

**Approved by the Department of Aerospace Engineering**  
*with 5 votes for, 0 against, 0 abstain on 16 October 2020*  
**Approved by the Professional Standards Committee**

***Implementation Date: 22 August 2022***

## **Background**

The Aerospace Engineering Department offers the BSAE and MSAE degrees and the Minor in Aerospace Engineering. In 2020 it has approximately 350 undergraduate and 70 graduate students.

## **Preamble**

The AE Department places a strong emphasis on teaching excellence and expects faculty to continually improve their teaching by staying abreast of, and applying the latest developments in engineering pedagogy. AE Faculty are strongly encouraged to innovate in their classrooms and laboratories.

Furthermore, AE faculty are expected to engage in technical or engineering education research and publish their results in non-predatory journals and conference proceedings.

Lastly, AE faculty are expected to serve AE students, the AE Department, and their profession by engaging in service activities as described below.

## **A. Teaching, Course, Curriculum & Laboratory Development, and Assessment**

AE faculty are expected to:

- Develop and teach graduate and undergraduate courses within their primary area of expertise, as specified in their letter of appointment and the Chair's Description of Academic Assignment (CDAA), and develop experiments and laboratories in support of these courses.
- Achieve a high level of teaching effectiveness, measured by student evaluations, peer evaluations, and student achievement of learning outcomes, as evidenced by student success in coursework, design competitions, and other scholarly venues (e.g. conference participation).
- Participate in all aspects of the BSAE and MSAE program assessment and evaluation, and contribute to the continuous improvement of the BSAE and MSAE programs through assessment of learning outcomes in graduate and undergraduate courses.
- Implement effectively research-based pedagogical innovations (high-impact practices), including but not limited to, active and cooperative learning, problem-based learning, project-based learning, service-learning, flipped learning, and integration of technology to enhance learning.

Evaluation of teaching effectiveness will be made holistically with an eye toward balancing student evaluations (SOTE), peer evaluations, curricular innovation, rigor and student achievement of learning outcomes. In the following, quality of instruction is indicated by SOTE scores consistent with departmental norms, positive peer-evaluations, steps taken to correct problems, successful implementation of high-impact practices, engagement in the departmental continuous improvement process as well as student involvement in scholarly work (e.g. participation in professional conferences) and success in design competitions.

Assistant professors undergo peer evaluations by faculty of higher rank at least once every semester, with a goal that by the end of the probationary period all courses taught should have at least one peer evaluation on file. The AE Department has a standard form that is used in all peer-evaluations. Although not required, additional peer reviews are possible if requested by the faculty member.

The Department recognizes that new courses, certain topics, new preparations, and implementation of innovative practices at times receive lower SOTE scores compared to well-established, previously taught courses or courses with more accessible content. The AE Department RTP committee takes these factors into account in assessing the candidate's performance in light of a general pattern of teaching effectiveness.

The AE Department values curricular flexibility to meet teaching needs, which frequently vary from semester to semester but it also recognizes that there are times when candidates must specialize in a specific set of courses.

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Therefore, it is expected that candidates will demonstrate varying levels of breadth and depth of teaching across the years of review depending on departmental and faculty needs.

Should any concerns be identified in student evaluations, peer observations or other performance evaluations, it is important that the candidate explicitly articulates specific actions taken to address these concerns, as this demonstrates the candidate's commitment to improving their teaching effectiveness.

