Indiana University Purdue University Fort Wayne
Assessment Report Template
Department of Electrical and Computer Engineering Technology

Criterion	Y / N	Comments/recommendations
All departments/programs have assessment plans	Y	Current Plan approved Spring 2004. Revised plan to assessment council Spring 2008
Assessment measures are linked to program goals	Y	
Assessment Plan Standards in Paragraph III.B.1. of SD 98-22 have been followed.	Y	
All departments/programs submitted reports	Y	
Departments/programs use assessment for program improvement (please include examples from each program).	Y	See attachment
Departments/programs base recommendations on data	Y	See attachment
Prior year recommendations were implemented	Y	
School* support for assessment requested/needed	N	
School*-level review effective	Y	
University-level support for assessment requested/needed	Y	Dr. Frew provided comments and recommendations on the draft assessment plan
Recommended changes to department/program plans	Y	The department plan is changing to reflect similar assessment methods to the MCET department.
Recommendations to Assessment Council	N	

ECET Assessment Results F06-S07

Syllabi: All syllabi included Course Outcomes that are linked to TAC/ABET (accreditation agency) outcomes. Appendix A contains a sample syllabus.

Assessment Plan: Revision begun with revised assessment plan expected to be sent to the Assessment Council in Spring 08. Appendix B contains two tables from the draft revision of the assessment plan. Data was collected during Spring 07 based on these tables and course outcomes from syllabi.

Data Collection:

Faculty: Faculty in selected courses, per the draft assessment plan were required to fill out an assessment form for each of the TAC/ABET outcomes that applied to the course which they taught which was being assessed. A sample form is at Appendix C. There are 11 TAC/ABET outcomes so faculty filled out this type of form for each of the TAC/ABET outcomes that was related to one of the course outcomes for their course.

Students: Students in the same selected courses were required to fill out an assessment form for the course that assessed the course outcomes on the syllabus. A sample form is at Appendix D for the ECET 302 course.

Exit Surveys: Exit surveys are conducted for the three degree programs and for each of the certificate programs. A sample form for a graduate of the B.S. in EET is shown at Appendix E.

Alumni Survey: An alumni survey is planned for Fall 07

Industrial Advisory Committee (IAC) Meeting: Minutes of the April 20, 07 meeting of the ECET IAC are at Appendix F.

Results of Data Collection:

1. Graduation Surveys
    a. B.S CPET Survey: 4 respondents. Overall average 3.92/5.00. Principal areas students felt required more emphasis: Network Design, Hands on Class/Lab (2) Result was discussion with faculty members.
    b. B.S. EET Survey: 4 respondents. Overall average 4.31/5.00. Principal areas students felt required more emphasis: 2nd Circuit Board class (1), Better room for 491 presentations (1), More LABVIEW (1). Result is discussion with faculty members.
    c. A.S. EET Survey: 7 respondents. Overall average 4.33/5.00. Principal areas students felt required more emphasis: Flow chart course for computer language (1), Order of courses (1), newer equipment (2). Result (but not a direct result) was the acquisition of 21 new color, digital oscilloscopes for ECET/ENGR labs. Old equipment is a longstanding problem in laboratories.
2. Course Outcomes
    a. ECET 146 (Prof Hack):
        i. Student assessment of course outcomes: 7 respondents. Overall average 4.23/5.00. After examining the student assessment of course outcomes, the instructor will revise one of the course outcomes to better reflect what is taught in the course.
        ii. Faculty assessment of course outcomes: The faculty member will reevaluate the choice of design language for this course and assign team leaders for the team project.
    b. ECET 157 (Prof Laverghetta):
        i. Student assessment of course outcomes: 17 respondents. Overall average 4.33/5.00. Did not understand phasors (1)
        ii. Faculty assessment and action: The faculty member will provide additional emphasis on Phasors in this course
    c. CPET 281 (Prof Steffen):

i. Student assessment of course outcomes: 10 respondents. Overall average 3.81/5.00. Need more hands-on (1), disaster recovery (1), installation of network interface card (2), logon scripts (2)
ii. Faculty assessment and action:
    1. The Outcome: “Installing and setting up a network interface card” will be removed from the course since this is done in CPET 181
    2. A Visual Basic scripting exercise will be developed
    3. An experiment will be implemented to set up a switch and a virtual LAN

