Academic Assessment Plan

(M.S., Ph.D. / Microelectronics-Photonics)

2017 Calendar Year Report

Program Goals

1. Provide students with interdisciplinary education and training in engineering and science to meet the needs of emerging technology industries.

2. Place students in interdisciplinary groups performing rigorous and challenging research to prepare them for careers in industrial research teams, national labs, and academic positions.

3. Prepare students to be effective in technology management and entrepreneurship.

Student Learning Outcomes

1. Conduct independent investigations (M.S.) or define and explore new areas of research (Ph.D.) in an interdisciplinary environment, expanding the breadth and depth of state-of-the-art knowledge in the field of micro to nanoscale materials, processing, and devices.

2. Master knowledge, practices, and skills from traditional graduate level programs in Physics, Chemistry, Electrical Engineering, Chemical Engineering, Mechanical Engineering, Biological Engineering, and Biomedical Engineering, regardless of prior traditional educational background.

3. Communicate effectively deep level knowledge of their work to persons well-versed in their field, detailed technical concepts to persons with strong technical backgrounds outside of their field, and general concepts and applications to the general public.

4. Work efficiently in interdisciplinary team environments, fully supporting team goals through active membership or through team leadership as appropriate.

5. Implement intellectual property management and research commercialization processes, encouraging migration of ideas from formulation to societal benefit during their professional careers.

6. Execute duties found in entry-level professional positions with the operational skills equivalent to at least one year's experience in that position.

7. Embrace the role of citizen-scientist in both their professional and societal communities, utilizing their sound ethical and analytical backgrounds, to lead the discussions that will be needed to balance what can be done with what should be done.

Process for Assessing each Student Learning Outcome

1. **Ph.D. Candidacy Exam Process (Direct): This process addresses the Ph.D. level knowledge portion of outcomes 1 and 2, communications requirements of outcome 3, IP and the commercialization aspects of outcome 5, and professional behaviors found in outcomes 6 and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

   The MicroEP Ph.D. candidacy process is in two parts which may be taken in either order. One part is a formal written research proposal 15 pages in length that is similar in nature to a NSF proposal. It is written in strong collaboration with the major professor, and must be presented and approved by the student's Ph.D. committee at the end of the formative stage of the research definition but well before the student is deep into the execution stage of the research. It is designed to assure that the field of the research is well understood by the student, that the proposed research topic has sufficient depth and breadth to demonstrate Ph.D. level professional work, and that the research has a reasonable chance of completion within four years after being accepted as a Ph.D. student after completion of a MS degree.

   The second part is a written exam with oral discussion taken by the student during prior to the start of the spring semester. This exam is a combination of a NSF solicitation and a Request for Quotation received by a technology-based company. Students are allowed access to any written information they wish to use, but they may not discuss the exam scenario or their work with any person. The student is limited to 15 pages, and the written document and the oral discussion are both evaluated by the same faculty panel. A student who fails the exam may take it one additional time during the same time the following year. This document is almost always the first complex problem assessment and development proposal written by the student, and provides very good information on how the student will perform in the types of assignments typically given in a professional position where a Ph.D. is the minimum education requirement for being hired. The exam is given to the students the week before the start of the spring semester.

   Data Collection and Analysis:

   <u>Candidacy Research Proposal, 2017 Calendar Year</u>

   Number of Students Presenting Candidacy Research Proposal / Number Accepted = 13/13.

Written Candidacy Exam, Spring 2017

Number of Students Taking Exam: 7.

Number of Students Passed Exam (First Attempt): 4.

Number of Students Passed Exam (Second Attempt): 1.

Number of Students Failed Exam (First Attempt): 2.

Number of Students Failed Exam (Second Attempt)*: 0.

* - Removed from MicroEP PhD program.

Students Admitted to MicroEP PhD Candidacy, 2017 Calendar Year

Number of Students Admitted to Candidacy** = 12.

** - Passed both parts of MicroEP PhD candidacy process.

Five Year Statistics for Written Candidacy Exam

Pass rate (first attempt) = 25/41 = 61%.

Pass rate (second attempt) = 9/12 = 75%.

