduction to Engineering course (GENG135) on the engineering side also brings in a fair number of guest speakers (external stakeholders) who are engineers in various fields. AET faculty value this contact time with alumni-employer stakeholders because they can reflect upon months or years of actual working experience when providing their feedback on the AET program.

Looking now at summer internships, AET faculty program engaged in assessment activities related to out-of-classroom learning with ties to specific program learning outcomes and external stakeholder needs. Internship visits during the summer offer another chance to connect with stakeholders. AET faculty visit all summer AET interns who are within their driving range. Employers evaluate our students on the skills and abilities (stakeholder needs) shown in Appendix 2. Several of these CAFES Internship Outcomes match quite well with the AET outcomes, namely #2 (problem solving outcome 6), #3 (measurement and analysis of data outcome 3), #5 (communication outcome 7), and #7 (team skills outcome 5).

There was minimal change to the AET learning outcomes during this report cycle because these outcomes are specified by ABET and ABET is cautious about changing their outcomes. The current assessment method was established after the previous program review in 2012 and data was gathered starting in 2013-2014. Several curriculum changes occurred during the report cycle. Most significantly, the professional Agricultural Engineering degree was established at UWRF, which required all existing AGEN courses to be mapped over to an AET course or maintained and taught as an AGEN course. AGEN courses are taught with a higher level of rigor, higher problem-solving expectations, and often with an engineering design component. The AET Professional Seminar Series (AET185/ AET285/ AET385/ AET485) was modified to include a significantly higher level of project planning, project management, and project documentation. Students must now develop objectives and use Microsoft Project to create a multilevel Gantt Chart showing what will be accomplished each week of the semester. The AET Assessment Plan includes more detail on this change, as well as rubrics for Project Proposals and Final Project Reports.

Learning Outcome 10 and AET’s J-Term Study Abroad in India program contribute directly to Pathway to Distinction Goal 2: Global Education and Engagement. Finally, Learning Outcome 4 and AET’s Professional Seminar course contribute directly to Pathway to Distinction Goal 3: Innovation and Partnerships. Students take this course in all four years of their career at UWRF, and work with internal or external stakeholders on an engineering solution to a practical problem, be it design and construction of a hops thresher, or quality testing of water captured in a rain-garden designed and built by previous students. Note that changes in AET learning outcomes follow ABET and any linkage to the UWRF Strategic goals is purely coincidental.

While there is always room for improvement, AET faculty believe that items brought up in the 2012 AET program review have been addressed.

**Assessment Activity Results**
AET students take the AET Professional Seminar course each year of their student career. AET Seminar is an appropriate tool for measuring progress on AET outcomes because it intersects more outcomes than any other AET course (similar to a senior capstone course, but taken every year). AET Seminar is a team-based, project oriented class where students solve real-world, broadly-defined engineering technology problems, often with design/prototype/test facets. Please refer to the AET Assessment Plan document for details. Freshmen were allowed to select their project, then given an explanation of the AET/ABET outcomes so that they could judge their capabilities with respect to each outcome, then given the survey.

Figure 1 shows a plot of the AET Freshman student’s perceived progress towards each AET learning outcomes for academic years 2014-15, 2015-16, and 2016-17. We were unable to survey freshmen students in 2013-14. Outcomes are listed by number above. The vertical axis shows weighted student response, with 6.0 being “Strongly Agree,” 3.5 corresponds to neither agree nor disagree, and 1.0 being “Strongly Disagree.” Notably, year-over-year, incoming freshmen believe they are further along their way in achieving the AET/ABET outcomes. Outcomes 5, 8, 9, and 11 are consistently higher ranked. These are related to team skills, professional responsibilities/diversity, continued engineering technology education, and quality/timeliness/continuous improvement, respectively. Perhaps students are picking up these concepts in high school, or from other UWRF students during Fall semester, or from poster presentations and the like (freshmen take the survey during the first week of classes Spring semester. Low responses were given to outcomes 1, 6, and 10. These outcomes relate to solving broadly defined engineering technology problems, identifying/analyzing/solving engineering technology problems, and knowing the impact of engineering technology solutions in the societal and global context. It is not surprising that outcomes 1 and 6 score low because those are a focus of many AET courses.

