

# Assessment Plan

## Western Michigan University

### Electrical & Computer Engineering

**Mission Statement:** The mission of the Electrical and Computer Engineering Department is to provide challenging undergraduate and graduate programs in electrical and computer engineering that are recognized for excellence in education and research. Strong ties with industry are encouraged.

**Vision Statement:** Educating for life-long careers in industry and academia.

#### Outcome: UG Assessment

To be successfully evaluating our programs to met the needs of the students, ABET, univeristy, faculty alumni, employers and staff of the ECE Department

**Track:** BSE Computer  
BSE Electrical

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Changes & Actions			Yes

#### Outcome: CPE Learning Outcome A

An ability to apply knowledge of mathematics, science and engineering

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Assessment from course reports <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome	Years 1 and 4 in six year cycle (05/06 & 08/09)	Yes
FE Exams <b>Assessment Method Category:</b> Exam-Standardized	50% pass rate of students taking exam	evaluated at same time as course reports	Yes
Capstone Design Course questions 4, 5, 6, 7, 8 and 16 <b>Assessment Method Category:</b> Capstone	Must achieve a 6 or better on a 10 scale for the above questions to support learning outcome A	every semester data collected, EDAC evaluate accumulated data on 3 year cycle	Yes
Senior Surveys <b>Assessment Method Category:</b> Survey-Student	3.0 or above on students self assessment of attainment of outcome A	survey distributed every semester, EDAC to review accumulated dated per assessment schedule every 3 years	Yes

#### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3500 - ECE 3500-Digital Electronics

- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3550 - ECE 3550-Digital Design
- \* 3570 - ECE 3570-Computer Architecture
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

### Outcome: CPE Learning Outcome B

An ability to design and conduct experiments, as well as to analyze and interpret data

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures from course reports <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct measures covering 3 year evaluation period should pass to support achievement of this outcome	Years 2 and 5 in six year cycle (06/07 & 09/10)	Yes
FE Exam <b>Assessment Method Category:</b> Exam-Standardized	50% of student taking the exam should pass	evaluate at same time as direct measures summarized data Department to collect and summarize data	Yes
Capstone Design Course questions 6, 7, 12, 16 <b>Assessment Method Category:</b> Capstone	Must achieve a 6 or better average on a 1-10 scale for the above questions to support learning outcome B	every semester data is collect EDAC evaluates accumulated data on the 3 year cycle for Outcome B	Yes
Senior Surveys <b>Assessment Method Category:</b> Survey-Student	3.0 or above on students self evaluation of attainment of outcome B	Survey distributed every semester in ECE 4820, Department to accumulate data. EDAC to review and accumulated data on 3 year assessment cycle for outcome B	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3500 - ECE 3500-Digital Electronics
- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3550 - ECE 3550-Digital Design
- \* 3570 - ECE 3570-Computer Architecture

- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I

**Outcome: CPE Learning Outcome C**

An ability to design a system, component, or process to meet desired needs

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct assessment need to pass to claim achievement of Outcome C	Years 3 and 6 of the six year assessment cycle (07/08 & 10/11)	Yes
FE Exams <b>Assessment Method Category:</b> Exam-Standardized	50% pass rate of students taking exam	evalauted at the same as Direct Assessment	Yes
Capstone Design Course questiosns 4, 5, 6, 7, 8, 11, 12 & 16 <b>Assessment Method Category:</b> Capstone	Must achieve a 6 or above average on a 1-10 for the above questions to support achieving outcome A	Every semester data is collected, EDAC evaluates accumulated data on the 3 year cycle.	Yes
Senior Survey <b>Assessment Method Category:</b> Survey-Student	3.0 or above on a students self assement of attainment of outcome C	survey distributed every semester, EDAC to review accumulated data per assessment schedule every 3 years	Yes

**Related Courses**

- \* 3200 - ECE 3200-Electronics II
- \* 3500 - ECE 3500-Digital Electronics
- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3550 - ECE 3550-Digital Design
- \* 3570 - ECE 3570-Computer Architecture
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis

- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2500 - ECE 2500-Digital Logic
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

**Outcome: CPE Learning Outcome D**

An ability to function on multi-disciplinary teams

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct measures covering 3 year evaluation period should pass to support achievement of this outcome	Years 2 and 5 of six year cycle (06/07 & 09/10)	Yes
Capstone evaluation questions 1 & 16 <b>Assessment Method Category:</b> Capstone	Must average a 6 or better on a 1-10 scale for the above questions to support learning outcome D	every semester data is collected, EDAC evaluate accumulate data on the 3 year cycle for outcome D	Yes
Senior Survey <b>Assessment Method Category:</b> Survey-Student	3.0 or above on students self assessment of attainment of outcome D	survey is distributed every semester EDAC to review accumulated data per outcome D assessment cycle every three years	Yes

**Related Courses**

- \* 3200 - ECE 3200-Electronics II
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2500 - ECE 2500-Digital Logic