Assessment:

- The candidacy exam process continues to provide a good assessment of the student's capability to meet the requirements of PhD level research. The written candidacy exam provides a good indication of how the student will perform in the types of assignments typically given in a professional position where a Ph.D. is the minimum education requirement for being hired.
- Several students who do not pass the written candidacy exam on the first attempt voluntarily move to other PhD programs at the university.
- The written candidacy exam results are presented to, and accepted by, the MicroEP faculty.
- The MicroEP director and associate director review the results of the written exam and the faculty panel assessment with each student examinee and their major professor. Constructive feedback is given to the students regarding strengths and areas for

improvement – either in preparation for their PhD research and dissertation or to re-take the exam the following year.

- The MicroEP staff solicits feedback from the faculty and students each year following the exam on the exam process and ways in which it may be improved. For example, addition of a summary highlighting the novel fundamental aspects of the written proposal is being considered for addition to the candidacy exam.

- In 2017, Prof. Keith Roper conducted a series of three candidacy exam preparation sessions with the students scheduled to participate in the candidacy exam. These sessions provided an in-depth introduction to the requirements of the exam, reviewed best practices in preparing for and taking the candidacy exam, and provided guidance to students to take steps in advance to prepare themselves for the candidacy exam. Examples included preparing a schedule for the exam in advance; notifying those potentially affected of the process; developing proficiency with a reference/citation manager; increasing familiarity with library and research resources available on campus; reviewing previous candidacy exam questions; drafting an outline of a response to an anticipated question; improving oral and written communication skills; and discussion of professional responses to input from evaluators. The sessions also elicited input from the participants on ways to improve the candidacy exam process. One outcome of this process was that, for the first time, participants were allowed to use LaTEX to prepare their candidacy exam. Feedback from candidacy exam participants in post-exam debriefing about the preparation sessions was uniformly positive.

2. Curriculum and career advising each semester at pre-registration (Indirect): This process addresses outcomes 2, 4, and 6. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.

This formal advising process gives an opportunity to discuss with the student such things as their academic performance in the prior semester, how they are working with their professor and their research group members, and what is affecting their ability to make satisfactory progress on their research. All students are advised by Director Rick Wise and co-advised by their major professor.

Data Collection and Analysis:

17 MS and 40 PhD students were advised for Spring 2017.

21 MS and 36 PhD students were advised for Fall 2017.

Assessment:

The advising process is helpful to the program director to get to know the students better and to track the progress of the students, or address issues, toward completing their degree requirements. It is also used as a time to check milestones including their research document (3-5 page description of their intended research initially signed by their committee and updated each semester by the student and approved by their major professor), committee form, title form, annual reviews, and reminders of dates for their written candidacy exam and candidacy research proposal.

3. **Small Group Student Meetings (peer assessment and mentoring) (Indirect): This process addresses outcomes 3, 4, 6, and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

These peer mentoring groups are led by senior MicroEP students, and participation is required for all MicroEP students during their first two years in the program. The groups meet six times each fall and spring semester and focus on how to effectively communicate to other students that are not already familiar with the work. In this way, they practice communicating with young professionals unfamiliar with their field, and also have an opportunity to discuss operational problems with their peers and receive feedback on their way of handling the problems. They are also taught the use of MS Project.

Data Collection and Analysis:

Spring 2017:

22 first and second year students in four Small Group Teams met six times.

Attendance (excluding illness and conference travel) = 100%.

Fall 2017:

22 first and second year students in four Small Group Teams met six times.

Attendance (excluding illness and conference travel) = 97%.

Assessment:

The Small Group Leaders teach the students to use MS Project to map out their key project as a graduate student – meeting the requirements to get their graduate degree. Each students MS

Project file must be updated and submitted to MicroEP management three times in the fall semester and four times in the spring semester. The student's completed MS Project summary of their graduate program path is included as an appendix in their thesis/dissertation.

The students also prepare and practice presenting their research to their small group team and are coached by their small group leader. Each small group rotates presenting their research at monthly Research Communication Seminars to all MicroEP students. This practice improves the student's public speaking skills and prepares them for conference presentations, oral defense of candidacy exams, defense of their thesis/dissertation, and becoming effective communicators throughout their careers.

4. **Use of Microsoft Project software (Indirect): This software usage addresses outcomes 4 and 6. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

One large predictor of professional success is the ability to plan your work such that you have no downtime during the day. All students in their first two years must use Microsoft Project software for their research planning to help them learn the time management and project management practices they will need in their early careers.

Data Collection and Analysis:

All MicroEP graduate students learn the use of Microsoft Project in their Small Group teams (see Student Learning Outcomes Process #3). 21 students learned use of MS Project in Small Group teams and how to develop their 'Degree Project Plan' in spring 2017 and 21 students in fall 2017. Except for their first full month in the program, students in their first two years in the program are required to submit their updated MS Project plan monthly to MicroEP program management. This submission is part of their grade for the Operations Management seminar grades.

Assessment:

This methodology is fully integrated into the MicroEP graduate program and helps the students understand what is needed to complete their graduate degree (and helps drive conversations with their major advisor or MicroEP program director when it is not). The students include their completed MS Project plan summary as an appendix in their thesis or dissertation. Program alumni and employers alike frequently provide feedback regarding how this skill clearly and positively distinguishes MicroEP graduates from most new hires from other STEM graduate degree programs.

5. **Research Communications Seminars (Indirect): This process addresses outcomes 3, 4, 6, and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

Monthly seminars are held to update the students on the MicroEP announcements, news, events, and recognition. Students in the first two years of the MicroEP program also present their research to their peers at these seminars. These one hour and 15 min seminars are held the first Monday evening of each month during the spring and fall semester. Attendance is required for all MS students in their first three semesters and all PhD students in their first five semesters.

Data Collection and Analysis:

Spring 2017:

Four research communication seminars were held.

Attendance of MS students in their first three semesters = 100%*.

Attendance of PhD students in their first five semesters = 100%*.

Fall 2017:

Three research communication seminars were held.

Attendance of MS students in their first three semesters = 100%*.

Attendance of PhD students in their first five semesters = 100%*.

* - Students who miss a seminar are required to attend a thesis or dissertation defense or other technical seminar authorized by the program director.

Assessment:

Students in the four Small Groups give two types of presentations – a three minute (elevator pitch) presentation and a 12 minute conference-style presentation. This gives them valuable experience in learning how to present their research at the level appropriate for their audience.

6. **Small Group Leader meetings (Indirect): This process addresses outcomes 4, 6, and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

Senior MicroEP students that lead these small groups experience their first taste of administrative responsibility, performance assessment and feedback, and management team discussions as they find common issues of concern from the different Small Groups. They have the responsibility to not only assess and prioritize common issues and the responsibility to propose and help implement program changes needed to address the issues. These meetings are facilitated by Associate Director Panneer Selvam.

Data Collection and Analysis:

MicroEP program management met with Small Group Leaders on May 15, August 28, December 13, to share best practices, discuss and implement new initiatives among the students, and to gain support among these student leaders to affect these changes. In addition, to teaching soft skills in these small group meetings, community service is also advocated. Service initiatives for 2017 included volunteering for the Razorback Regional Greenway Trail Clean-Up (April 1 and July 27) and the Lake Sequoyah Clean-Up (October 14). Fifty-two MicroEP students and faculty volunteers participated in these events.

Assessment:

The Small Group Team concept is working as intended giving senior MicroEP students an opportunity to develop their leadership skills and more direct access to the program management to explore and implement new initiatives to help other students in the program with their professional and academic development.

7. **Annual student performance reviews (Indirect): This process addresses outcomes 1, 2, 3, 4, and 6. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

An annual review process was established by the Graduate School several years ago that is designed to tell the student if they are making satisfactory research and academic progress toward their degree, or if they are not. The MicroEP grad program expanded the feedback forms significantly to allow the major professor to separately address the quantity and quality of a student's work in many different performance attributes including academic progress, interaction with professor,

interaction with other students, laboratory work, research documentation, thesis/dissertation progress, and research planning. The student fills out a self-assessment and then brings that document with him/her to the meeting with the major professor, which gives the student practice in how to align their self-assessment of their work to their direct supervisor's assessment. All review forms are then reviewed by Associate Director Panneer Selvam to both create a program wide composite view and to identify any students that need further program level performance review before the forms are forwarded to the Graduate School.

Data Collection and Analysis:

Annual performance reviews were received from 39 students. Performance reviews were expected from 44 students.