Figure 1. AET Freshman’s perceived progress towards AET learning outcomes
Figure 2 shows a plot of the AET Senior student’s perceived progress towards each AET learning outcomes for academic years 2013-14, 2014-15, 2015-16, and 2016-17. Outcomes are again listed by number above. The vertical axis shows weighted student response, with 6.0 being Strongly Agree, 3.5 corresponds to neither agree nor disagree, and 1.0 being Strongly Disagree. At first glance, scores are roughly 2.5 points higher than for incoming freshmen. Scores for the seniors are roughly centered on 5.0, corresponding to Agree. Consistently high scores are seen in outcomes 5 and 7, which relate to team skills and technical communication skills. Lower responses were sometimes given to outcomes 2, 4, 6, 9, and 10. Note however that the response is still in the “Agree” range, except for outcome 10 in 2016-17 where it approaches the neutral point of neither agree or disagree. This outcome deals with knowing the impact of engineering technology solutions in the societal and global context. Inconsistency in results may be due in part to low response rate. We have been giving the senior outcomes survey during senior exit interviews (given by proxy; no AET faculty are present). In spite of free pop and pizza, the turnout can be relatively low. Average AET class size is over 20 students but only 7 showed up for exit interviews in 2016-17.

Figure 2. AET Seniors perceived progress towards AET learning outcomes

Figure 3 shows a plot of the AET Senior student’s satisfaction with their experience for academic years 2013-14, 2014-15, 2015-16, and 2016-17. Survey questions are listed above. The vertical axis shows weighted student response, with 6.0 being “Strongly Agree,” 3.5 corresponds to neither agree nor disagree, and 1.0 being “Strongly Disagree.” Except for question 6 and the 2016-17 group, scores are in the 4.0 to 5.5 range. Questions 1 and 2 asked if AET courses and faculty were a positive experience and we see a consistent score of 4.5 to 5.0 (Agree) there. Question 3 asked if they would choose the same major. Here scores were on the Agree side except for 2016-17 where the average was 3.0 (Slightly Disagree). Individual responses ranged from Agree all the way to Strongly Disagree. During free discussion it was determined that part of this negative response was due to negative comments by male AET students towards female students in laboratory and team settings. Question 4 asks if they feel
prepared for a job with the AET major, and scores indicate positive reaction. Question 5 asks if AET laboratory and hands-on experiences make them job-ready. Scores are again generally positive, except for 2016-17. This may again tie into the free response comments discussed above for Question 3. Question 6 asks if they feel that AET department laboratory equipment helps make them job-ready. Here there is a wide range of responses, dropping into the negative territory especially for the 2016-17 group. Interestingly, the 2016-17 group experienced the best laboratory equipment of all four cohorts since we have been gradually upgrading laboratory equipment, laboratory facilities, and laboratory exercises. Scores for questions 7, 8, and 9 are range tightly from 5 to 5.5. These questions ask if AET faculty are approachable, if AET courses require more effort than other courses, and if AET faculty have higher expectations than other departments. Slightly more variation (though still positive) is seen in question 10, which asks if the student is confident in the knowledge and skills developed in the AET program.