d. ECET 296 (Prof Goodmann):
    i. Student assessment of course outcomes: 6 respondents. Overall average 3.94/5.00. Did not mill boards (2)
    ii. Instructor assessment and action:
        1. Changed wording and outcomes for the course to better match the course content
        2. Reduced number of projects from 3 to 2
        3. Students now choose projects from those selected and tested by the instructor
        4. New texts were chosen based on student feedback
    iii. Faculty assessment of course outcomes: Oral and written presentations for this Senior Design Phase II course as well as project operation are assessed by faculty and invited industry personnel:
        1. Oral Presentations: 10 student presentations assessed. Overall average 3.82 /5
        2. Written Presentations: 10 student written reports assessed. Overall average 3.35/5
        3. Project Operation: 10 student project demonstrations. Overall average 2.10/5
e. ECET 302 (Prof Broberg):
    i. Student assessment of course outcomes: 18 respondents. Overall average 4.17/5.00. Group members did not allow a group environment (1)
    ii. Faculty assessment and action:
        1. Place additional emphasis on transducer specifications
        2. Place additional emphasis on the project report
        3. Break out different areas in the project to better evaluate course outcomes
f. CPET/ECET 355 (Prof Luo):
    i. Student assessment of course outcomes: 9 respondents. Overall average 3.81/5.00. Need more applications in lecture (2), little network security coverage (3), rapid coverage of many subjects (3)
    ii. Faculty assessment and action: The following changes were made to the course outcomes to better reflect course content.
        1. Course Outcome 5 changed to: Know about the current network infrastructure (Criterion 2, item b, f). The words, ATM, SONET, frame relay, are removed from the syllabus. ATM, SONET, frame relay are not popular technology today, so not much emphasis will be given to those topics.
        2. Course Outcome 8 changed to: Know about different protocols used at the Internet transport layer (Criterion 2, item b, f)
        3. Course Outcome 9 added: Know how the congestion control of the Internet is implemented at the transport layer (Criterion 2, item b, f). Congestion control is listed separately in the syllabus since it is one of the most important topics at the transport layer.
g. ECET 357: (Prof Lin)
    i. Student assessment of course outcomes: 14 respondents. Overall average 3.94/5.00. Trouble communicating with DSP board (1), more hands-on labs (1), More Labview labs (1),
    ii. Faculty assessment and action: The following changes were made to improve the course. More DSP HW and LabView/C SW in the course.
h. CPET 364: (Prof Steffen)

i. Student assessment of course outcomes: 10 respondents. Overall average 4.22/5.00. More in-depth coverage desired (2), lab on troubleshooting compromised systems desired (2),
ii. Faculty assessment and action: The following changes were made to improve the course:
    1. A lab experiment will be added to enable students to remove a virus from an infected computer
    2. Additional emphasis will be placed on legal issues pertaining to network security.
    3. An additional small group topical discussion will be added on ethics in computing.

i. ECET 403: (Prof Laverghetta)
    i. Student assessment of course outcomes: 2 respondents. Overall average 4.25/5.00. No written student comments.
    ii. Faculty assessment of course outcomes: The faculty member will work to improve the labs in this course.
j. CPET/ECET 490: (Prof Foreman)
    i. Student assessment of course outcomes: 8 respondents. Overall average 4.00/5.00. Felt case study material was not worthwhile (1)
    ii. Faculty assessment of course outcomes: A full-time faculty member is being assigned to this important senior design course.
k. CPET/ECET 491: (Prof Lin)
    i. Student assessment of course outcomes: 8 respondents. Overall average 3.98/5.00. Need better presentation venue for students (1)
    ii. Faculty assessment of course outcomes: Oral and written presentations for this Senior Design Phase II course as well as project operation are assessed by faculty and invited industry personnel:
        1. Oral Presentations: 10 student presentations assessed. Overall average 4.08/5
        2. Written Presentations: 10 student written reports assessed. Overall average 4.45/5
        3. Project Operation: 10 student project demonstrations. Overall average 3.96/5

Appendix A: Sample Syllabus

ECET 302-01D CRN # 22879
Introduction to Control Systems
Spring 2007
Harold L. Broberg

Course Description:

ECET 302 Introduction to Control Systems
Class 3, Lab. 2, Cr. 4.