<b>Level of Achievement</b>	
Unsatisfactory	<i>S15-8: 3.3.1.3.1 – The candidate has not documented teaching accomplishments that meet the baseline level as described below.</i>
Baseline	<p><i>S15-8: 3.3.1.3.2 – The candidate has taught assigned courses that are well crafted and appropriate for the catalog description. The candidate has taken measures to correct any problems identified earlier in either direct observations or prior performance evaluations. Recent direct observations are supportive. Student evaluations, taking into account the nature, subject, and level of classes taught, are generally within the norms by the end of the review period, particularly for classes within the candidate's primary focus and any curriculum specifically identified in the appointment letter.</i></p> <p><b>Definitions of "baseline":</b></p> <ul style="list-style-type: none"> <li>• <b>"Baseline" quality of instruction</b> in any given course: <ul style="list-style-type: none"> <li>○ The candidate has tailored courses consistent with the catalog description, with clear and measurable CLOs – at least a few of which address higher levels of the Bloom/Anderson taxonomy (4, 5 or 6) – assignments that address these CLOs, and assessments that measure student achievement of these CLOs.</li> <li>○ SOTEs are at the low end of departmental norms and peer evaluations are generally positive.</li> <li>○ If in early offerings of any courses the SOTEs are below departmental norms (-0.5 below departmental average) and/or peer evaluations indicate need for improvement, the candidate has taken measures to correct any problems identified. Recent peer observations are positive.</li> </ul> </li> </ul> <p>Examples of <b>"baseline"</b>: Demonstrated baseline quality of instruction in assigned courses, teaching in alignment with the course curricula established by the department. A candidate may be rated as "baseline" through multiple pathways including, but not limited to:</p> <ul style="list-style-type: none"> <li>• Demonstrating baseline quality of instruction in at least four courses by the end of the review period.</li> <li>• Demonstrating baseline quality of instruction in at least two courses and documented efforts to improve teaching by attending workshops on course design/pedagogy and developing strategies to address areas of concern raised by students in SOTEs, for SOTEs that are below departmental norms (-0.5 below departmental average).</li> </ul>
Good	<p><i>S15-8: 3.3.1.3.3 – In addition to the baseline as described above, the candidate has documented a degree of innovation within the teaching assignment. This could mean that the candidate has effectively taught an unusually wide range of courses, or that the candidate has created one or more new courses to fill important curricular needs, or that the candidate has documented the use of high-impact practices in teaching. Candidates meeting this level of achievement have at least some student evaluations above the norms, when taken in context of the nature, subject, and level of classes taught.</i></p> <p><b>Definitions of "good":</b> in addition to the baseline as described above:</p> <ul style="list-style-type: none"> <li>• <b>"Good" quality of instruction</b> in any given course: SOTEs are consistently at the highest end of departmental norms and peer evaluations are generally good.</li> <li>• <b>"Good" degree of innovation</b> constitutes any or a combination of the following:</li> </ul>

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	<ul style="list-style-type: none"> <li>○ Design and implementation of new laboratory experiments integrated into the curriculum, documented in peer reviewed conference proceedings.</li> <li>○ Use of high impact teaching practices (e.g. active/cooperative learning, problem-based/project-based learning, flipped learning, service learning, mastery learning and specifications grading, culturally sensitive teaching practices, formative and summative assessment of new teaching strategies, etc.) at a mastery level documented in peer reviewed conference proceedings.</li> <li>○ Implementation of creative assignments, followed by authentic assessment of increased student learning through these assignments, documented in peer reviewed conference proceedings.</li> </ul> <p>Examples of “<b>good</b>”: A candidate may be rated as “good” through multiple pathways including, but not limited to:</p> <ul style="list-style-type: none"> <li>● Demonstrating good quality of instruction and innovation at the level described above in at least six courses by the end of the review period.</li> <li>● Demonstrating excellent quality of instruction and innovation at the level described above in at least two courses, good quality of instruction in an additional two courses, and baseline quality in an additional two courses by the end of the review period.</li> <li>● Demonstrating baseline quality of instruction and innovation at the level described above in at least two courses with large enrollment (75+), good quality in an additional three courses, and introduction of one new course that filled an important curricular need, taught with at least baseline quality, recognizing that new courses may receive lower ratings than well-established courses.</li> </ul>
<p>Excellent</p>	<p><i>S15-8: 3.3.1.3.4 – In addition to a good performance as described above, the candidate has either engaged in a higher level of curricular innovation than described above, or documented widespread positive impacts for student success or achieved both student and peer evaluations that are consistently above the norms when taken in context of the nature, subject, and level of classes taught. Excellent teachers may have received recognition or awards for their teaching, they may have mentored other teachers or they may have created curriculum that is adopted at other institutions.</i></p> <p>Definitions of “<b>excellent</b>”: in addition to a good performance as described above:</p> <ul style="list-style-type: none"> <li>● “<b>Excellent</b>” <b>quality of instruction</b> in any given course: SOTEs are consistently at the highest end of, or exceed departmental norms <b>and</b> peer evaluations are excellent.</li> <li>● “<b>Excellent</b>” <b>degree of innovation</b> constitutes any or a combination of the following: <ul style="list-style-type: none"> <li>○ Design and implementation of new laboratory experiments integrated into the curriculum, documented in peer reviewed journal publications or conference proceedings.</li> <li>○ Use of high impact teaching practices (e.g. active/cooperative learning, problem-based/project-based learning, flipped learning, service learning, mastery learning and specifications grading, culturally sensitive teaching practices, formative and summative assessment of new teaching strategies, etc.) at a mastery level documented in peer reviewed journal publications or conference proceedings and demonstrated through workshop delivery or peer mentoring.</li> <li>○ Implementation of creative assignments, followed by authentic assessment of increased student learning through these assignments, documented in peer reviewed journal publications or conference proceedings.</li> </ul> </li> </ul> <p>Examples of “<b>excellent</b>”:  Demonstrated leadership in teaching excellence in and outside the classroom through <i>a combination of</i> achievements, including:</p> <ul style="list-style-type: none"> <li>● Receipt of an award for excellence in teaching.</li> <li>● Synergy between teaching and service activities, demonstrated by mentoring other faculty in the Department, the College or the University and/or the offering of workshops that disseminate teaching innovations.</li> </ul>