Figure 3. AET Senior Exit Survey measuring overall satisfaction

A number of recent AET graduates are invited back to UWRF to speak about their career trajectory and current job activities. Some of the companies represented include Oxbo International, HarvestTec LLC, GEA Process Engineering, Del Monte, Cargill Kitchen Solutions (Sunnyfresh), The Toro Company, Ziegler Caterpillar Inc., St. Paul Municipal Water Authority, Manitowoc Corp., Minnesota Water Resources Board, and Swagelok Corp. AET faculty typically meet informally with the former student (e.g. over lunch) and discuss what topics to emphasize in the presentation. Individual feedback is related to AET/ABET outcomes, such as a comment that the former student still uses the AET Laboratory Report template for reporting laboratory studies at their workplace. Several speakers commented on how valuable certain AET/AGEN/GENG courses are now that they are in the working world. Multiple speakers commented on how valuable their Quarter Scale Tractor Design experience was. Other speakers have commented that graduates must be able to comfortably speak on a technical topic in front of a group of colleagues, even on short notice. Still other speakers have
emphasized the need for careful documentation of laboratory work, the need for cultural awareness and travel, and for accurate problem solving skills. This type of timely alumni feedback is significant because it helps AET faculty revise coursework and laboratory activities to emphasize areas of weakness. It provides additional reasons why a current AET major would want to go on a Study Abroad program (e.g. J-Term in India) or join the ASABE Quarter Scale Tractor Design Team.

**Assessment Action Plan**

A comprehensive discussion will now be presented of where and how performance is or is not meeting program expectations. Based on results presented above, overall, AET/ABET outcomes are being met. Employer stakeholders require AET graduates who are problem solvers with excellent hands-on and people skills. That indicates an emphasis on outcomes 1, 2, 3, 5, 6, and 7. Figure 2 shows that these outcomes are being met, since all responses are positive. There is room for improvement in outcomes 3 and 6 however, more consistently for 6 than for 3. Outcome 3 calls for an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes and outcome 6 deals with ability to identify, analyze, and solve broadly-defined engineering technology problems.

A comprehensive discussion will now be presented on the actions the AET program will take to maintain/improve learning outcome performance by individual outcome. All outcomes are treated equally important at this stage, even though our stakeholders would likely have their own rankings as to the importance of each one. AET learning outcomes, as abstracted from ABET, are as follows:

1. An Agricultural Engineering Technology graduate will have an ability to “apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities” (ABET a).

   As shown in Fig. 2, scores are centered around 5.0 for this outcome, with no clear trend in year. We will continue to focus on project definition, planning, and documentation in seminar projects, since only the AET Seminar Series AET185/285/385/485 intersect this outcome.

2. An Agricultural Engineering Technology graduate will be able to “select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies” (ABET b).

   As shown in Fig. 2, scores range from 4.4 to 5.0 for this outcome, with no clear trend in year. AET faculty will continue to use homework problem assignments to build student skill and thus problem-solving confidence. A number of AGEN and AET courses emphasize this outcome, such as AGEN240, AGEN352, AET355, AET361, and AET425. AET faculty strive to use up-to-date texts and assign relevant problems.
3. An Agricultural Engineering Technology graduate will be able to “conduct standard tests and measurements; conduct, analyze and interpret experiments and apply experimental results to improve processes” (ABET c). As shown in Fig. 2, scores range from 4.5 to 5.5 for this outcome, with a declining trend by year. The declining trend is noteworthy, but the overall response is still positive with an average of about 5.0. AET faculty will strive to keep laboratory activities meaningful and skill-relevant. A number of AGEN and AET courses emphasize this outcome, such as AGEN240, AGEN350, AET361, AET363.

4. An Agricultural Engineering Technology graduate will be able to “design systems, components or processes for broadly-defined engineering technology problems appropriate to program objectives” (ABET d). As shown in Fig. 2, scores range from 4.2 to 5.2 for this outcome, with no clear trend in year. The 1 point spread is noteworthy, but the overall response is still positive with an average of about 4.7. This outcome calls for design skills, which is more relevant to a professional engineering program than it is to an engineering technology program. It is therefore not a surprise that AET students do not see this as a strength, but we still have a plan to improve this outcome using our 3D Printing Lab. All AET students take GENG121 Introduction to CAD and Design, where they design a part, conduct virtual strength tests using Finite Element Analysis (FEA), then improve their design, 3D print the part, then actually test it in the Universal Testing Machine.

