

## ***Assess to Assure Learning & Student Success***

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John Wooden, “Although there is no progress without change, not all change is progress.”

ATMAE (Association of Technology, Management, and Applied Engineering),  
<http://atmae.org/>

SACS (Southern Association of Colleges and Schools), <http://www.sacs.org/>

## Outline

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- Need for linking assessment of student learning at various institutional levels and for external audit purposes
- Managing the complexity of assessment – Creating/updating program objectives and assessments for evaluating student learning
- Closing the loop – Mechanism for continuous improvement in student learning



2

Influence of accreditation, advisory committee, and alumni/employer surveys on the assessment process

Assessment = Measurement, Evaluation, Reporting

## Planning at Various Institutional Levels



3

Reporting -- results used to identify areas of program improvement

## Strategic Direction of the Program

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- Core student competencies based on:
  - curriculum/advisory committee discussions
  - professional organization requirements
  - benchmark institutions
- Take a close look at both:
  - existing program content
  - direction in which the program is headed
- Put in place appropriate coursework, and learning opportunities for directing growth in the strategic direction



## Advisory Committee



- Invaluable source of ideas about:
  - Determining student competencies
  - Future directions of discipline
  - Prioritizing program goals
  - Suggestions for updates in curriculum
  - Validating curriculum committee decisions
  - Evaluating capstone projects

Discussion of exit exam performance, graduating student interviews and alumni surveys

- Opportunities for students
  - Field-trips
  - Co-op and full-time employment



## Alumni Feedback Survey

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- Main questions on the alumni survey relate to:
  - Initial job after graduation
  - Job titles held following graduation, with optional description
  - Salary or rough salary ranges for current job or jobs held following graduation (either annually or per hour)
  - Recommendations regarding any additional technical/professional skills or knowledge that should be an integral part of the Computer Electronics curriculum
- Information used for providing updates to students and accreditation agencies



## Need for a Unified Assessment Strategy



- Cut down on paperwork, duplication, time and resources
- Inherent difficulty in maintaining separate documentation and procedures for reporting at various institutional levels
- Need for streamlining the flow and transparency of information regarding results and action plans



### Need for a Unified Measuring Strategy:

- Time at a premium for faculty and administrative staff
- Have in place assessment methods that are easy to deploy by the faculty, and convenient for the students to take
- Online administration, and tracking of the program assessment when possible

## Matching Student Competencies with Course Outcomes



- Translate the core program competencies into specific course-level competencies – curriculum mapping
- Specify the precise skills that are to be evaluated in the exit exam or capstone project
- Assess core competencies in multiple ways
- Specify how/when the results will be measured and used to identify areas of improvement
- Assessment developed so as to evaluate:
  - breath of student understanding
  - mastery of the core competencies





## University 2006-10 Strategic Action Plan

1. To promote and support an institutional climate that respects and celebrates **diversity** by attracting, developing and retaining a diverse student, faculty, and staff population
2. To continuously assess and enhance the **academic programs** and **infrastructure** of the University to support and enhance the quality of the programs.
3. To **promote learning** through high quality programs, research and support services.
4. To develop and enhance an environment facilitating **intellectual curiosity**, cultural opportunities and **problem-solving abilities** for members of the university community.
5. To increase and enhance external and internal constituency **engagement**, while maintaining a connection with the southeastern region of Kentucky.

Closely aligned with  
student competency  
assessment



## College 2006-10 Strategic Action Plan

1. The College will recruit and retain a **diverse** student body (both undergraduate and graduate) to participate in a regionally, nationally, and internationally competitive economy.   
Closely aligned with student competency assessment
2. The College will serve students, businesses, professionals, and communities by providing a **faculty** who are engaged in providing quality instruction, scholarly activities (basic, applied, and instructional), and service.
3. The College will engage in **continuous improvement** processes that involve its appropriate **stakeholders** to ensure its programs and services are relevant, current, and meet national standards.