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	<ul style="list-style-type: none"> <li>• Synergy between teaching and research activities demonstrated through grants and/or dissemination of teaching innovations in peer reviewed venues.</li> <li>• Excellent quality of instruction as defined above in a combination of at least six graduate and undergraduate courses.</li> <li>• Good quality of instruction and innovation at the level described above in at least two courses with large enrollment (75+), excellent quality and innovation in at least two additional courses, and introduction of one new course that filled important curricular needs, taught with at least good quality, recognizing that new courses may receive lower ratings than well-established courses.</li> <li>• Received the College Excellence in Teaching Award</li> </ul>
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### B. Scholarly & Professional Activity

AE faculty are expected to:

- Develop professionally by conducting research in any aerospace engineering and/or engineering education discipline and engage AE students in their research.
- Present their research results at professional conferences and publish them in peer-reviewed conference proceedings, peer-reviewed journals or other peer-reviewed venues. A non-inclusive list of acceptable conferences, journals and technical reports are included in Appendix B.
- Participate in and provide leadership in professional society activities and engage AE students in such activities.

The AE Department acknowledges the value of peer-to-peer collaboration and co-authorship with peers, as well as with students. AE faculty members receive full credit for publications in which they are first authors or in which their students are first authors. For publications co-authored with other faculty or professionals, they receive 50% credit if they are the second co-author and 25% credit if they are the third co-author or below.

Level of Achievement	
Unsatisfactory	<i>S15-8: 3.3.2.2 – The candidate has not created scholarly/artistic/professional accomplishments that meet the baseline level as described below.</i>
Baseline	<p><i>S15-8: 3.3.2.3 – The candidate has, over the course of the period of review, created a body of completed scholarly/artistic/professional achievements and shows the promise of continued growth and success within his/her discipline.</i></p> <p>Definitions of “<b>baseline</b>”:</p> <ul style="list-style-type: none"> <li>• The candidate has created a body of scholarly and professional achievement, which demonstrates continued growth in his/her aerospace discipline or in engineering education or some combination of both.</li> <li>• “<b>Baseline</b>” external grant: any grant or combination of grants totaling at least \$ 25 K.</li> </ul> <p>Examples of “<b>baseline</b>”:</p> <ul style="list-style-type: none"> <li>• Published at least two journal articles in approved journals.</li> <li>• Published at least one journal article in an approved journal and at least five papers in approved conference proceedings.</li> <li>• Published at least one journal article in an approved journal and received a baseline external grant, as the principal investigator or a co-principal investigator of a project.</li> <li>• Published at least one technical engineering report in an approved venue and received a baseline external grant.</li> </ul>
Good	<p><i>S15-8: 3.3.2.4 – In addition to the baseline as described above, the candidate has created scholarly/artistic/professional achievements that constitute important contributions to the discipline and that help to enhance the scholarly/artistic/professional reputation of the candidate’s department, school, college, SJSU, or the CSU more generally.</i></p> <p>Definitions of “<b>good</b>”:</p>