5. An Agricultural Engineering Technology graduate will have an “ability to function effectively as a member or leader on a technical team” (ABET e). As shown in Fig. 2, this outcome is associated with our highest scores. This outcome calls for team skills, which is a key soft skill desired by most employer stakeholders. Most AET courses have a lab component in which students typically work in assigned teams to solve a given problem. Most labs are not step-by-step type labs but rather students must determine what to do, how to do it, along with documentation, data analysis, and devising conclusions. Some labs require a formal written report. AET faculty will maintain current strategies in laboratory assignments as they relate to team building skills.

6. An Agricultural Engineering Technology graduate will be able “to identify, analyze and solve broadly-defined engineering technology problems” (ABET f). As shown in Fig. 2, scores are quite tightly clustered around 5.0 for this outcome, with no clear trend in year. This outcome involves engineering technology project work, which requires faculty guidance, facilities, lab supplies and test equipment. Relatively few courses intersect this outcome, but among them are AGEN240, AET350, and the AET Seminar Series AET185/285/385/485. We will continue to focus on project definition, planning, and documentation in seminar projects and implement meaningful laboratory projects in other relevant courses.
7. An Agricultural Engineering Technology graduate will have the ability to “apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature” (ABET g). As shown in Fig. 2, this outcome is associated with relatively high scores. This outcome calls for communication skills, which is another key soft skill desired by most employer stakeholders. Most AET courses have a lab component in which students typically work in assigned teams to solve a given problem. Some lab reports are verbal presentation, with appropriate audio-visual and multimedia material shown on the screen. AET students become proficient at Word, Excel, and PowerPoint. AET faculty will maintain current strategies in communication and presentation assignments.

8. An Agricultural Engineering Technology graduate will have “an understanding of the need for, and have the ability to engage in self-directed continuing professional development” (ABET h). As shown in Fig. 2, scores range from 4.7 to 5.4 for this outcome, with no clear trend in year. The overall response is still positive with an average of about 5. The small point spread is actually surprising because relatively few courses intersect this outcome, and this is not a concept that is “teachable” in the traditional sense. AET faculty will continue to stress the need for continued professional education and affiliation with professional organizations like American Society of Agricultural and Biological Engineers (ASABE). ASABE membership will be promoted in the AET Seminar courses and by placing signs in the AEA area.

9. An Agricultural Engineering Technology graduate will have an “understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity” (ABET i). As shown in Fig. 2, scores range quite widely from about 4.6 to 5.5 for this outcome, with no clear trend in year. The overall response is still positive with an average of about 5. Relatively few courses intersect this outcome, and this is also not a concept that is “teachable” in the traditional sense. This outcome would be enhanced by increased numbers of women and minority students. AET faculty will continue to stress the need in today’s professional workplace for ethical solutions. As more AET students attend the J-Term in India program, students appreciate first-hand the value of diversity. AET Faculty will investigate conversion of the J-Term in India class to a stand-alone class. AET faculty will investigate establishment of a student organization representing women and/or minorities in engineering and/or engineering technology. This outcome ties into Questions 3 and 5 of the Senior Exit survey. As pointed out above, female students have experienced negative interactions with male counterparts in laboratory and team settings. To remedy this, AET faculty will investigate establishment of a student organization representing women and/or minorities in engineering and/or engineering technology. We will also apply for a UWRF grant to investigate strategies that help female students succeed in the classroom and laboratory.

10. An Agricultural Engineering Technology graduate will have “knowledge of the impact of engineering technology solutions in a societal and global context” (ABET j).
As shown in Fig. 2, this outcome was associated with the highest scatter due to the 2016-17 response, but otherwise a consistent score of 5.0. Again, relatively few courses intersect this outcome, and this is also not a concept that is “teachable” in the traditional sense but the concept can be infused in all courses. The world is a global marketplace, especially in agriculture, since the tractor they are helping design may be sold in China or the biggest competitor country of the soybeans they are helping the grower plant may be in South America. AET faculty will continue to stress the need to look outside of our county/state/nation when devising agricultural engineering technology solutions. AET faculty will also continue to promote the J-Term in India program, during which students appreciate first-hand the importance of global solutions. The AET Department will also investigate conversion of the “389” J-term in India to a stand-alone Global Perspectives compatible course.

