EXECUTIVE SUMMARY Engineering Technology Department – Electronics Engineering Technology Self-Study Document, Fall 2014

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The following is a summary of the self-study document, highlighting important points. For complete information, please refer to the self-study document itself.

Program History:

The Electronics Engineering Technology (EET) program was first accredited by the TAC of ABET (then ECPD) in 1978 and has been continually accredited since that time. In 2000, the Computer Engineering Technology (CET) emphasis was created and made a separate degree in 2001. Incremental changes to the EET program were made until 2012.

In 2012, CEET faculty and resources were divided to create separate Electronics Engineering and EET programs. The EET program, consisting of one full-time faculty, one part-time and three adjunct instructors with approximately half of the existing laboratory facilities, was reorganized. EET merged with the existing Mechanical, Manufacturing, and Design programs (MET, MFET, DET) in the Department of Engineering Technology. To date, the part-time faculty has retired, and currently three adjuncts support the program. Two tenure-track faculty members have since been hired (2012, and 2013).

In June 2014, Weber State University long-term renovation plans claimed Building Four, which housed laboratories and facilities for both the EET and EE programs. All existing laboratory facilities and the new engineering department have been displaced for approximately 2.5 years. Through a collaborative effort led by the Dean and the Department Chair, the Engineering Technology department has adapted and modified existing ET laboratory facilities to create several electronic and computing laboratories.

Mission Statement:

The mission of the **Engineering Technology Department** is:

- To provide engineering technology students four specific disciplines which emphasize solid theoretical backgrounds supplemented by practical experiences. The four Engineering Technology programs within the department include: Design, Electronics, Manufacturing, and Mechanical. The technology-based education enables students to acquire career-specific competencies and leadership skills, prepare for advanced education in their chosen fields of study and equips them for lifelong learning. Emphasis is given to the importance of students becoming and remaining competent in their chosen career, the need for continual improvement and application of new technologies, and the need to become active contributing members of society with an understanding of professional and ethical responsibilities.
- To advance knowledge in the respective disciplines through scholarly activities including instructional improvement, applied research and transfer of technology.

• To serve the students of the College of Applied Science and Technology and the University in addition to the business and industrial communities of Utah and the Intermountain region.

Curriculum:

The curriculum of the Electronics Engineering Technology (EET) program is designed to meet the program educational objectives and to achieve the student learning outcomes as required by ABET. It should be noted that the program also teaches a number of support courses for the Manufacturing and Mechanical Engineering Technology programs. The program emphasizes three subject areas:

- Industrial automation
- Digital systems and Microcontrollers
- Communication systems and Signal processing.

The Electronics Engineering Technology program offers an Associate of Applied Science (AAS) and a Bachelor of Science (BS) degree. The program also offers a minor in Electronics Engineering Technology. The program educational objectives for the EET program are:

- 1. Graduates (AAS and BS) will receive an applications-oriented education and upon completion will be prepared to make significant contributions in technology-based career fields.
- 2. Graduates (BS) will demonstrate relevant technical capabilities in the design, application, installation, and implementation of electrical and electronic systems. AAS graduates will demonstrate requisite technical skills for building, testing, operating, and maintaining electrical and electronic systems.
- 3. Graduates will demonstrate their knowledge using oral, written, and graphical communications and have a desire for lifelong learning, keeping current within the discipline and be responsible citizens able to contribute as active members of society.
- 4. Graduates will have the abilities and skills to work in a variety of different industries and businesses including manufacturing, mechanical, electrical, architectural, and government.
- 5. Graduates will demonstrate a commitment to quality, ethics, service and continuous improvement in personal and professional situations.

Student Learning Outcomes and Assessment:

The student learning outcomes for the EET program are for students to:

1. Demonstrate relevant technical capabilities in the design application, installation, and implementation of electrical and electronic systems. Three emphasis areas in the program curriculum include industrial automation, digital systems, communications and signal processing.

- 2. Apply current knowledge of technologies of industrial automation, digital systems and microcontrollers, communications and signal processing to develop practical solutions for engineering technology problems.
- 3. Conduct, analyze and interpret experiments and apply experimental results to improve processes.
- 4. Apply creativity to design of electrical and electronic systems.
- 5. Function effectively on teams.
- 6. Demonstrate creativity in designing solutions to problems through analysis and experimentation leading to modification of systems, components and processes.
- 7. Communicate effectively in written, oral, and graphical forms.
- 8. Recognize the need for and possess the ability to pursue lifelong learning.
- 9. Understand professional, ethical and social responsibilities.
- 10. Respect diversity and recognize professional, societal and global issues.
- 11. Have a commitment to quality, timeliness and continuous improvement.