Assessment:

The annual performance review serves its intended purpose of identifying performance issues as well as differences in performance perception between the student and their major professor. These differences can be used to facilitate a useful discussion during the review meeting.

Although the level of participation in this process increased compared to previous years, further attention will need to be given to this process by the MicroEP graduate program management to ensure full compliance by the students and faculty.

8. Formal Exit Interviews with all graduates (Indirect): This process addresses all outcomes. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.

While the MicroEP program receives student feedback through many channels, as a result of feedback from external reviewers during the first program review a formal exit interview policy was implemented and a script was created to help guide the interview. Associate Director Roper performs these exit interviews; then the forms are scanned and stored in both hardcopy and electronic forms.

Data Collection and Analysis:

Exit interviews were performed with seven students who graduated from the program during the 2017 calendar year. Participating in the exit interview has now been formalized as a requirement before final sign-off of the student's record of progress.

Assessment:

The students generally reflect positively on the unique and interdisciplinary nature of the MicroEP program. Students appreciated the belonging to a cohort and participating in the community culture of the program, e.g., the summer camp, seminars, presentations to peers and service activities. In particular, students appreciate become familiar with organizational tools, e.g., Microsoft Project, that increase their productivity. Many students report getting positions in the microelectronics industry. Students suggested providing a framework that supports incoming and matriculating students in meeting all requirements of the program, graduate school and university on the way to graduation.

9. M.S. and early stage Ph.D. Research Document (Direct): This process addresses outcomes 1 and 3. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.

All early stage MicroEP students are required to create a research description document to both help them fully understand their proposed research and to assist in communicating the goals and limits of their proposed research with their committee members. It is updated each semester with progress made and current issues hampering progress. When a Ph.D. student completes the Ph.D. Candidacy Research Proposal, this document is no longer required.

Data Collection and Analysis:

In 2017, Prof. Roper met with incoming graduate students to introduce the annual student performance review, describe its purpose as a tool to establish goals and expectations, guide research activities, and provide continuous feedback regarding research results. Each section of the performance review was discussed in detail. Prof. Roper met individually with each graduate student as they prepared their performance review to provide feedback and guidance in completing the review as well as establishing and communicating their research direction.

Research documents and updates were received from 17 MS and early stage PhD students during the 2017 calendar year.

Assessment:

The initial research documents were reviewed and signed by the student's major professor, committee, and a member of the MicroEP management team. Subsequent updates, submitted each

fall and spring semester, are reviewed and signed by the major professor and the MicroEP management team. This helps document the student's progress on their intended research – through completion for MS students and, for PhD students, until the candidacy research proposal is approved by their committee.

10. **Research Commercialization course MEPH 5383 (Indirect): This course addresses outcomes 3, 4, 5, and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

This course is a core requirement of both the MicroEP M.S. and Ph.D. curricula, and leads the student through the full process of commercialization of research. It is a team based course that requires development of a commercialization plan for an on-campus professor's research and extensive presentations on that work to the class.

Data Collection and Analysis:

Research Commercialization (MEPH 5383) was taken by 11 MicroEP students during the 2017 calendar year (offered in spring semester). A patent by Dr. Richard Coffman (CVEG) and two of his graduate students entitled "Field Deployable Soil Observation Topographic Differential Absorption LiDAR" was used for the commercialization project for the class. Teams were formed to cover: 1) Intellectual Property and Technology Space, 2) Market Space: Competitor Analysis / Methods & Strategy, 3) Production & Manufacturing / Financials, and 4) Business Plan.

Assessment:

The course gives students an exposure to the entrepreneurial process of commercializing research. This helps prepare the students for the MicroEP PhD written candidacy exam as well as providing insight into the research commercialization process for those who may consider an entrepreneurial career path. Several local entrepreneurial ventures have been started by graduates of the MicroEP program.

11. **Operations Management seminar courses MEPH 5811/5911/6811/6911 and Proposal Writing course MEPH 5832 (Indirect): This five semester course sequence addresses outcomes 6 and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.**

This is a required core course sequence for every MicroEP student, and is designed to introduce aspects of management of a technical group in a high tech workplace.

Data Collection and Analysis:

MEPH 5811 (Operations Mgmt: Infrastructure Management) Fall 2017: 9 students enrolled.

MEPH 5911 (Operations Mgmt: Personnel Management) Spring 2017: 14 students enrolled.

MEPH 6811 (Operations Mgmt: Management&Leadership I) Fall 2017: 13 students enrolled.

MEPH 6911 (Operations Mgmt: Management&Leadership II) Spring 2017: 8 students enrolled.

Assessment:

These seminars provide students in the interdisciplinary MicroEP graduate program with an insight into organizational, personnel, and management topics and issues typically encountered in the corporate world which most STEM graduates receive no, or little, exposure to until they make the sudden and rather dramatic change to an engineer or scientist hired into industry. These seminars help prepare the graduates for this transition and improve the likelihood of making a favorable impression as they start their new careers. A portion of the seminars is also allocated to improving the students' resumes using resources brought in from the UA Career Development Center. The students also present the MS Project plan for completing their degree requirements as a means of 'best practices' sharing.

12. Ethics course MEPH 5821 (Indirect): This course addresses outcome 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.

This is a required core course for every MicroEP student, and is designed to prepare MicroEP graduates with discussions of alternative actions that may be taken in many typical ethically uncomfortable positions that may arise in the technology workplace.

Data Collection and Analysis:

Ten MicroEP graduate students were enrolled in MEPH 5821 – Ethics for Scientist and Engineers.

Assessment:

In this class, the students learn about famous examples of unethical practices and decisions which led to engineering catastrophes such as the Challenger disaster, about understanding what plagiarism is and how to avoid it, and about appropriate and ethical authorship of research papers.

13. M.S. Thesis preparation and defense (Direct): This process addresses outcomes 1, 2, 3, and 5. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.

The M.S. thesis work and documentation demonstrates both a student's skills and knowledge, and is often the first major professional work done by the student where he/she has the responsibility to both guide the work and overcome whatever obstacles arise. We see this as the demonstration vehicle of the student demonstrating through achievement that they are now professionals. The MicroEP program requires all Ph.D. path students that enter the MicroEP program after the B.S. degree to complete a thesis based M.S. MicroEP degree before being admitted as a Ph.D. student. The thesis is first used to assess a student's capability for independent work and analysis and then used as a career guidance tool. In this sense the M.S. thesis is part of the Ph.D. candidacy process as well.

Data Collection and Analysis:

Spring 2017 – 1 MS thesis graduate.

Summer 2017 – 1 MS thesis graduate.

Fall 2017 – 2 MS thesis graduates.

Assessment:

N/A.

14. Ph.D. Dissertation preparation and defense (Direct): This process addresses outcomes 1, 2, 3, 4, 5, and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.

A student completing a Ph.D. dissertation has a responsibility to have created a new field of investigation, performed a meaningful investigation, performed analysis to tie current work to prior

theory, examined the societal and commercial potential of their work, and found a way to communicate deep level knowledge in an understandable fashion to their committee and public.

Data Collection and Analysis:

Spring 2017 – 2 PhD graduates.

Summer 2017 – 2 PhD graduates.

Fall 2017 – 0 PhD graduates.

Assessment:

N/A.

15. Industrial Advisory Board (IAB) (Indirect): This board meets annually and addresses outcomes 2, 3, and 7. Assessment of the report year will begin on January 15th of the following year and results will be reported by May 31st.

The IAB is comprised of proven professionals in companies that have a strong interest in the MicroEP fields of research, including several early graduates from the MicroEP program. During its annual meeting it reviews program attributes and gives feedback on proposed changes, as well as having the authority to propose changes to the program from their own intuitions or observations. During the annual meeting selected students present their research in progress to the IAB and discuss the societal implications of their work with this group of outside professionals.

Data Collection and Analysis:

The Industrial Advisory Board meeting was held October 1-2, 2017 in Fayetteville with nine board members from industry and one guest faculty member (Dr. David Probst, Chairman, Department of Physics and Engineering Physics, Southeast Missouri State University) attending. Approximately 40 board, faculty, and students attended the IAB dinner on Sunday evening, October 1st. Nine students participated in the three-minute thesis and poster contest held before the dinner. Small Group Leaders, Student Community Service Coordinator, and MicroEP student Volunteer of the Year were also recognized at the event. In addition to a review of the program on Monday morning, the board member held breakout meetings with MicroEP faculty and students. Mike Seacrist, Senior Fellow from SundEdison Semiconductor, serves as the board chair. Professor Greg Salamo gave an update on the proposal for the formation of a School of Materials Science and Engineering (SMSE) which would span both the College of Engineering and the College of Arts and Sciences. Rick Wise gave an overview of the MicroEP program metrics. Dr. Keith Roper presented the proposal submitted to NSF

for a three-year MicroEP REU (Research Experience for Undergraduates) entitled: “Tomorrow’s Nanomanufacturing: Engineering with Science”. Dr. Cynthia Sides presented the new three-year NSF STEM PAAD (Professional Awareness, Advancement, and Development) awarded it 2017.

Assessment:

The Industrial Advisory Board continues to provide a valued service to the MicroEP graduate program in assessing the academic coursework, research, and processes used to prepare the students to compete and contribute in the high tech industry. The board members provide the program with good contacts to industry and serve as role models for the students.

Key feedback from the IAB for consideration by the MicroEP Management team:

(From breakout meeting with students)

- As in past roundtables, students expressed concerns about the marketability of the MicroEP degree title when compared to more traditional degree titles. There was discussion about clearly stating on resume items such as key coursework, thesis title, and other keywords that help resume reviewers understand MicroEP. The breadth of the MicroEP program is viewed as a significant benefit, but also a challenge to explain on resume. IAB reinforced that students need to be prepared to discuss the advantages of the interdisciplinary skill gained in MicroEP. There is continued strong interest among the students in progress towards the potential MSE name change.

- There was discussion about the merits/values of the 3-minute presentation, research posters, and quad charts. IAB members reinforced the value of quad charts in industry and how experience with that format will be of value in interview situations. Students described the 3-minute presentation preparation with clear guidelines provided and practice sessions in team format. Students acknowledged the challenge of the 3-minute presentation vs poster, but seemed enthusiastic about the value of both.

- Students expressed enthusiasm for the continued commercialization focus within MicroEP.

(From breakout meeting with faculty)

- Several topics were discussed. Concerning student readiness for interviewing, the faculty described help available including direct resume advisement from professors, from the departments, and practice presentations/interviews. There are not formal programs for industrial mentorship or internships. Some of this happens when project funding involves industry and if the topic is right. Internships are not easy in the grad school setting given project research towards IP and publishing, and academic priorities. Professors feel pressure to deliver research results and to compete for funding. Most of the funding is from grants and the amount from industry is relatively small. It was acknowledged that research focus is not

always well aligned with industry. The desire for increased commercialization, better alignment between research and industry was discussed, and how to make it easier to move research in this direction was discussed. The IAB agreed to provide a letter of support to the MSE initiative, and to continue discussion with MicroEP on how to push towards more industrial involvement in terms of funding and changing the culture.

(Summary Review with MicroEP management)

- The IAB members appreciate the effort from students/faculty/admin to conduct the posters and 3-minute presentations at the Sunday evening event. The IAB voted on the student poster presentations and the 3-minute presentations.
- IAB continues to support the MSE initiative. IAB agreed to provide Dr. Salamo and Dr. Wise a formal letter of support for the MSE initiative.
- With respect to the students, IAB is willing to provide some support throughout the year if there are requests to review a resume or provide general mentoring discussion. IAB prefers not to have contact list generally distributed, but the center director can provide contact information on a case basis. The LinkedIn group that was previously set-up is also a possible forum for contacting IAB. Following the 2017 IAB meeting some students initiated direct LinkedIn contact.
- IAB supports MicroEP efforts to do more in-state and adjacent-state recruiting to further enhance the regional presence of the program and the university.

Timeline for Data Collection and Analysis

Collection, Analysis, and Reporting of Assessment Data	**(Program Director)**	**May 15**
Document Key Findings		**May 15**

Use of Results

- **Actions for MicroEP Management Team Approval** **June 30**
- **Actions for MicroEP Graduate Studies Committee Approval** **July 31**
- **Actions for MicroEP Graduate Faculty Approval** **September 15**
- **Program review with Industrial Advisory Board** **November 15**

In addition to the actions taken by these groups in response to the Academic Assessment report, other issues will be addressed as appropriate in a timely manner.