11. An Agricultural Engineering Technology graduate will be able to show “a commitment to quality, timeliness, and continuous improvement” (ABET k).
As shown in Fig. 2, scores range from 5.0 to 5.5 for this outcome, with no clear trend in year. The small point spread is actually surprising because relatively few courses intersect this outcome, and this is another concept that is not “teachable” in the traditional sense. A relevant CAFES internship experience or participation in ASABE Quarter Scale Tractor Design team would likely be the best way to develop this outcome. AET faculty will continue to stress the need for students to get an internship or relevant summer job, especially after their junior year.

A comprehensive discussion of the actions the program will take to maintain and/or improve out-of-classroom learning experiences will now be presented. As pointed out above, several outcomes involve concepts that are not “teachable” in the traditional sense. An undergraduate research and scholarly and creative activity (URSCA) project, a relevant CAFES internship experience, or participation in would be good ways to develop these outcomes. AET ASABE Quarter Scale Tractor Design team faculty will continue to stress the need for students to apply for an URSCA grant, participate in the ASABE Quarter Scale Tractor Design team, and get an internship or relevant summer job, especially after their junior year.

A comprehensive discussion of the actions the program will take to maintain and/or improve indirect student assessment will now be presented. Senior outcome surveys are given during senior exit interviews, which typically takes place at the end of April. As pointed out above, inconsistency in results may be due in part to low response rate. In spite of free pop and pizza, the turnout can be relatively low. Average AET class size is over 20 students but only 7 showed up for exit interviews in 2016-17. Another option would be to give the Senior Outcome Survey during AET485 Professional Seminar class. Employment and salary data are also gathered at Senior Exit Interviews. While valuable, only a fraction of students have formalized their employment plans at that time and contact with students is difficult after graduation.
A comprehensive discussion of the actions the program will take to maintain and/or improve indirect alumni assessment will now be presented. As introduced above, a number of recent AET graduates are invited back to UWRF to speak about their career trajectory and current job activities. Some of the companies represented include Oxbo International, HarvestTec LLC, GEA Process Engineering, Del Monte, Cargill Kitchen Solutions (Sunnyfresh), The Toro Company, Ziegler Caterpillar Inc., St. Paul Municipal Water Authority, Manitowoc Corp., Minnesota Water Resources Board, and SwageLok Corp. AET faculty typically meet informally with the former student (e.g. over lunch) and discuss what topics to emphasize in the presentation. AET faculty also connect with alumni at the UWRF career fairs and over the summer on internship site visits. These activities will all be maintained since they provide timely specific feedback. We will consider creating a three to five question response card that seeks input on shortcomings in AET graduates and/or additional suggested outcomes.

A comprehensive discussion of the actions the program will take to maintain and/or improve indirect professional assessment will now be presented. As pointed out above, all AET outcomes were treated equally important in this document, even though our stakeholders would likely have their own rankings as to the importance of each one. Therefore, AET faculty will consider establishing a focus group of local and regional stakeholders and alumni. This will provide employers and other stakeholders input as to which AET/ABET outcomes are important for our graduates. This is expected to enhance learning outcomes and external stakeholder expectations.