Academic Advising:

Each faculty is required to maintain a minimum of 5 office hours per week for student consultation and advising. Students are strongly urged to meet with their advisor once a year to ensure they are on track towards graduation. Advising records are kept for each student in the major and are maintained using the Cattracks Degree Evaluation and Planning Tool. The College has an advisor that handles all questions on General Education requirements.

The University maintains a Career Services department. Furthermore, a full-time representative from Career Services is assigned to the College. This person is available for one-on-one consultation with students and is also available to visit classes to talk about job applications, resume writing and senior files. Job opportunities are posted on a website entitled CareerConnect. Students are also notified about job postings through email.

Faculty:

The following faculty members teach full-time in the EET program:

Ms. Julanne McCulley is an associate professor and the Electronics Engineering Technology program coordinator. Ms. McCulley teaches the following courses:

EET 1140	DC Circuits
EET 2170	Industrial Controls
EET 3040	Instrumentation and Measurements
EET 3090	Project Management
EET 4800	Individual Studies
EET 4890	Cooperative Work Experience
MFET 4850	Integration of Automation

Ms. McCulley obtained a Master's Degree in Engineering from Arizona State University and a B.S.E.E.T. degree from Weber State University. Ms. McCulley serves as the faculty advisor for the Weber State University section of the Society of Women Engineers and is a member of the IEEE and the American Society for Engineering Education (ASEE). Ms. McCulley has taught university-level mathematics and engineering technology at Weber State University for eleven years. She has over fifteen years of industrial experience as a project engineer specializing in automation and industrial controls engineering.

Dr. Fred Chiou is an assistant professor and teaches the following courses:

EET 1130	Digital Systems
EET 2150	Embedded Controllers
EET 2160	Troubleshooting
EET 3010	Circuit Analysis
EET 3060	Real-Time Embedded Controllers
EET 4890	Alternative Energy Systems
EET 4900	Solar PV Systems

Dr. Chiou obtained a Master of Science and a Ph.D. degree, both in Electrical Engineering, from Georgia Tech. Dr. Chiou has taught engineering courses at Southern Polytechnic State University for three years before accepting a faculty position at Weber State University. In addition to his academic experience, Dr. Chiou has accumulated over twenty years of industrial work experience in the fields of microprocessor-based digital circuit design, video/image processing, telecommunications and LED lighting.

Dr. Christian Hearn is an assistant professor and teaches the following courses:

EET 1110	Basic Electronics
EET 2010	AC Circuits
EET 2110	Semiconductor Circuits
EET 2140	Communication Systems I
EET 3140	Communication Systems II
EET 4030	Controls and Systems
EET 4040	Signals and Systems
EET 4090	System Design and Integration

During his Ph.D. plan-of-study prior to joining the faculty at WSU, Dr. Hearn worked as research engineer in the field of antenna system design for Applied EM Inc. Previously, Dr. Hearn taught as an instructor for three years in the Electrical Engineering Technology department at Old Dominion University (Norfolk, VA). He was initially trained as a mechanical engineer and employed by the Naval Surface Warfare Center UERD for seven years. He obtained a Bachelor of Science in Mechanical Engineering from Virginia Tech, a Bachelor of Science in Electrical Engineering Technology from Old Dominion University, a Master of Science and a Ph.D. in Electrical Engineering – both from Virginia Tech. He is registered as a professional engineer (mechanical) in the state of Virginia.

Program Support:

The program receives adequate support for the Department, the College, and to a lesser extent, the University. One of the issues discussed in more detail in the self-study is the lack of full-time faculty for the program which has caused the regular faculty to teach a considerable amount of overload. There is adequate support staff and the facilities for the program are also adequate.

Relations with External Community:

The program has strong relationship with the external community, particularly with those companies that hire their graduates. They also have an active Industrial Advisory Committee consisting of ____ members that provides guidance to the program regarding the curriculum as well as providing monetary support.

Student, Faculty, Contract/Adjunct Faculty and Staff Statistics:

For the 2013-14 academic year there were 106 declared majors in the EET program. There are three full-time faculty and the program also uses three adjunct faculty on an as needed basis. The support staff consists of one and a half technicians and a secretary with a student aide that the program shares with the Department.

Results of Previous Program Reviews:

Information regarding the results of previous program reviews was not available.

Information Regarding Current Review Team Members:

The (suggested) review team members are:

Physics Department - WSU
MFET - WSU
Gardner Engineering
Hill AFB