**Outcome: CPE Learning Outcome E**

An ability to identify, formulate and solve engineering problems

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome.	Years 2 and 5 of the six year cycle (06/07 & 09/10)	Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
FE Exams	50% of cpe students taking this exam should pass to support achievement of outcome E	Outcome E data is evaluated in years 2 and 5.	Yes
Capstone Evaluation questions 5, 6, 7, 8, 11, 12 and 16	must achieve a 6 or better average on the above questions to support achievement of outcome E	every semester data is collect, EDAC review when Outcome E is evaluated	Yes
Senior Surveys	3.0 or above on students self assessment of attainment of out E	survey distributed every semester EDAC to evaluate results on Outcome E schedule	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3500 - ECE 3500-Digital Electronics
- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3550 - ECE 3550-Digital Design
- \* 3570 - ECE 3570-Computer Architecture
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

### Outcome: CPE Learning Outcome F

An ability to understand professional and ethical responsibility

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of the direct measure covering the 3 year evaluation period should pass to support achievement of outcome F	Years 2 and 5 of the six year cycle (06/07 & 09/10)	Yes
FE Exam	50% of EE student taking this exam need to pass to consider this support of attaining outcome F	evaluated on the same schedule as direct measures for outcome F	Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Capstone Evaluation questions # 3, 8, 15 & 16	must achieve a 6 or better average on responses to the above questions to support learning outcome F	every semester data is collected EDAC to evaluate data on outcome F schedule	Yes
Senior Survey	3.0 or above average on students self assesemnt of attainment of outcome F	data collected every semester EDAC to review per assessment schedule for outcome F	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3550 - ECE 3550-Digital Design
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2210 - ECE 2210-Electronics I

### Outcome: CPE Learning Outcome G

An ability to communicate effectively

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of the direct measures covering the 3 year evaluation should pass to support achievement of learning outcome G	Years 2 and 5 in the six year assessment cycle (06/07 & 09/10)	Yes
Other Courses	75% of direct measures used in IME 1020 and IME 3100	Evaluate on the same cycle as the departments direct measures	Yes
Capstone Course Evaluation questions 1, 2, 4, 9, 10, 11, 13, 14 and 16.	must achieve a 6 or higher average on responses for the above listed question	data is collected every semester evaluated with the direct measure of outcome G	Yes
Senior Surveys	Average score of 3.0 or above for students self assesement of attainment of outcome G	survey distributed every semester EDAC to review accumulated data per assessment schedule every 3 years	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3500 - ECE 3500-Digital Electronics
- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3550 - ECE 3550-Digital Design

- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 3100 - Network Analysis

### Outcome: CPE Learning Outcome H

The broad education necessary to understand the impact of engineering solutions in a global and societal context.

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering the 3 year evaluation period should pass to support achievement of this outcome	Year 3 and 6 of the six year assessment cycle	Yes
Other Course	75% of IME 3100 assessment of outcome H	Evaluated in year 3 and 6	Yes
Capstone Evaluation questions #4 & 16	an average of 6 or better	every semester data is collected, EDAC will evaluate in year 3 and 6.	Yes
Senior Survey	3.0 or above on students self assessment of attainment of outcome H	every semester the survey is given, department to accumulate data, EDAC to evaluate on outcome H schedule	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3570 - ECE 3570-Computer Architecture
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I

### Outcome: CPE Learning Outcome I

A recognition of the need for, and an ability to engage in life-long learning.

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering the 3 year evaluation period should pass to support achievement of this outcome	Year 1 and 4 of the six year cycle (05/06 & 08/09)	Yes
Capstone Evaluation questions 15 & 16	must achieve a 6 or better average on related questions to support learning outcome I	survey is distributed every semester evaluated on the direct measure schedule by EDAC	Yes
Senior Survey	3 or above average for the students self assessment of attaining outcome I	survey distributed every semester evaluated and reviewed with direct measures for outcome I	Yes

### Related Courses

- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I

### Outcome: CPE Learning Outcome J

A knowledge of contemporary issues

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome	Year 3 and 6 of the six year cycle (07/08 & 10/11)	Yes
Capstone Evaluation questions # 4, 15 & 16	must achieve a 6 or better average for the above questions to support achievement of outcome J	data collected each semester evaluated on the schedule for outcome J	Yes
Senior Surveys	3.0 or above on students self assessment of attainment of outcome J	data collected each semester with evaluation scheduled per assessment plan for outcome J	Yes

### Related Courses

- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3550 - ECE 3550-Digital Design
- \* 3570 - ECE 3570-Computer Architecture
- \* 3710 - ECE 3710-Linear Systems

- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2500 - ECE 2500-Digital Logic

### Outcome: CPE Learning Outcome K

An ability to use techniques, skills, and modern engineering tools necessary for engineering practice and/or further graduate study.

**Track:** BSE Computer

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering the 3 year evaluation period should pass to support achievement of this outcome.	Year 3 and 6 of the six year cycle (07/08 & 10/11)	Yes
Capstone Evaluation questions # 6 & 16	6 or better average in selected questions to support learning outcome K	data collected every semester evaluated every 3 years based on the assessment plan	Yes
Senior Surveys	3.0 average on the students self assessment of achievement of outcome K	data collected every semester evaluated based on the assessment plan every 3 years	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3500 - ECE 3500-Digital Electronics
- \* 3510 - ECE 3510-Engineering of Real Time Systems
- \* 3550 - ECE 3550-Digital Design
- \* 3570 - ECE 3570-Computer Architecture
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

### Outcome: Learning Outcome A

An ability to apply knowledge of mathematics, science and engineering

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Assessment from course reports <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome	Years 1 and 4 in six year cycle (05/06 & 08/09)	Yes
FE Exams <b>Assessment Method Category:</b> Exam-Standardized	50% pass rate of students taking exam	evaluated at same time as course reports	Yes
Capstone Design Course questions 4, 5, 6, 7, 8 and 16 <b>Assessment Method Category:</b> Capstone	Must achieve a 6 or better on a 10 scale for the above questions to support learning outcome A	every semester data collected, EDAC evaluate accumulated data on 3 year cycle	Yes
Senior Surveys <b>Assessment Method Category:</b> Survey-Student	3.0 or above on students self assessment of attainment of outcome A	survey distributed every semester, EDAC to review accumulated dated per assessment schedule every 3 years	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3300 - ECE 3300-Electrical Machinery
- \* 3610 - ECE 3610-Electromagnetic Fields
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4200 - ECE 4200-Power Electronics
- \* 4300 - ECE 4300-Electrical Power Systems
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4600 - ECE 4600-Communication Systems
- \* 4700 - ECE 4700-Feedback Systems
- \* 4710 - ECE 4710-Motion and Controls (joint w/me)
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

### Outcome: Learning Outcome B

An ability to design and conduct experiments, a well as to analyze and interpret data

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures from course reports <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct measures covering 3 year evaluation period should pass to support achievement of this outcome	Years 2 and 5 in six year cycle (06/07 & 09/10)	Yes
FE Exam <b>Assessment Method Category:</b> Exam-Standardized	50% of student taking the exam should pass	evaluate at same time as direct measures summarized data Department to collect and summarize data	Yes
Capstone Design Course questions 6, 7, 12, 16 <b>Assessment Method Category:</b> Capstone	Must achieve a 6 or better average on a 1-10 scale for the above questions to support learning outcome B	every semester data is collect EDAC evaluates accumulated data on the 3 year cycle for Outcome B	Yes
Senior Surveys <b>Assessment Method Category:</b> Survey-Student	3.0 or above on students self evaluation of attainment of outcome B	Survey distributed every semester in ECE 4820, Department to accumulate data. EDAC to review and accumulated data on 3 year assessment cycle for outcome B	Yes

#### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3300 - ECE 3300-Electrical Machinery
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4200 - ECE 4200-Power Electronics
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4600 - ECE 4600-Communication Systems
- \* 4700 - ECE 4700-Feedback Systems
- \* 4710 - ECE 4710-Motion and Controls (joint w/me)
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I

#### Outcome: Learning Outcome C

An ability to design a system, component, or process to meet desired needs

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct assessment need to pass to claim achievement of Outcome C	Years 3 and 6 of the six year assessment cycle (07/08 & 10/11)	Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
FE Exams <b>Assessment Method Category:</b> Exam-Standardized	50% pass rate of students taking exam	evaluated at the same as Direct Assessment	Yes
Capstone Design Course questions 4, 5, 6, 7, 8, 11, 12 & 16 <b>Assessment Method Category:</b> Capstone	Must achieve a 6 or above average on a 1-10 for the above questions to support achieving outcome A	Every semester data is collected, EDAC evaluates accumulated data on the 3 year cycle.	Yes
Senior Survey <b>Assessment Method Category:</b> Survey-Student	3.0 or above on a students self assement of attainment of outcome C	survey distributed every semester, EDAC to review accumulated data per assessment schedule every 3 years	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3300 - ECE 3300-Electrical Machinery
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4200 - ECE 4200-Power Electronics
- \* 4300 - ECE 4300-Electrical Power Systems
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4600 - ECE 4600-Communication Systems
- \* 4700 - ECE 4700-Feedback Systems
- \* 4710 - ECE 4710-Motion and Controls (joint w/me)
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2500 - ECE 2500-Digital Logic
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

### Outcome: Learning Outcome D

An ability to function on multi-disciplinary teams

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures <b>Assessment Method Category:</b> Course-Embedded Measure	75% of direct measures covering 3 year evaluation period should pass to support achievement of this outcome	Years 2 and 5 of six year cycle (06/07 & 09/10)	Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Capstone evaluation questions 1 & 16 <b>Assessment Method Category:</b> Capstone	Must average a 6 or better on a 1-10 scale for the above questions to support learning outcome D	every semester data is collected, EDAC evaluate accumulate data on the 3 year cycle for outcome D	Yes
Senior Survey <b>Assessment Method Category:</b> Survey-Student	3.0 or above on students self assessment of attainment of outcome D	survey is distributed every semester EDAC to review accumulated data per outcome D assessment cycle every three years	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 4200 - ECE 4200-Power Electronics
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4600 - ECE 4600-Communication Systems
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2500 - ECE 2500-Digital Logic

### Outcome: Learning Outcome E

An ability to identify, formulate and solve engineering problems

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome.	Years 2 and 5 of the six year cycle (06/07 & 09/10)	Yes
FE Exams	50% of ee students taking this exam should pass to support achievement of outcome E	Outcome E data is evaluated in years 2 and 5.	Yes
Capstone Evaluation questions 5, 6, 7, 8, 11, 12 and 16	must achieve a 6 or better average on the above questions to support achievement of outcome E	every semester data is collect, EDAC review when Outcome E is evaluated	Yes
Senior Surveys	3.0 or above on students self assessment of attainment of out E	survey distributed every semester EDAC to evaluate results on Outcome E schedule	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II

- \* 3300 - ECE 3300-Electrical Machinery
- \* 3610 - ECE 3610-Electromagnetic Fields
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4200 - ECE 4200-Power Electronics
- \* 4300 - ECE 4300-Electrical Power Systems
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4600 - ECE 4600-Communication Systems
- \* 4700 - ECE 4700-Feedback Systems
- \* 4710 - ECE 4710-Motion and Controls (joint w/me)
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2110 - ECE 2110-Machines and Electronic Circuits
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

**Outcome: Learning outcome F**

An ability to understand professional and ethical responsibility

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of the direct measure covering the 3 year evaluation period should pass to support achievement of outcome F	Years 2 and 5 of the six year cycle (06/07 & 09/10)	Yes
FE Exam	50% of EE student taking this exam need to pass to consider this support of attaining outcome F	evaluated on the same schedule as direct measures for outcome F	Yes
Capstone Evaluation questions # 3, 8, 15 & 16	must achieve a 6 or better average on responses to the above questions to support learning outcome F	every semester data is collected EDAC to evaluate data on outcome F schedule	Yes
Senior Survey	3.0 or above average on students self assessemnt of attainment of outcome F	data collected every semester EDAC to review per assessment schedule for outcome F	Yes

**Related Courses**

- \* 3200 - ECE 3200-Electronics II
- \* 4600 - ECE 4600-Communication Systems
- \* 4810 - ECE 4810-Senior Design I

- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2210 - ECE 2210-Electronics I

**Outcome: Learning outcome G**

An ability to communicate effectively

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of the direct measures covering the 3 year evaluation should pass to support achievement of learning outcome G	Years 2 and 5 in the six year assessment cycle (06/07 & 09/10)	Yes
Other Courses	75% of direct measures used in IME 1020 and IME 3100	Evaluate on the same cycle as the departments direct measures	Yes
Capstone Course Evaluation questions 1, 2, 4, 9, 10, 11, 13, 14 and 16.	must achieve a 6 or higher average on responses for the above listed question	data is collected every semester evaluated with the direct measure of outcome G	Yes
Senior Surveys	Average score of 3.0 or above for students self assesement of attainment of outcome G	survey distributed every semester EDAC to review accumulated data per assessment schedule every 3 years	Yes

**Related Courses**

- \* 3200 - ECE 3200-Electronics II
- \* 3300 - ECE 3300-Electrical Machinery
- \* 3610 - ECE 3610-Electromagnetic Fields
- \* 4200 - ECE 4200-Power Electronics
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4600 - ECE 4600-Communication Systems
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 3100 - Network Analysis

**Outcome: Learning outcome H**

The broad education necessary to understand the impact of engineering solutions in a global and societal context.

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4)

as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering the 3 year evaluation period should pass to support achievement of this outcome	Year 3 and 6 of the six year assessment cycle	Yes
Other Course	75% of IME 3100 assessment of outcome H	Evaluated in year 3 and 6	Yes
Capstone Evaluation questions #4 & 16	an average of 6 or better	every semester data is collected, EDAC will evaluate in year 3 and 6.	Yes
Senior Survey	3.0 or above on students self assessment of attainment of outcome H	every semester the survey is given, department to accumulate data, EDAC to evaluate on outcome H schedule	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3610 - ECE 3610-Electromagnetic Fields
- \* 4300 - ECE 4300-Electrical Power Systems
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I

### Outcome: Learning outcome I

A recognition of the need for, and an ability to engage in life-long learning.

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering the 3 year evaluation period should pass to support achievement of this outcome	Year 1 and 4 of the six year cycle (05/06 & 08/09)	Yes
Capstone Evaluation questions 15 & 16	must achieve a 6 or better average on related questions to support learning outcome I	survey is distributed every semester evaluated on the direct measure schedule by EDAC	Yes
Senior Survey	3 or above average for the students self assessment of attaining outcome I	survey distributed every semester evaluated and reviewed with direct measures for outcome I	Yes

## Related Courses

- \* 3610 - ECE 3610-Electromagnetic Fields
- \* 4200 - ECE 4200-Power Electronics
- \* 4300 - ECE 4300-Electrical Power Systems
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4710 - ECE 4710-Motion and Controls (joint w/me)
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I

## Outcome: Learning outcome J

A knowledge of contemporary issues

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome	Year 3 and 6 of the six year cycle (07/08 & 10/11)	Yes
Capstone Evaluation questions # 4, 15 & 16	must achieve a 6 or better average for the above questions to support achievement of outcome J	data collected each semester evaluated on the schedule for outcome J	Yes
Senior Surveys	3.0 or above on students self assessment of attainment of outcome J	data collected each semester with evaluation scheduled per assessment plan for outcome J	Yes

## Related Courses

- \* 3610 - ECE 3610-Electromagnetic Fields
- \* 3710 - ECE 3710-Linear Systems
- \* 4300 - ECE 4300-Electrical Power Systems
- \* 4600 - ECE 4600-Communication Systems
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II

## Outcome: Learning outcome K

An ability to use techniques, skills, and modern engineering tools necessary for engineering practice and/or further graduate study.