A comprehensive discussion of the actions the program will take to maintain and/or enhance the assessment process will now be presented. Overall the assessment process provides feedback on all eleven AET outcomes, student satisfaction with the program, and employment. This process will be maintained and enhanced by offering the Senior Outcomes Survey during AET485 Seminar class to capture a wider audience. In the past, direct measures of assessment have been considered, like certain project and/or portfolio scores from students’ AET485 Professional Seminar class. We did not choose to do this because of the variability involved; even though students pick their own project for the semester, their first choice of project may have already been taken by other students, or, they may not want to work on any project offered that semester. In addition, most project scores are the same for all team members and this blurs performance of the individual students.
<table>
<thead>
<tr>
<th>Specific Action</th>
<th>Implementation</th>
<th>Accountability</th>
<th>Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASABE membership will be promoted in the AET Seminar courses and by placing signs in the AEA area.</td>
<td>2017</td>
<td>Joseph Shakal and Joel Peterson</td>
<td>Annually</td>
</tr>
<tr>
<td>AET Department will investigate conversion of the “389” J-term in India course to a stand-alone Global Perspectives compatible course.</td>
<td>2017-18</td>
<td>Joseph Shakal</td>
<td>Annually</td>
</tr>
<tr>
<td>Give the Senior Outcome Survey during AET485 Professional Seminar class.</td>
<td>2017</td>
<td>Joseph Shakal and Joel Peterson</td>
<td>Annually</td>
</tr>
<tr>
<td>Add a free response option to Senior Exit Interview Survey for less than “Agree” ratings.</td>
<td>2017-18</td>
<td>Joseph Shakal</td>
<td>Annually</td>
</tr>
<tr>
<td>Investigate establishment of a focus group of local and regional stakeholders and alumni.</td>
<td>2017-19</td>
<td>Matt Digman</td>
<td>Annually</td>
</tr>
<tr>
<td>Investigate a three to five question response card that seeks input on shortcomings in AET graduates and/or additional suggested outcomes.</td>
<td>2017-18</td>
<td>Dean Olson</td>
<td>Annually</td>
</tr>
<tr>
<td>Investigate establishment of a student organization representing women and/or minorities in engineering and/or engineering technology.</td>
<td>2017-19</td>
<td>Youngmi Kim</td>
<td>Annually</td>
</tr>
<tr>
<td>Apply for a UWRF grant to investigate strategies that help female students succeed in the classroom and laboratory</td>
<td>2017-19</td>
<td>Youngmi Kim</td>
<td>Annually</td>
</tr>
</tbody>
</table>
Appendix 1.

B. For baccalaureate degree programs, these student outcomes must include, but are not limited to, the following learned capabilities:

1. a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;

2. b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;

3. c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;

4. d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;

5. e. an ability to function effectively as a member or leader on a technical team;

6. f. an ability to identify, analyze, and solve broadly-defined engineering technology problems;

7. g. an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;

8. h. an understanding of the need for and an ability to engage in self-directed continuing professional development;

9. i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;

10. j. a knowledge of the impact of engineering technology solutions in a societal and global context; and

11. k. a commitment to quality, timeliness, and continuous improvement.

Appendix 2.

Employer Evaluation of Intern

Site Supervisor Name: ___________________________ Organization: ___________________________

Intern Name: ___________________________ Semester/Year: ___________________________

Intern Major: ___________________________

Please rate your intern on the basis of this scale 1 = lowest and 6 = highest:

(1) Strongly Disagree  (2) Disagree  (3) Slightly Disagree  (4) Slightly Agree  (5) Agree  (6) Strongly Agree

1. Understands job duties and responsibilities, and seeks out and utilizes appropriate resources and asks questions. 0 1 2 3 4 5 6

2. Applies technical knowledge to address relevant problems. 0 1 2 3 4 5 6

3. Utilizes equipment, instrumentation, software, and other technologies to perform the essential functions of the job. 0 1 2 3 4 5 6

4. Reads, comprehends and communicates ideas and concepts with a strong attention to detail clearly in writing. 0 1 2 3 4 5 6

5. Listens to others, attentive and demonstrates effective verbal communication skills. 0 1 2 3 4 5 6

6. Exhibits effective problem solving skills clearly and brainstorms/develops ideas and options if necessary. 0 1 2 3 4 5 6

7. Demonstrates teamwork skills and ability to get along with coworkers and customers. 0 1 2 3 4 5 6

8. Exhibits professional behavior and attitude and demonstrates ability to set appropriate priorities and goals. 0 1 2 3 4 5 6

9. Overall performance of the student intern as an employee. 0 1 2 3 4 5 6

Comments: ____________________________________________

______________________________________________________

University of Wisconsin – River Falls is an equal opportunity/affirmative action employer.
Please refer to: CAFES Internship Office, 210 Agriculture Science Building, UW-River Falls, 410 S. Third St., River Falls, WI 54022.