P: 157, MA 154. A study of the components in open-loop and closed-loop systems. Included are sensing devices, error detectors, potentiometers, synchros, resolvers, modulators, demodulators, amplifiers, motors, generators, and networks. An analysis course that stresses operation, time and frequency-response characteristics, and proper adjustment of the components.

Instructor: Dr. H.L. Broberg, PE **Phone**: 481-6341 **email**: Use WebCT email
Homepage: http://webct.ipfw.edu/
Classroom: PowerPoint presentations on WebCT **Lab**: TBA in ET 215
Office: ET221B
Office Hours: TBA, see WebCT

EET 302 Course Outcomes:
A student who successfully fulfills the course requirements will have demonstrated the ability to:

1. investigate and understand available transducers based on specifications and be able to select one for use (Criterion 1, items a, b, f, h)
2. interpret and apply transducer specifications (Criterion 1, items a, b, c, d, f)
3. understand and apply the physical principles of thermal, mechanical, and optical sensors (Criterion 1, items a, b, c, d, f)
4. use a spreadsheet and Matlab for calculations and graphs in applications (Criterion 1, items a, b, f)
5. use an electronic circuit analysis program for calculations and graphs in applications (Criterion 1, items a, b, f)
6. design and construct analog signal conditioning circuits (Criterion 1, items a, b, c, d, f)
7. apply integrated circuits to provide analog signal conditioning (Criterion 1, items a, b, c, d, f)
8. work as a member of project team (Criterion 1, items a, b, d, e, f, g, h, k)
9. write a coherent project report (Criterion 1, items c, e, f, g)

Textbook: Process Control Instrumentation Technology, Curtis D. Johnson, 8th Ed., 2006
References: Web sites and other references will be posted on the Internet.
Prerequisites: AC Circuit Analysis, OpAmps, Microprocessors
Software: Matlab, Excel, Multisim, PSpice, and other software will be used.

Use WebCT for Internet and Email: The principal Internet address for this course is: http://webct.ipfw.edu/ Internet access is available in all open labs on campus. You can also use your home or work Internet connection. You **must** use WebCT Email to contact me about the class. My personal IPFW email address at: broberg@ipfw.edu should **only** be used for questions not relating to this class or for emergencies.

Homework: Homework **must** be individual work. Homework will be submitted using WebCT. No late homework except with permission of the instructor.

Labs: Lab assignments will be posted on WebCT. You can do each lab alone or in two person lab teams. No more than 2-persons per lab team without permission of the instructor. One lab report per team is required and will be submitted via WebCT.

Team Project: The team project will be assigned via WebCT. A written report will be turned in and a demonstration of the project will be presented to the instructor.

Quizzes: There will be 3 multiple choice/true-false quizzes taken via the web. Each quiz may be taken twice. Sufficient time will be allowed each time you take a quiz and the higher of your two scores will count as your grade on each quiz.

Grading Scale: The grading scale used will be: A >= 90%, B >= 80%, C >= 70%, D >= 60%, F < 60%. The grade will be based on the total of the projects, quizzes, and final project grade.

Grading:	6 Labs	6 X 40 pts	= 240 pts
	3 Quizzes	3 X 100 pts each	= 300 pts
	10 Homework	10 X 25 pts each	= 250
	1 Final Project		= 210

Total = 100% Total=1000 pts

Disabilities Statement: If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb, room 113, telephone number 481-6658), as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site for SSD at http://www.ipfw.edu/ssd/

WEEK	SUBJECT	STUDY See WebCT for PPT lectures	HOMEWORK: See assignment posted on WebCT for due date Hmwk can be turned in via WebCT or on paper	LAB (ET215) Each lab is a Demo + a Report (due via WebCT) See assignment posted on WebCT for due date
Jan 8-12	Intro, Time response	Ch 1 & Lec01	#1: Due by Mon Jan 22	
Jan 15	Holiday		Martin Luther King Day	
Jan 16-19	Statistics & Curve Fitting	Ch 1 & Lec02		Demo Lab #1
Jan 22-26	Analog Signal Conditioning	Ch 2 & Lec03 & Lec04	#2: Due Mon Feb 5	
Jan 29- Feb 2	Analog Signal Conditioning	Ch 2 & Lec05 & Lec06		Demo Lab #2
Feb 5-9	Digital Signal Conditioning	Ch 3 & Lec07	#3. Due Mon Feb 19	
Feb 12-16	Digital Signal Conditioning	Ch 3 & Lec08		Demo Lab #3
→	Quiz 1		Covers Ch 1-3 & Labs 1-3, on WebCT	Mon Feb 19 at 11AM to Mon Feb 26 at 11:00 AM
Feb 19-23	Thermal Sensors	Ch 4 & Lec09	#4: Due Mon Feb 26	Demo Lab #4
Feb 26- Mar 2	Mechanical Sensors	Ch 5 & Lec10	#5: Due Wed, Mar 14	Demo Lab #5
Mar 5-9	No Class		SPRING BREAK	
Mar 12-16	Optical Sensors	Ch 6 & Lec11	#6: Due Mon Mar 19	Demo Lab #6
→	Quiz 2:		Covers Ch 4-6 & Labs 4-6, on WebCT	Mon Mar 19 at 11 AM to Mon Mar 26 at 11 AM
Mar 19-23	Final Control	Ch 7 & Lec12	#7: Due Mon Apr 2	Final Project
Mar 26-30	Final Control	Ch 7 & Lec13		Final Project
Apr 2-6	Discrete Controllers	Ch 8 & Lec14	#8: Due Mon Apr 9	Final Project
Apr 9-13	Controller Principles	Ch 9 & Lec15	#9: Due Mon Apr 23	Final Project
Apr 16-20	Analog Control	Ch 9 & Lec16		Final Project
Apr 23-27	Analog Control	Ch 10 & Lec17	#10: Due Mon Apr 30	Final Project
→	Quiz 3:		Covers Ch 7-10, on WebCT	Mon Apr 30 at 11AM to Sat May 6 at 8:00 AM
Apr 30- May 6	Finals Week		Final Project demonstration and report	Demonstrate Final Project to Prof Broberg and submit report

Appendix B

Tables from Draft ECET Assessment Plan used to collect data during Spring 07

Table 8: Course Outcomes vs TAC/ABET Outcomes

TAC/ABET Outcomes / ***Course***	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
Analog											
ECET 107 CPET 101	X	X	X	X		X	X	X			X
ECET 157	X	X	X	X		X					
ECET 207	X	X	X	X		X					
ECET 231	X	X	X	X		X					
ECET 302	X	X	X	X	X	X	X	X			X
ECET 303	X	X	X	X	X	X	X				
ECET 307	X	X	X	X	X	X	X	X	X	X	X
Digital/uP											
ECET 111	X	X	X		X	X	X	X			
ECET 146	X	X	X		X	X	X				
ECET 205	X	X	X	X		X					
ECET 357	X	X	X	X	X	X	X	X			X
Programming											
ECET 114	X	X	X	X		X	X				
CPET 190	X	X	X	X		X	X	X			
ECET 264	X	X	X	X	X	X	X	X			X
Networking											
CPET 181	X	X	X		X	X		X			
CPET 281	X	X	X			X		X			
ECET/CPET 355	X	X	X	X	X		X	X	X	X	
CPET 364	X	X	X			X		X	X		
Projects											
ECET 296	X	X	X	X	X	X	X	X	X	X	X
ECET/CPET 490	X	X	X	X	X	X	X	X	X	X	X
ECET/CPET 491	X	X	X	X	X	X	X	X	X	X	X
ECET/CPET/Tech Electives	X	X	X	X	X	X					
Math/Science/English/Comm											
MA 153/154/175/227/228/321 & STAT 301		X									
PHY 218		X		X							
CHM 111		X									
ENG 131/234/421							X				
COM 114							X				
Industrial Organ/Mgmt											
IET 105					X			X	X	X	X
CPET/ECET 470	X	X	X	X	X	X	X	X	X	X	X
GenEd											
Area III								X	X	X	
Area IV								X	X	X	
Area V								X	X	X	