## Departmental 2006-10 Strategic Goals

1. To prepare professionals for careers in [program name] through the **Bachelor of Science** degree programs
2. To prepare **technicians** for careers in Technology
3. To prepare professionals for careers in **Career and Technical Education** through certification, AAS, BS
4. To prepare selected professionals for advancement in Industrial Technology through the **MS degree**
5. To provide programs of **quality instruction** and professional services to the university and community

Closely aligned with  
student competency  
assessment



## Program Assessment: Identify Core Competencies

Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate proficiency in basic **networking skills** relevant to small office/home (SOHO) environments.

Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate proficiency in basic **computing skills**.

Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate **fundamental** knowledge in **electricity/electronics**.

Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate the ability to solve technical problems using **critical thinking, creativity, and communicate the results** to technical and non-technical audiences.



## Assess Core Competencies using Exit Exam & Capstone Project

**BS-CEN1 (networking skills)** – Exit Exam for testing skills related to proficiency in basic networking skills relevant to small office/home (SOHO) environments.

**BS-CEN2 (computing skills)** – Exit Exam for testing skills related to proficiency in basic computing skills.

**BS-CEN3 (fundamental electricity/electronics)** – Exit Exam for testing skills related to fundamental knowledge in electricity/electronics.

**BS-CEN4 (critical thinking, creativity, communication)** – Capstone project class for testing skills that demonstrate the ability to solve technical problems using critical thinking, creativity, and communicate the to technical and non-technical audiences.



## Strategic Plans at Institutional Levels Linked with Program Assessment



14

Multiple perspectives should not oppose each other – and should point in the same direction ... **student success**

# Deployment of Exit Exam through Blackboard

## Networking Section Cabling

**Practice Exit Exam**

Item | Folder | External Link | Organization Link | Test | Select: Learning Unit | Go

1. Practice Assessment, Section (Electricity & Electronics)  
Material for this section of the Exit Exam has been taken mainly from: electricity, analog and digital electronics, microprocessors, PLCs, fiber-optic communications.
2. Practice Assessment, Section (Computer Systems)  
Material for this section of the Exit Exam has been taken mainly from: computer troubleshooting, microcontrollers, programming aspects of PLCs.
3. Practice Assessment, Section (Networking)  
Material for this section of the Exit Exam has been taken mainly from: computer networking and routing.
4. Information regarding Practice Exit Exam  
The practice exam is posted in this folder. It consists of 3 sections, all of which must be completed. You may attempt the practice sections as many times as needed. However, on the actual Exit Exam, you will have only one attempt to Submit the exam for each section. Practice testing and returning to different sections of the practice exit exam.

## Practice Exit Exam Directions

**Test Canvas**

Add, modify, and remove questions. Select a question type from the Add Question drop-down list and click **Go** to add questions. Use Creation Settings to establish which default options, such as feedback and images, are available for question creation.

**Add Calculated Formula** **Go** **Creation Settings**

**Name** Practice Assessment, Section (Networking)  
**Description** Material for this section of the Exit Exam has been taken mainly from: computer networking and routing.  
**Instructions** Each question has exactly one answer unless indicated otherwise.  
Once created this section must either be saved or submitted. To save press the save button at the end of this section or given alongside any question. Then navigate to any other part of the Exit exam course in Blackboard. You may return to where you left off at a later time.  
When complete press the submit button to electronically submit the test. Once submitted your score for this section will be available for viewing immediately.

**Question 1** **Multiple Answer** **1 points** **Full Question Here**

**Question** Which of the following is LEAST LIKELY to be a concern when selecting a network interface card?

**Answer**

- ☒ Processor type
- ☐ Cable type
- ☐ Network speed
- ☐ Bus expansion slot

**Test Canvas**

Add, modify, and remove questions. Select a question type from the Add Question drop-down list and click **Go** to add questions. Use Creation Settings to establish which default options, such as feedback and images, are available for question creation.

**Add Calculated Formula** **Go** **Creation Settings**

**Name** Practice Assessment, Section (Electricity & Electronics)  
**Description** Material for this section of the Exit Exam has been taken mainly from: electricity, analog and digital electronics, microprocessors, PLCs, fiber-optic communications.  
**Instructions** Each question has exactly one answer unless indicated otherwise.  
Once created this section must either be saved or submitted. To save press the save button at the end of this section or given alongside any question. Then navigate to any other part of the Exit exam course in Blackboard. You may return to where you left off at a later time.  
When complete press the submit button to electronically submit the test. Once submitted your score for this section will be available for viewing immediately.

**Question 1** **Multiple Answer** **1 points** **Full Question Here**

**Question** Ohm's Law, stated mathematically, could be expressed by which of the following formulas? (Where E=Voltage, I=Current, R=Resistance)

**Answer**

- ☐  $R = I \times E$
- ☐  $E = I \times R$
- ☒  $I = E / R$
- ☐  $E = I / R$

## Electricity & Electronics Section Ohm's Law

# Capstone Project Evaluation – Presentation & Portfolio

## CET/CEN Capstone Projects - Spring 2009

### • Patrick Coe



*Multimedia content delivery over LANs and WANs*  
Whether it is for a long distance business meeting, long-distance learning, or communicating with family, video and audio communication have become a crucial part of everyday life in today's fast-paced world. For my project I set out to research, design and configure a multimedia redistribution system for use in an educational or business environment. Equipment, including personal computers, servers and a portion of the local area network was provided by the Williamsburg Independent School District. I did most of my research physically away from the facility while I studied at Satakunta University of applied sciences in Pori, Finland. Because of this, remote access services had to be set up reliably. I successfully set up the distribution system in the Williamsburg school, allowing live video streams to be accessed internally by students and teachers. Externally archived video can also be accessed via the internet.

[Presentation](#)

[Video](#)

[Resume \(PDF\)](#), [Resume \(RTF\)](#)

Contact Email - [coepatrick@gmail.com](mailto:coepatrick@gmail.com)

### • Christopher Rutherford



*Microsoft Windows Server 2008: Software Deployment*

This project is designed to test the functionality of Microsoft Windows Server 2008 and its software deployment features. Instead of purchasing third-party software to remote deploy your software or desktop features; Windows Server 2008 has all of the necessary tools to accomplish such a goal. Server 2008 can install, upgrade, and remove software packages to and from computers or users using the group policy management configuration. Adding necessary roles to test the functionality and use features such as Windows Deployment Services is also taken into consideration. For limiting use of

- Posted online
  - Includes videos
  - Presentation
  - Contact info
- Internal and external evaluation:
  - Faculty
  - Advisory committee
- Criteria:
  - Content
  - Organization
  - Delivery
  - Audience connection
  - Visual aids
  - Demo





## Analysis of Exit Exam for Entry in TracDat

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- The Student Competencies (Learning Objectives or Outcomes), Curriculum Mapping, and Sample Assessment Data entered into TracDat typically at start of the Fall term.

<http://oie.eku.edu/tracdat>

- Data for the 4 student learning outcomes (SLOs) is obtained from:
  - online exit exams deployed through Blackboard
  - hands-on performance exam
  - capstone course project, demonstrations and portfolio



**BS-CEN-1 NET1** Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate proficiency in basic networking skills relevant to LAN/WAN environments.

Related Courses: ~~EEET~~ NET 303 – LAN's & PC communications  
~~EEET~~ NET 343 – Network Switches & Routers  
~~EEET~~ NET 440 – Fiber-Optics & Communication

Method	Criterion	Schedule for this measure	Who will use the data, how and when?
Departmental exit exam developed and evaluated by the Electronics Curriculum Committee.	Minimum mean score of 70% on the networking portion of the exit exam.	End of the academic year in which student graduates.	Who will use the data: Department of Technology, Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually
Computer Networking Systems performance based assessment or certification exam approved by the Electronics Curriculum committee.	Minimum mean score of 70% on the performance based assessment.	End of the academic year in which student graduates.	Who will use the data: Department of Technology, Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually

Result/Observation	Use of Results/Observations	Follow-Up	Resolved
<u>09/XX/2011</u> <u>In Fall 2010, 2 BS students took the exit exam, averaging a score of 95% in the networking section.</u> <u>In Spring/summer 2011, 7 BS students took the exit exam, averaging a score of 86.4% in this section.</u> <u>Overall, for the 2010-11 academic year 9 BS students took the exit exam, averaging a score of 86.4% in this section.</u>	<u>09/XX/2011</u> <u>Based on student performance on the exit exam the areas requiring improvement have been identified as: OSI layer functions, and network and network cabling.</u>	<u>Exit exam being updated to reflect changes in curriculum. Additional network troubleshooting and security related scenarios to be added as part of lab and/or in-class activities.</u>	<u>No</u>
<u>Performance assessment: In Fall 2010, the average score of the BS students who took the exit was 87.5% in the networking section.</u> <u>In Spring/summer 2011, the average score of the BS students who took the exit was 97.2% in this section.</u> <u>Overall, for the 2010-11 academic year the average score of the 9 BS students who took the exit exam was 95.04% in this section.</u>	<u>Student performance was very good regarding practical wireless scenario and security configuration. Recommend inclusion of network simulation software for students intending to work in networking area.</u>	<u>Performance section of the exam is being updated for including more complex skills used in the workplace.</u>	<u>No</u>

<b>BS-CEN2 NET2</b> Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate proficiency in basic computing skills.  Related Courses:    EET 253 – Microprocessor systems <del>EET 254 – Machine Language for Microcontrollers</del> EET NET 302 – PC Troubleshooting & Construction <del>EET 351 – Programmable Logic Controllers</del> TEC 161 – Computer applications in Technology				
	Method	Criterion	Schedule for this measure	Who will use the data, how and when?
y, : d:	Departmental exit exam developed and evaluated by the Electronics Curriculum Committee.	Minimum mean score of 70% on the computing portion of the exit exam.	End of the academic year in which student graduates.	Who will use the data: Department of Technology Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually
y, : d:	Computer Electronic Systems performance based assessment or certification exam approved by the Electronics Curriculum committee.	Minimum mean score of 70% on the performance based assessment.	End of the academic year in which student graduates.	Who will use the data: Department of Technology Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually

Result/Observation	Use of Results/Observations	Follow-Up	Resolved
<u>09/XX/2011</u> <u>In Fall 2010, 2 BS students took the exit exam, averaging a score of 92.5% in the computer systems section.</u> <u>In Spring/summer 2011, 7 BS students took the exit exam, averaging a score of 83.5% in this section.</u> <u>Overall, for the 2010-11 academic year 9 BS students took the exit exam, averaging a score of 85.6% in this section.</u>	<u>09/XX/2011</u> <u>Based on student performance on the exit exam the areas requiring improvement have been identified as: microcontroller programming structure and program steps</u>	<u>The computer systems section of the exit exam is being updated to include changes planned in the AAS degree curriculum.</u>	<u>No</u>
<u>Performance assessment: In Fall 2010, the average score of the BS students who took the exit was 85% in the computer systems section.</u> <u>In Spring/summer 2011, the average score of BS students who took the exit was 91.4% in this section.</u> <u>Overall, for the 2010-11 academic year, the average score of the 9 BS students who took the exit exam was 89.97% in this section.</u>	<u>Need for necessary security checks on downloaded software to be discussed in multiple computer systems classes.</u>	<u>Performance section of the exam is being updated for including more complex skills used in the workplace.</u>	<u>No</u>

**BS-CEN3 NET3** Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate fundamental knowledge in electricity/electronics.

Related courses: EET 251 – Electricity and Electronics  
EET 252 – Digital Electronics  
EET 253 – Microprocessor Systems  
EET 257 – Circuits & Electronic Devices  
EET 351 – Programmable Logic Controllers

Method	Criterion	Schedule for this measure	Who will use the data, how and when?
Departmental exit exam developed and evaluated by the Electronics Curriculum Committee.	Minimum mean score of 70% on the electricity/electronics and electro-mechanical portion of the exit exam.	End of the academic year in which student graduates.	Who will use the data: Department of Technology, Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually