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	<ul style="list-style-type: none"> <li>• <b>“Good” level of scholarly achievement:</b> in addition to the baseline requirements the candidate has created a body of scholarly and professional achievement, which constitutes an important contribution to his/her aerospace discipline or the engineering education field or some combination of both.</li> <li>• <b>“Good” external grant:</b> any grant or combination of grants totaling at least \$50 K.</li> </ul> <p>Examples of <b>“good”</b>:</p> <ul style="list-style-type: none"> <li>• Published at least four journal articles in approved journals.</li> <li>• Published at least two journal articles in approved journals and at least eight papers in approved conference proceedings.</li> <li>• Published at least two journal articles in approved journals or NASA reports and received a “good” external grant as the principal investigator of a project.</li> <li>• At least 30 citations of an article on Google Scholar.</li> <li>• An h-index of at least "5".</li> <li>• An i-10 index of at least "5".</li> </ul>
Excellent	<p><i>S15-8: 3.3.2.5 – In addition to a good performance as described above, this level requires achievements of both sufficient quality and quantity to establish a significant, important, and growing reputation within the candidate’s field. Excellence in scholarly/artistic/professional achievement requires a body of work that is recognized as significant within the discipline.</i></p> <p>Definitions of <b>“excellent”</b>:</p> <ul style="list-style-type: none"> <li>• <b>“Excellent” level of scholarly achievement:</b> in addition to the requirements for a “good” rating, the candidate has created a body of scholarly and professional achievement, which constitutes a growing and important contribution to his/her aerospace discipline or the engineering education field or some combination of both as illustrated through any of the examples below.</li> <li>• <b>“Excellent” external grant:</b> any grant of at least \$150 K.</li> </ul> <p>Examples of <b>“excellent”</b>:</p> <ul style="list-style-type: none"> <li>• Published at least six journal articles in approved journals.</li> <li>• Published at least four journal articles in approved journals and at least eight papers in approved conference proceedings.</li> <li>• Published at least four journal articles in approved journals or NASA reports and received a "excellent" external grant as the principal investigator of a project or received a “best paper award” in an approved conference.</li> <li>• At least 50 citations of an article on Google Scholar.</li> <li>• An h-index of at least “10”.</li> <li>• An i-10 index of at least “10”.</li> <li>• Received the College Excellence in Scholarship Award</li> </ul>

### C. Service to the AE Department, the College, the University, and the Professional Community

AE faculty are expected to:

- Serve AE students as:
  - Faculty advisors of student clubs, when needed.
  - Academic advisors for undergraduate students, when needed.
- Serve the AE Department in any of the following roles or a combination thereof:
  - Course coordinators (responsibilities attached).
  - Chair of the AE Curriculum Committee (responsibilities attached).
  - Director of the AE Learning Community for Student Success (responsibilities attached).
  - Department Assessment Coordinator (responsibilities attached) or as members of the Department Assessment Committee.
  - Outcome Champion for BSAE and MSAE outcomes (responsibilities attached).

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- Outreach coordinator (responsibilities attached).
- AE representative to one or more college committees (e.g. undergraduate curriculum, assessment, undergraduate advisors, graduate advisors).
- Offers faculty development workshops and/or mentors other faculty in the Department.

AE faculty are also encouraged (but not required) to:

- Represent the College of Engineering at university committees and/or the Academic Senate.
- Serve as faculty-in-residence with the Center for Faculty Development and Support
- Take on leadership roles with our California Faculty Association.

AE faculty are also expected to serve their local and professional community through any of the following or a combination thereof:

- Integrates service learning in their courses.
- Reviews papers for approved conferences or journals.
- Organizes/chairing sessions in approved conferences.
- Participates as members of the organizing committee for approved conferences.
- Serves on NSF review panels.
- Offers faculty development workshops at conferences or other institutions of higher education.

<b>Level of Achievement</b>	
Unsatisfactory	<i>S15-8: 3.3.3.2 – The candidate has not documented service activities that meet the baseline level described below.</i>
Baseline	<p><i>S15-8: 3.3.3.3 – The candidate has undertaken a fair share of the workload required to keep the Department functioning well. This includes activities such as work on department committees, the creation or revision of curricula, the assessment of student learning outcomes, or participating in department planning, accreditation, outreach, and advising. A baseline level of achievement for promotion to Professor will also include at least some service at the University level.</i></p> <p>Example of “<b>baseline</b>”:</p> <ul style="list-style-type: none"> <li>● Contributes to AE program assessment at the undergraduate and graduate levels by assessing at least two courses and at least two program outcomes, effectively coordinates at least four courses, and represents the Department at one college-level committee.</li> </ul>
Good	<p><i>S15-8: 3.3.3.4 – In addition to the baseline described above, the candidate has also participated in significant service activities beyond the department. This will usually include college-level service and may include University level service, service in the community, or significant activities in a professional organization. In at least one facet of service, the candidate will have demonstrated leadership resulting in tangible, documented achievements.</i></p> <p>Examples of “<b>good</b>”: In addition to the baseline example described above the candidate engages in any combination of the following:</p> <ul style="list-style-type: none"> <li>● Advises an AE student club or serves as an academic advisor and represents the Department at two college-level committees.</li> <li>● Provides service to the local community through service learning projects in at least one course.</li> <li>● Reviews papers for approved conferences.</li> <li>● Organizes and chairs sessions in approved conferences.</li> <li>● Offers faculty development workshops in the department.</li> <li>● Serves as the Department Representative for the California Faculty Association.</li> </ul>

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Excellent	<p><i>S15-8: 3.3.3.5 – In addition to a good performance as described above, the candidate has documented significant influence at a high level, whether it be service to students, the University, the community, or the profession. Candidates who achieve an evaluation of “excellent” in service will generally have occupied several elected or appointed positions of leadership and will document multiple specific accomplishments that have significance for people beyond the candidate’s department or college.</i></p> <p>Examples of “<b>excellent</b>”: In addition to the “good” examples described above the candidate serves as:</p> <ul style="list-style-type: none"><li>• The AE Assessment Coordinator and contributes through leadership and the preparation of a self-study report to the successful accreditation of the AE programs and represents the College of Engineering at the Academic Senate and leads the effort in the creation of new policies.</li><li>• Director of the AE Learning Community for Student Success and contributes through leadership to the improvement of student retention/graduation rates and serves as faculty-in-residence with the Center for Faculty Development and Support to provide workshops and mentoring for faculty across the campus.</li><li>• Chair of the AE Curriculum Committee and participates as a member of the organizing committee for approved conferences or invited to join a national or international technical committee.</li><li>• Offers faculty development workshops at conferences and other institutions of higher education and serves as the College Representative for the California Faculty Association.</li></ul>
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### Appendix B – AE Department List of RSCA Venues

#### Journals

AIAA Journal  
Acta Astronautica  
Advances in Space Research  
ASME Journal of Applied Mechanics  
Athens Journal of Engineering and Technology  
Celestial Mechanics and Dynamical Astronomy  
Experiments in Fluids  
European Journal of Engineering Education  
International Journal of Engineering Education  
Journal of Engineering Education  
Journal of Fluid Mechanics  
Journal of Guidance, Control, and Dynamics  
Journal of Propulsion and Power  
Journal of Sound and Vibration  
Journal of Small Satellites  
Journal of Spacecraft and Rockets  
Journal of the American Helicopter Society  
Journal of Vibration and Control  
Journal of Vibrations and Acoustics  
Mechanical Systems and Signal Processing  
Physics of Fluids  
Progress in Aerospace Sciences  
Structural Control Health Monitoring  
The Aeronautical Journal

#### Conferences

AIAA International Space Planes and Hypersonics Systems and Technologies Conference

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Annual International Conference on Engineering Education & Teaching  
Annual International Conference on Mechanical Engineering  
Annual International Symposium on the Future of STEAM (sciences, technology, engineering, arts and mathematics) Education  
ASEE Annual Conference on Engineering Education  
Athens International Symposium on Education and Research  
International Conference on Sustainable Aviation  
International Planetary Probe Workshop  
International Symposium for Sustainable Aviation

### **Technical Reports**

NASA Contractor Report  
NASA Technical Memorandum  
NASA Technical Note  
NASA Special Publication  
NASA Technical Report

## **Appendix C – AE Department List of Responsibilities for Various Leadership Roles**

### **AE Associate Chair**

1. Serve as the Assessment Coordinator for the Department. (see list of responsibilities below)
2. Chair the AE Curriculum Committee. (see list of responsibilities below)
3. Represent the AE Department at the Council of Chairs, the Engineering Industrial Advisory Council and other public venues as needed, when the Chair is not available.
4. Manage the everyday business in the AE Department when the Chair is not available (i.e. sign student and faculty paperwork as needed, advise students as needed, and problem-solve as necessary).

### **AE Assessment Coordinator**

1. At the beginning of each semester, remind faculty:
  - a. Which outcomes will be assessed in each of their courses (if any), following the published AE assessment schedule and the course / outcome mapping table.
  - b. To close the assessment loop in regards to any improvements recommended in the previous assessment cycle.
2. At the end of each semester: collect from each faculty member their outcome assessment and compile them in two documents, one for the BSAE outcome assessment and one for the MSAE outcome assessment.
3. Coordinate the assignments for GE Area S between AE171A & AE172A and Engr195A and assess GE Area S outcomes in AE171A & AE172A.
4. Coordinate the assignments for GE Area V between AE171B & AE172B and Engr195B and assess GE Area V outcomes in AE171A & AE172A.
5. Prepare the Annual GE Assessment Reports for:
  - a. Area S in AE171A.
  - b. Area S in AE172A.
  - c. Area V in AE171B.
  - d. Area V in AE172B.
6. Prepare the Annual BSAE Assessment Report.
7. Prepare the Annual MSAE Assessment Report.
8. Prepare the ABET SSR.

### **Chair, AE Curriculum Committee**

1. Work with the Department Chair and Faculty to review and edit annually all SJSU Catalogue entries for the BSAE and MSAE programs.
2. Work with the office of Undergraduate or Graduate Studies to correct mistakes on descriptions of AE programs and courses.

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3. Submit all AE course and curriculum proposals through Curriculog.
4. Represent AE at the College Curriculum and Graduate Studies committees.

### AE Course Coordinator

1. SJSU Catalogue Description: Review and revise the SJSU catalogue description of the course as needed, after discussion and approval by the AE Curriculum Committee.
2. Course Syllabus: Ensure a current course syllabus, following our common AE format, is posted on the BSAE / MSAE website. Each syllabus must contain the following information and in the following order:
  - a. Course number and title
  - b. Instructor information
  - c. Credit (# of units)
  - d. Class days and time
  - e. Classroom
  - f. Prerequisites and co-requisites
  - g. Textbook or notes availability
  - h. Course website
  - i. Course description
  - j. Course goals
  - k. Course learning objectives (CLOs)
    - A minimum of 12
    - Must be clear and measurable
  - l. Approximate weekly schedule
  - m. Grading
  - n. Any other relevant information pertaining to CANVAS, labs, projects, etc.

*Note:* AE Department and SJSU policies are posted and kept updated on a separate link on the AE website.
3. Peer Evaluations  
Visit each course you coordinate and **taught by a PTF** member at least once during the semester and conduct a peer evaluation using the AE Peer Evaluation Form. A copy of the form should be given to and discussed with the PTF member. Another copy should be given to the AE Department Chair for placement in the PTF member's file.
4. Course Assessment
  - a. **If teaching** the course in the current semester: collect and analyze data and provide a write up – including recommendations and timeline for implementation of improvements – to the AE Assessment Coordinator and/or the Department Chair for inclusion in the BSAE and MSAE annual assessment reports, the ABET Self-Study Report, and the AE Self-Study Report (WASC).
  - b. **If not teaching** the course in the current semester: work with faculty member currently teaching the course to ensure that appropriate data is collected and analyzed and a write up – including recommendations and timeline for implementation of improvements – is provided to the Assessment Coordinator / Department Chair for inclusion in the BSAE and MSAE annual assessment reports, the ABET Self-Study Report, and the AE Self-Study Report (WASC).
5. Course Binder: Set up a course binder that includes:
  - a. The course syllabus
  - b. The course outcome analysis
  - c. The course grading spreadsheet with student names removed
  - d. Best sample(s) of student work for each outcome addressed in the course (homework assignments, reports, exams, etc.).

### AE Outcome Champion

1. An outcome champion assumes ownership and overall responsibility for his/her outcome.
2. Strives to ensure that the program (BSAE or MSAE) meets the performance target for his/her particular outcome.

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3. Looks for ways to improve student performance in the particular outcome, regardless of whether the performance target is met or not.
4. Combines data and analyses from all courses in which outcome is assessed to write an overall assessment for the specific outcome. This overall assessment must provide one of two conclusions:
  - The performance target *is met* for Outcome X.
  - The performance target *is not met* for Outcome X.
5. Recommends course and/or curriculum improvements to strengthen the outcome and improve student performance.

### AE Lab Director

1. Develops a vision for the laboratory in support of the BSAE and / or MSAE programs as well as research.
2. In collaboration with the Department Chair prepares and submits proposals to the College / University, when funding opportunities arise, to acquire new equipment.
3. Ensure before the start of each semester that all experiments are working properly in support of any course, which requires the use of these experiments.
4. Work with equipment manufacturers, College / Department technicians, and student assistants to maintain all equipment and instrumentation in good working order and upgrade as needed.
5. Introduce new experiments in support of existing and / or new courses. This will involve researching and identifying appropriate equipment for purchase.
6. Train and supervise student assistants to ensure student safety while performing any experiments in the lab.
7. Work with College / Department technicians to enforce proper safety procedures in the lab, as required by University, local, and State authorities.

### AE Outreach Coordinator

1. Coordinate with local K-12 administrators and/or *CommUniverCity* to setup outreach and/or service-learning activities at local schools.
2. Work with local chapters of AE professional societies to design, build and test appropriate hands-on demonstrations for K-12 audiences, community colleges, museums or other public venues.
3. Coordinate with AE lab directors and the Dean's Office to setup AE labs for Engineering Open House.
4. Respond to requests of high school students who are interested in exploring AE and pair them with AE peer-mentors.

### AE Learning Community Director

The AE Learning Community (AELC) was initiated in Fall 2013 after reviewing the literature on student success, retention, and graduation rate improvement. The Director plans, coordinates, and directs several activities as described below:

1. Pairs AE student teams in AE20 (CAD for AE) and AE30 (Programming for AE) with students in AE171A&B (Aircraft Design) and AE172A&B (Spacecraft Design), so that freshmen and sophomores can shadow seniors in their design projects. The seniors provide simple CAD and programming assignments to AE20 and AE30 students and meet with them to provide assistance, as necessary. The AELC provides a venue for freshmen and sophomores to connect with AE seniors, whom they look up to as role models and mentors. The Director works with the AE20, AE30, AE171 and AE172 instructors to coordinate the AE20, AE30, AE171 and AE172 teams and their projects, so she can pair freshmen and sophomores in AE20 and AE30 with seniors in AE171 and AE172 based on topical interest. She meets with paired teams (aircraft and spacecraft) to check progress and to ensure the AE20 and AE30 students are being mentored effectively by our seniors. She also compiles a library of appropriate AE20 and AE30 projects to facilitate student pairing every semester.
2. Assigns mentors to AE 1<sup>st</sup>-year and 2<sup>nd</sup>-year students (3<sup>rd</sup>-year, 4<sup>th</sup> year or graduate AE students), with whom they meet on a regular basis every semester to discuss challenges and how to best navigate the AE Program and the University.

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3. Connects AE 1<sup>st</sup>-year and 2<sup>nd</sup>-year students with our chapters of AE professional societies (AIAA, SGT, Rocket Club, SEDS) to encourage their participation in professional activities.
4. Organizes tutoring-on-demand in math, physics, as well as all upper division AE subjects from juniors, seniors and graduate students.
5. Plans, coordinates and directs a job fair for AE students every semester. Communicates with companies that hire AE students in order to solicit representatives to participate in our AE Job Fair and interview AE students. During Covid-19 the fair takes place virtually.