Table 9: Specific assessments to be completed for each Program Outcome

A.S. EET Outcomes: (ABET a-k)				
1) knowledge, techniques, and skills in computer pgms, elect. devices, & circuit analysis to succeed as an electronic or computer technician. (Items a, b, f)	ECET 296	Assess ECET 146,157,205, 264, & CPET 281		
2) conduct and analyze experiments and apply the results. (Items a, b, c, f)	ECET 296	Assess ECET 146, 157, & CPET 281		
3) apply creativity in electronic fabrication, circuit layout and design within constraints of professional, ethical, and social responsibilities. (Items d, h i, j)	ECET 296	Graduate Exit Survey		
4) prepared to work effectively on an engineering team. (Items e, g, i, j)	ECET 296	Assess ECET 146, 302, & CPET/ECET 355		
5) identify, analyze, and solve technical problems. (Items b, c, f)	ECET 296	Assess ECET 146, 157, & CPET 281		
6) prepare and present written and oral technical reports at the levels of technician. (Items e, g)	ECET 296	Complete ENG W131, COM 114		
7) further study toward a B.S. or for entry into the profession as an electronic or computer technician. (Items h, j, k)	ECET 296	Graduate Exit Survey		
B.S. EET Outcomes (ABET a-k)				
1) appropriate mastery of electronics and computer skills to function effectively in industry. (Items a, b, c)	ECET 490/491	Graduate Exit Survey	Assess: ECET 307, 357 & CPET 364	Alumni & Employer Surveys
2) knowledge and ability to adapt to emerging applications and processes in their field. (Items a, b, d, f, k)	ECET 490/491	Graduate Exit Survey	Assess: ECET 307, 357 & CPET 364	Alumni & Employer Surveys
3) ability and math skills to understand and apply experimental results and solve technical problems. (Items c, d, f)	ECET 490/491	Graduate Exit Survey	Assess: ECET 307, 357 & CPET 364	Alumni & Employer Surveys
4) knowledge and skills to interact with others and function effectively on teams. (Items e, g, j)	ECET 490/491	Assess: CPET/ECET 470	Alumni & Employer Surveys	
5) ability to communicate effectively in oral, written, visual and graphical modes. (Items e, g, j)	ECET 490/491	Assess: CPET/ECET 470	Alumni & Employer Surveys	
6) knowledgeable with the expected standards of ethical and professional conduct. (Items i, j)	ECET 490/491	Assess: CPET/ECET 470	Alumni & Employer Surveys	
7) prepared to understand the necessity for lifelong learning and the need for quality, timeliness, and continuous improvement. (Items h, k)	ECET 490/491	Graduate Exit Survey	Assess: CPET/ECET 470	Alumni & Employer Surveys
B.S. CPET Outcomes (ABET a-k)				

1) appropriate mastery of electronics, microprocessors, networking, computer, and related programming skills to function effectively in industry. (Items a, b, c)	CPET 490/491	Graduate Exit Survey	Assess: CPET/ECET 355 & CPET 364	Alumni & Employer Surveys
2) knowledge and ability to adapt to emerging applications and processes in their field. (Items a, b, d, f, k)	CPET 490/491	Graduate Exit Survey	Assess: CPET/ECET 355 & CPET 364	Alumni & Employer Surveys
3) ability and math skills to understand and apply experimental results and solve technical problems. (Items d, h i, j)	CPET 490/491	Graduate Exit Survey	Assess: CPET/ECET 355 & CPET 364	Alumni & Employer Surveys
4) knowledge and skills to interact with others and function effectively on teams. (Items e, g, j)	CPET 490/491	Assess: CPET/ECET 470	Alumni & Employer Surveys	
5) ability to communicate effectively in oral, written, visual and graphical modes. (Items e, g, j)	CPET 490/491	Assess: CPET/ECET 470	Alumni & Employer Surveys	
6) knowledgeable with the expected standards of ethical and professional conduct. (Items i, j)	CPET 490/491	Assess: CPET/ECET 470	Alumni & Employer Surveys	
7) prepared to understand the necessity for lifelong learning and the need for quality, timeliness, and continuous improvement. (Items h, k)	CPET 490/491	Graduate Exit Survey	Assess: CPET/ECET 470	Alumni & Employer Surveys

Appendix C: Sample Faculty form for TAC/ABET outcome C

Faculty Assessment Form: TAC/ABET Outcome c:

Rubric: ***an ability to conduct, analyze and interpret experiments and apply experimental results to improve processes***

Course #: _____ Course Title: _____

Section: _____ # of Students: _____ Semester: _____ Year: _____

1. What outcome measures were used? (please check all that apply):
Homework: _____ Quizzes: _____ Exams: _____ Final Exam: _____

Projects: _____ Lab Reports: _____ Presentations: _____ Other: _____

2. In general, was the outcome achieved for this course?
YES NO

List several student experiences where analysis, interpretation and experimental results are used and how students learn to apply experimental results to improve processes based on this course: -

_____

_____

_____

3. Do any of the topics require greater emphasis? YES NO

If YES, please list: _____

_____

4. Do you recommend changing the textbook to better achieve this outcome?

YES NO
If YES, which textbook do you recommend? _____

5. If you have any other recommendations, please list them:

_____

_____

_____

_____

Appendix D: Student Assessment Form for ECET 302

Student Assessment of Course Outcomes
ECET 302 Introduction to Control Systems (TAC/ABET a, b, c, d, e, f, g, h, k)

Instructor: _____ Date:_____

Please be candid and use your best judgment in answering the questions. Circle the level you think you achieved of the outcome. ***If you think an outcome was not achieved, please provide a brief explanation.***

Check your degree program: AS EET _____ BS EET _____

BS CPET _____ Expected Grade: _____

	Level of Achievement of this outcome
1. investigate and understand available transducers based on specifications and be able to select one for use (TAC/ABET: a, b, f, h)	**Exc Good**
Comments:	**Fair Poor**
2. interpret and apply transducer specifications (TAC/ABET: a, b, c, d, f)	**Exc Good**
Comments:	**Fair Poor**
3. understand and apply the physical principles of thermal, mechanical, and optical sensors (TAC/ABET: a, b, c, d, f)	**Exc Good**
Comments:	**Fair Poor**
4. use a spreadsheet and Matlab for calculations and graphs in applications (TAC/ABET: a, b, f)	**Exc Good**
Comments:	**Fair Poor**
5. use an electronic circuit analysis program for calculations and graphs in applications (TAC/ABET: a, b, f)	**Exc Good**
Comments:	**Fair Poor**
6. design and construct analog signal conditioning circuits (TAC/ABET: a, b, c, d, f)	**Exc Good**
Comments:	**Fair Poor**
7. apply integrated circuits to provide analog signal conditioning (TAC/ABET: a, b, c, d, f)	**Exc Good**
Comments:	**Fair Poor**
8. work as a member of project team (TAC/ABET: a, b, d, e, f, g, h, k)	**Exc Good**
Comments:	**Fair Poor**
9. write a coherent project report (TAC/ABET: c, e, f, g)	**Exc Good**
Comments:	**Fair Poor**

Appendix E: BSEET Graduate Exit Survey Form

Graduation Survey Form
Bachelor of Science
Electrical Engineering Technology

Name: (Optional) _____

Degree: B.S. Electrical Engineering Technology Semester/Year: Fall / 2006

Are you employed? Yes: ____ No: ____ If Yes, Full Time: ____ Part Time: ____ Employer name _____

Is your job related to this degree? Yes: ____ No: ____ If Yes, how does it help you? _____

_____

Do you plan to continue your education? Yes: ____ No: ____ If Yes, please explain: _____

_____

Do you plan on attending graduation? Yes: ____ No: ____

Please circle the number that best represents your reaction to each of the following statements about your education at IPFW.

Scale

Strongly Disagree 1 2 3 4 5 Strongly Agree

1.	I am well prepared in circuit analysis.	1	2	3	4	5
2.	I am well prepared in circuit design and construction.	1	2	3	4	5
3.	I am well prepared in the area of planning and constructing a complete circuit.	1	2	3	4	5
4.	I am well prepared in the area of computer programs related to electronics.	1	2	3	4	5
5.	I am well prepared in the area of computer languages related to electronics.	1	2	3	4	5
6.	I am well prepared in problem solving.	1	2	3	4	5
7.	I am well prepared to work in a team environment.	1	2	3	4	5
8.	I am well prepared to prepare and present written and oral technical reports.	1	2	3	4	5
9.	I am well prepared to continue learning throughout my career.	1	2	3	4	5
10.	ECET faculty members are proficient in their field of expertise.	1	2	3	4	5
11.	ECET faculty are helpful both within and outside of the classroom.	1	2	3	4	5

12. What additional courses (if any) would you like offered? _____

_____

13. What additional Lab facilities would have assisted in your education? _____

_____

Please add any comments that you feel would be beneficial towards the maintenance of quality educational programs in the Department of Electrical and Computer Engineering Technology

_____

_____

Minutes

Of

ECET Industrial Advisory Committee Meeting

Friday, April 20, 2007

Hosted by American Electric Power

Members present: Harold Broberg (IPFW-ECET), Paul Lin (IPFW-ECET), Iskandar Hack (IPFW-ECET), Gary Steffen (IPFW-ECET), Peter Goodman (IPFW-ECET), Hongli Luo (IPFW-ECET), Medrick McClain (Raytheon), Dave Altizer (American Electric Power), Al Taylor (American Electric Power), Matt Bishop (Parkview Health), Thomas Groves (Lutheran Health Network), Mike Mourey (IPFW-ITS), Walter Schoonover (Raytheon), Mike Newell (ITT), Rick Malecki (International Truck), John Beasley (Verizon), Jerry Ryan (United Technologies).

Call to Order: 7:50 A.M.

Attendees introduced themselves.

7:56 AM: Dave Altizer opened the meeting with an overview of Indiana & Michigan Power and its parent company AEP, one of the largest investor-owned utilities in the U.S. I & M has 19,075 miles of transmission lines and 5777 megawatts of generating capacity, of which 2160 megawatts is provided by the Cook nuclear plant in Berrien Springs, MI. Current activities of AEP include the AEP Interstate Project, a robust interstate transmission system which Mr. Altizer compared to construction of the Interstate Highway system 50 years ago, and expansion 765 kilovolt (kV) transmission lines into Michigan.

Mr. Altizer introduced Al Taylor of AEP, former Fort Wayne station manager, who delivered a more detailed description of AEP operations and future plans. AEP's generating capacity is approximately 36,000 megawatts. Mr. Taylor spoke of the benefits of investing in robust transmission systems (reliability and delivery of low-cost energy without bottlenecks) and of the costs of underinvestment in transmission systems (blackouts, such as occurred on the East Coast in 2003), transmission and distribution bottlenecks (which can result in localized "spikes" in the price of electric power), and load shedding ("rolling blackouts") during periods of peak demand.

Mr. Taylor cited Michigan as an example of underinvestment. Michigan has begun to address this by asking AEP to expand a 765 kV transmission loop from Indiana into Michigan. This will reduce line losses by 325 megawatts, equivalent to adding a small generating plant.

8:45 AM: Professor Broberg updated the committee on the state of the ECET department and the College of ETCS. The Master of Science in Technology (MST) program is approved, and graduate classes will start in the fall. Professor Hack is chairing a committee study the possibility of offering a B.S. program in Mechatronics. A new B.S. program in Information Technology will be offered by ECET. Professor Lin is in charge of the B.S.I.T. program. ETCS will offer an Army ROTC program, available to all IPFW students, beginning this fall.

Professor Broberg introduced our new faculty member, Dr. Hongli Luo, and reported that there will be a search for a new Chair for the Computer Science department. He also listed the ETCS Centers of Excellence: the Center for Industrial Innovation and Design, the Center for Systems Engineering (chaired by Steve Walters), the Center for the Built Environment (chaired by Regina Leffers), and the Center for Wireless Communication (being estiblished with support from ITT).

Professor Broberg's remarks were followed by a short break.

The meeting reconvened at 9:36, with a few additional remarks from Professor Broberg, reporting that Professor Steffen is now preparing his case for Promotion and Tenure for submission at the beginning of the Fall semester. Professor Broberg also reported that if any donor (corporate or private) provides a "full ride" scholarship, the Chancellor will match it.

Purdue is currently experimenting with a system (Citrex) which will make University-licensed software such as Matlab and Autocad available for student use online. If it is successful, this will eliminate much of the need for "computer labs" on campus.

It is likely that there will be a search for a new chair of ECET in 2009, with Professor Steffen possibly serving as interim chair during the search.

9:40 AM: Mr. Altizer began the industry status reports, remarking that 50% of AEP's engineers will be retiring in the next few years, resulting in opportunities for engineers in all disciplines. He also pointed out that an EET degree is considered equal to an EE degree at AEP.

Mr. Ryan of United Technologies Electronic Controls, reported that continued growth is expected. They have hired ECET graduates for positions in manufacturing and test engineering. UT Electronic Controls also considers an EET degree equal to an EE degree. Most of those they hire go on for advanced degrees.

Mr. Moury, of IPFW's ITS department, remarked that ITS hires IPFW students giving them practical experience which makes them more valuable when they graduate. Professor Broberg added the observation that IPFW has over 1000 full-time employees.

Mr. McClain (Raytheon) reported that two new graduates were just hired for the Battle Management area, but they were not IPFW graduates. They have hired a lot of students, but summer intern positions fill quickly. There are new business possibilities in their Radios and Terminals business area.

Mr. Malecki (International Truck) reported on the recent layoffs, which resulted from the completion of two major development programs. International is growing at the global level, but not in Fort Wayne. He remarked that, from International Truck's point of view, an engineering education should be both cross-cultural and cross-disciplenary.

Mr. Beasley reported that, like AEP and UT Electronic Controls, Verizon considers EET and EE degress to be equal. Verizon hires many students and graduates, but mostly at the two-year level. Some of this hiring has resulted from the deployment of FIOS). Telecommuting is often an option for Verizon employees.

Mr. Groves reported that Lutheran Health Network has recently hired 5 technicians and engineers. Their parent company was recently acquired by Community Health Systems, and the impact of this acquisition is still not known. He expects to have opportunities for 3-4 technicians.

Mr. Newell noted that ITT has two operations in Fort Wayne, a Satellite operation (which has been hiring) and a Communications operation. DOD budgets are expected to deline over the next several years, resulting in at best a small increase in employment. Any opportunities would emphasize VHDL and software engineering, with a decrease in manufacturing. ITT does have an interest in ad-hoc wireless networks.

Mr. Bishop remarked that Parkview Health's outlook is similar to that reported by Mr. Groves. He added that any health care provider must grow, raise prices, or cut costs. Parkview is adding new facilities, with emphasis on providing a patient-centric healing environment. Parkview has a large IS system. Mr. Bishop listed a number of enabling technologies: VOIP (Voice Over Internet Protocol), HL7 (Hospital Language 7, for which programmers are needed), robots (for virtual rounding), video on demand, and new applications for lasers (such as stroke recovery). He also remarked that he considers an EET degree better than an EE degree.

Professor Broberg observed that ETCS has been offered an industrial laser.

10:34 AM: The faculty members provided brief updates on their activities.

Professor Lin reported on the new BSIT degree, which he is leading development of. He asked for input on the math requirement, specifically whether calculus should be required for this degree, and reported that we expect at least 18 new student within 3 years as a result of the new degree. New IAC member will be recruited to represent potential employers of BSIT graduates. Professor Lin also remarked briefly on the possibility of providing distance-learning opportunities for various certifications.

Professor Hack reported that he expects to take a group of students to Maylasia again this summer, and he reported that the Mechatronics program is still in a very early stage of development. We need to find out if there is a need for a new program in this area.

Professor Broberg reported that the new MST program is available to anyone with a B.S. degree (not just ET or engineering graduates), but there are prerequisites. He also reported that we are reviewing our certificate programs, and that we have a Program Review coming up.

Professor Goodmann reported on the Amateur Radio Club, and on donations of equipment by Lutheran Health Network, Parkview Health, and Raytheon.

These remarks were followed by a general discussion, summarized as follows:

It is expected that the BSIT program will have two tracks, one of which will emphasize networking (similar to the current CPET program), and the other will emphasize information systems. As a result, the emphasis of the CPET program will shift from networking to embedded digital systems.

The EET program is also expected to have two tracks: one track will emphasize communication systems, while the other will emphasize control systems.

Limited Term Lecturers are needed for the Fall semester, for ECET 146, ECET 157, and CPET 181. They should have Masters's degrees, if possible.

Professor Steffen is developing a course on VOIP

There will be a party for our graduates on May 9, from 12:00 to 2:00 PM.

We will be updating the Programmable Logic Controllers used for the PLC course, which is currently taught by David Houck. The cost will be about $6688.

We have requested nine new digital oscilloscopes for the laboratory in ET-215, and we hope to replace the CRT monitors in that lab with LCD monitors.

We also hope to purchase 10 additional wireless sensor nodes for laboratory use.

This concluded the business of the 2007 IAC meeting, which was followed by a light lunch and a very intersting tour of the AEP operations center