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** For the outcomes loop: (1) course and program level modifications will be defined and instituted by those able and responsible for performing the improvement in terms of (2) course, program or institutional changes. Once an improvement has been defined and incorporated, (3) the students will experience the change and (4) as graduates demonstrate a greater level of attainment of program objectives.

Means of Assessment
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Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Direct Measures	75% of direct measures covering the 3 year evaluation period should pass to support achievement of this outcome.	Year 3 and 6 of the six year cycle (07/08 & 10/11)	Yes
Capstone Evaluation questions # 6 & 16	6 or better average in selected questions to support learning outcome K	data collected every semester evaluated every 3 years based on the assessment plan	Yes
Senior Surveys	3.0 average on the students self assessment of achievement of outcome K	data collected every semester evaluated based on the assessment plan every 3 years	Yes

### Related Courses

- \* 3200 - ECE 3200-Electronics II
- \* 3300 - ECE 3300-Electrical Machinery
- \* 3610 - ECE 3610-Electromagnetic Fields
- \* 3710 - ECE 3710-Linear Systems
- \* 3800 - ECE 3800-Probabilistic Methods of Signal and System Analysis
- \* 4200 - ECE 4200-Power Electronics
- \* 4300 - ECE 4300-Electrical Power Systems
- \* 4510 - ECE 4510-Microcontroller Applications
- \* 4550 - ECE 4550-Digital Signal Processing
- \* 4600 - ECE 4600-Communication Systems
- \* 4700 - ECE 4700-Feedback Systems
- \* 4710 - ECE 4710-Motion and Controls (joint w/me)
- \* 4810 - ECE 4810-Senior Design I
- \* 4820 - ECE 4820-Senior Design II
- \* ECE 2100 - ECE 2100-Circuit Analysis
- \* ECE 2210 - ECE 2210-Electronics I
- \* ECE 2510 - ECE 2510-Introduction to Microprocessors I
- \* ECE 3100 - Network Analysis

### Outcome: Objective - Breadth

Graduates utilize general and discipline-specific skills and knowledge acquired as students in our program to be successful in diverse professional fields. Success in these fields necessitates that our graduates be technically competent, exhibit problem-solving skills, engage in life-long learning, and be effective team members.

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** The objectives loop of the new process methodology defines specific tasks and activities to: (1) perform program objective synthesis, (2) determine measurement vehicles and performance metrics for program objectives, (3) receive alumni and employer input through assessment vehicles of graduate accomplishments, (4) evaluate the assessment results with respect to the desired performance levels, and (5) provide feedback to the program and department so that program improvements may be undertaken to improve on any shortcomings.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Employer Survey (Questions 3, 6, 8, 9, 10, 11, 14) <b>Assessment Method Category:</b> Survey-Employer	72% of the questions meet or exceed 50/50 performance metric for each questions	Collecting every three years in Fall and analysing every three years in spring starting 06/07	Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Alumni Survey (Questions 3, 6, 8, 9, 10, 11, 14) <b>Assessment Method Category:</b> Survey-Alumni	72% of the questions meet or exceed the 50/50 performance metric established	Collecting every three years in Fall and analysing every three years in the Spring starting in 06/07	Yes
Employer Survey (Overall how do WMU Graduates compare to graduates from other institutions in work performance) <b>Assessment Method Category:</b> Survey-Employer	75% must rate our graduates to be on par or exceed other graduates.	Collecting every three years in Fall and analysing every three years in spring starting 06/07	Yes

### Outcome: Objective - Depth

Graduates demonstrate an understanding of the fundamental knowledge prerequisite for the practice of, or for advanced study in, electrical and/or computer engineering including its scientific principles, rigorous analysis and creative design.

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** The objectives loop of the new process methodology defines specific tasks and activities to: (1) perform program objective synthesis, (2) determine measurement vehicles and performance metrics for program objectives, (3) receive alumni and employer input through assessment vehicles of graduate accomplishments, (4) evaluate the assessment results with respect to the desired performance levels, and (5) provide feedback to the program and department so that program improvements may be undertaken to improve on any shortcomings.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Alumni Survey Questions (9, 10, 11, 12, 13, 18) <b>Assessment Method Category:</b> Survey-Alumni	71% of the questions must meet or exceed the 50/50 metric	Collecting every three years in Fall and analysing every Spring at three years starting in 2006	Yes
Employer Survey Questions (9, 10, 11, 12, 13, 18) <b>Assessment Method Category:</b> Survey-Employer	71% of the questions must meet or exceed the 50/50 performance metric established	Every 3 years data will be collected and analysed starting in 2006.	Yes
Employer Survey Questions "Overall, how do WMU Graduates compare to graduates from other institutions in work performance?" <b>Assessment Method Category:</b> Survey-Employer	At least 75% of responses need to rank our graduates as on par or exceeding other graduates.	Every 3 years data will be collected and analysed starting in 06/07.	Yes

### Outcome: Objective - Professionalism

Graduates exhibit professional ethics, are effective team members, and demonstrate communication and leadership skills as contributing members within their professional organizations.

**Track:** BSE Electrical

**Outcome Status:** Active

**Assessment Evaluation:** The objectives loop of the new process methodology defines specific tasks and activities to: (1) perform program objective synthesis, (2) determine measurement vehicles and performance metrics for program objectives, (3) receive alumni and employer input through assessment vehicles of graduate accomplishments, (4) evaluate the assessment results with respect to the desired performance levels, and (5) provide feedback to the program and department so that program improvements may be undertaken to improve on any shortcomings.

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Alumni Survey (Questions 1, 2, 3, 4, 5, 7, 8, 15, 16, 17) <b>Assessment Method Category:</b>	72% of the questions must meet or exceed the 50/50 performance metric	Collecting every three years in Fall and analysing every three years in Spring starting in 06/07.	Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Survey-Alumni			
Employer Survey (Questions, 1, 2, 3, 4, 5, 7, 8, 15, 16, 17) <b>Assessment Method Category:</b> Survey-Employer	72% of the questions must meet or exceed the 50/50 performance metric	Collecting every three years in the Fall and analysing every three years in the Spring starting in 06/07.	Yes
Employer Survey Questions - "Overall, how do WMU Graduates compare to graduates from other institutions in work performance?" <b>Assessment Method Category:</b> Survey-Employer	75% of the responses must rank our graduates as meeting or exceeding other graduates.	Every 3 years surveys will be collected and data evaluated.	Yes
Alumni Survey (Questions 1, 2, 3, 4, 5, 7, 8, 15, 16, 17)	72% of the questions must meet or exceed the 50/50 performance metric	Collecting every three years in Fall and analysing every three years in Spring starting in 06/07.	Yes
Employer Survey (Questions, 1, 2, 3, 4, 5, 7, 8, 15, 16, 17)	72% of the questions must meet or exceed the 50/50 performance metric	Collecting every three years in the Fall and analysing every three years in the Spring starting in 06/07.	Yes
Employer Survey Questions - "Overall, how do WMU Graduates compare to graduates from other institutions in work performance?"	75% of the responses must rank our graduates as meeting or exceeding other graduates.	Every 3 years surveys will be collected and data evaluated.	Yes

### Outcome: CPE-BREADTH OBJECTIVE

Graduates utilize general and discipline-specific skills and knowledge acquired as students in our program to be successful in diverse professional fields. Success in these fields necessitates that our graduates be technically competent, exhibit problem-solving skills, engage in life-long learning, and be effective team members.

**Track:** BSE Computer

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Employer Survey (Questions 3, 6, 8, 9, 10, 11, 14) <b>Assessment Method Category:</b> Survey-Employer	72% of the questions meet or exceed 50/50 performance metric for each questions	Collecting every three years in Fall and analysing every three years in spring starting 06/07	Yes
Alumni Survey (Questions 3, 6, 8, 9, 10, 11, 14) <b>Assessment Method Category:</b> Survey-Alumni	72% of the questions meet or exceed the 50/50 performance metric established	Collecting every three years in Fall and analysing every three years in the Spring starting in 06/07	Yes
Employer Survey (Overall how do WMU Graduates compare to graduates from other institutions in work performance?) <b>Assessment Method Category:</b> Survey-Employer	75% must rate our graduates to be on par or exceed other graduates.	Collecting every three years in Fall and analysing every three years in spring starting 06/07	Yes

### Outcome: CPE DEPTH OBJECTIVE

Graduates demonstrate an understanding of the fundamental knowledge prerequisite for the practice of, or for advanced study in, electrical and/or computer engineering including its scientific principles, rigorous analysis and creative design.

**Track:** BSE Computer

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Alumni Survey Questions (9, 10, 11, 12, 13, 18) <b>Assessment Method Category:</b> Survey-Alumni	71% of the questions must meet or exceed the 50/50 metric	Collecting every three years in Fall and analysing every Spring at three years starting in 2006	Yes
Employer Survey Questions (9, 10, 11, 12, 13, 18) <b>Assessment Method Category:</b> Survey-Employer	71% of the questions must meet or exceed the 50/50 performance metric established	Every 3 years data will be collected and analysed starting in 2006.	Yes
Employer Survey Questions "Overall, how do WMU Graduates compare to graduates from other institutions in work performance?" <b>Assessment Method Category:</b> Survey-Employer	At least 75% of responses need to rank our graduates as on par or exceeding other graduates.	Every 3 years data will be collected and analysed starting in 06/07.	Yes

### Outcome: CPE PROFESSIONALISM OBJECTIVE

Graduates exhibit professional ethics, are effective team members, and demonstrate communication and leadership skills as contributing members within their professional organizations.

**Track:** BSE Computer

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
Alumni Survey (Questions 1, 2, 3, 4, 5, 7, 8, 15, 16, 17) <b>Assessment Method Category:</b> Survey-Alumni	72% of the questions must meet or exceed the 50/50 performance metric	Collecting every three years in Fall and analysing every three years in Spring starting in 06/07.	Yes
Employer Survey (Questions, 1, 2, 3, 4, 5, 7, 8, 15, 16, 17) <b>Assessment Method Category:</b> Survey-Employer	72% of the questions must meet or exceed the 50/50 performance metric	Collecting every three years in the Fall and analysing every three years in the Spring starting in 06/07.	Yes
Employer Survey Questions - "Overall, how do WMU Graduates compare to graduates from other institutions in work performance?" <b>Assessment Method Category:</b> Survey-Employer	75% of the responses must rank our graduates as meeting or exceeding other graduates.	Every 3 years surveys will be collected and data evaluated.	Yes

### Outcome: Graduate Assessment

To be successful in reviewing our programs to meet the needs of the students, employers, university, faculty and staff of the ECE Department

**Track:** MSE Computer  
MSE Electrical  
PhD Elec/Comp Engrg

**Outcome Status:** Active

### Outcome: i. ECE Master level assessment

apply scientific and engineering principles to identify, formulate, and solve complex problems;

**Track:** MSE Computer  
MSE Electrical

**Start Date:** 10/28/2008

**Outcome Status:** Active

Means of Assessment
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Means of Assessment			
Assessment Method	Criterion	Schedule	Active
<p>All ECE graduate level courses are assigned to one outcome, the department will maintain the agreed upon assignments. Any new graduate level courses will need to be assigned to one of the outcomes, faculty developing the course should denote which outcome they feel best aligns with the course.</p> <p>An assessment instrument or the course grade will be chosen by the instructor to measure whether the students have achieved the assigned outcome by the following metric.</p> <p><b>Assessment Method Category:</b> Course Grade</p> <p><b>Related Documents:</b> <a href="#">ECE Depart Obj-Outcome MASTER Matrix (version 1).xls</a></p>	<p>90% of the students pass the assessment of the course at the 5000 level.</p> <p>75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome</p>	<p>every 3 years, data will be summarized and records each semester from faculty course reports</p>	Yes
<p>All ECE graduate level courses are assigned to one outcome, the department will maintain the agreed upon assignments. Any new graduate level courses will need to be assigned to one of the outcomes, faculty developing the course should denote which outcome they feel best aligns with the course.</p> <p>An assessment instrument or the course grade will be chosen by the instructor to measure whether the students have achieved the assigned outcome by the following metric.</p> <p><b>Assessment Method Category:</b> Course Grade</p>	<p>95% of the students pass the assessment of the course at the 6000 level. 75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome</p>	<p>Data will be summarized every semester with Assessment Committee reviewing every three years.</p>	Yes

### Related Courses

- \* 5200 - ECE 5200-Power Electronics & Motors
- \* 5520 - ECE 5520-Switching and Finite Automata Theory
- \* 5550 - ECE 5550-Advanced Digital Signal Processing
- \* 5600 - ECE 5600-Time-varying Fields
- \* 5700 - ECE 5700-Digital Control Systems
- \* 6360 - Applied Optics and Optical System Design
- \* 6400 - Electronic Instruments
- \* 6410 - Electronic Instrumentation II
- \* 6640 - Digital Communications
- \* 6700 - Modern Control Theory
- \* 6710 - Optimal Control Systems
- \* 6950 - Topics in ECE - Modeling & Simulation 2

### Outcome: ii. ECE Master Level Assessment

utilize modern methodologies and tools in the problem solving process;

**Track:** MSE Computer  
MSE Electrical

**Start Date:** 10/28/2008

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
<p>All ECE graduate level courses are assigned to one outcome, the department will maintain the agreed upon assignments. Any new graduate level courses will need to be assigned to one of the outcomes, faculty developing the course should denote which outcome they feel best aligns with the course.</p>	<p>90% of the students pass the assessment of the course at the 5000 level. 75% of direct measures covering 3 year evaluation should pass to support</p>	<p>Data will be summarized every semester and provided to Assessment Committee for review and report every 3 years.</p>	Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
achievement of this outcome			
An assessment instrument or the course grade will be chosen by the instructor to measure whether the students have achieved the assigned outcome by the following metric.			
<b>Assessment Method Category:</b> Course Grade			
All ECE graduate level courses are assigned to one outcome, the department will maintain the agreed upon assignments. Any new graduate level courses will need to be assigned to one of the outcomes, faculty developing the course should denote which outcome they feel best aligns with the course.	90% of the students pass the assessment of the course at the 6000 level. 75% of direct measures covering 3 year evaluation should pass to support achievement of this outcome	Data will be summarized every semester and provided to Assessment Committee for review and report every 3 years.	Yes
An assessment instrument or the course grade will be chosen by the instructor to measure whether the students have achieved the assigned outcome by the following metric.			
<b>Assessment Method Category:</b> Course Grade			

**Related Courses**

- \* 5150 - ECE 5150-Real-Time Computing
- \* 5210 - ECE 5210-Surface Mount Technology Design
- \* 5510 - ECE 5510-Application Specific Integrated Circuit Design
- \* 5530 - ECE 5530-Advanced Microcontroller Applications
- \* 5570 - ECE 5570-Design of Reconfigurable Digital Machines
- \* 5850 - ECE 5850-Mechatronics
- \* 5950 - ECE 5950-Intro to Adv Topics - Elec Power Systems
- \* 5950 - ECE 5950-Intro to Micro Electro Mechanical Systems
- \* 6730 - Artificial Neural Networks
- \* 6950 - Topics in ECE -- Mobile Communications

**Outcome: iii. ECE Master Level Assessment**

effectively communicate

**Track:** MSE Computer  
MSE Electrical

**Start Date:** 10/28/2009

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
All ECE graduate level courses are assigned to one outcome, the department will maintain the agreed upon assignments. Any new graduate level courses will need to be assigned to one of the outcomes, faculty developing the course should denote which outcome they feel best aligns with the course.	90% of the students pass the assessment of the course at the 5000 level. 75% of all course assessing Outcome ii must achieve this outcome to indicate achievement of this outcome.	Data will be summarized every semester and provided to Assessment Committee for review and report every 3 years.	Yes
An assessment instrument or the course grade will be chosen by the instructor to measure whether the students have achieved the assigned outcome by the following metric.			
<b>Assessment Method Category:</b> Course Grade			

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
<p>All ECE graduate level courses are assigned to one outcome, the department will maintain the agreed upon assignments. Any new graduate level courses will need to be assigned to one of the outcomes, faculty developing the course should denote which outcome they feel best aligns with the course.</p> <p>An assessment instrument or the course grade will be chosen by the instructor to measure whether the students have achieved the assigned outcome by the following metric.</p> <p><b>Assessment Method Category:</b> Course Grade</p>	90% of the students pass the assessment of the course at the 6000 level. 75% of all course assessing Outcome ii must achieve this outcome to indicate achievement of this outcome.	Data will be summarized every semester and provided to Assessment Committee for review and report every 3 years.	Yes

### Related Courses

- \* 6500 - Advanced Computer Architecture
- \* 6510 - Objects, Architectures, and Parallel Computation
- \* 6550 - Digital Image Processing
- \* 6720 - Fuzzy Control Systems
- \* 6800 - Design Factors for Distributed Systems
- \* 6900 - Computer Engineering Seminar
- \* 6950 - Topics in ECE -- Projects in Virtual Reality
- \* 6950 - Topics in ECE -- Multi Rate Digital Process
- \* 6970 - Problems in Electrical and Computer Engineering

### Outcome: i. ECE PhD Assessment

develop an understanding of current knowledge in an engineering specialty area

**Track:** PhD Elec/Comp Engrg

**Start Date:** 11/10/2008

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
<p>will be assessed using the number of passed qualifying exams divided by the number of exams given over the 3 year period.</p> <p><b>Assessment Method Category:</b> Exam-Comprehensive</p>	Achievement of outcome (i) for the program is met if at least 75% of the taken qualifying exams are passed.	every three years	Yes

### Outcome: ii. ECE PhD Assessment

discover new knowledge and/or develop novel methodologies that lead to an improved ability to identify, formulate and solve complex problems

**Track:** PhD Elec/Comp Engrg

**Start Date:** 11/11/2008

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
<p>will be assessed using an instrument based on accumulated Publication Points acquired by the enrolled Ph.D. students over each 3 year period. The points to be accumulated for each type of publication are shown in the table and in order to qualify, the publication must have a Ph.D. student listed as an author. At the end of the three year period, the assessment measure will be the accumulated Publication Points divided by</p>	Achievement of outcome (ii) for the program is met if the program averages 8.0 publication points per student.		Yes

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
the number students enrolled in the program over the three years, with each student being counted no more than once.			
Type of Publication	Publication Points		
Posters	1		
Non-juried Presentations	2		
Juried Presentation	4		
Non-refereed Journal Publications	4		
Refereed Journal Publications	5		
Dissertation	15		
<b>Assessment Method Category:</b>			
Portfolio Review			

**Outcome: iii. ECE PhD Assessment**

effectively communicate

**Track:** PhD Elec/Comp Engrg

**Start Date:** 11/11/2008

**Outcome Status:** Active

Means of Assessment			
Assessment Method	Criterion	Schedule	Active
will be assessed using the score achieved on question #1 of the instructional evaluation questionnaire: ?Rate the instructor?s overall teaching effectiveness?. For each course or lab taught by a Ph.D. student within the 3 year period, the scores for question #1 will be summed and divided by the number of sections evaluated.	Achievement of outcome (iii) for the program is met if the overall average for the 3 year period is 2.5 or greater.		Yes
<b>Assessment Method Category:</b>			
Field Experience Evaluation			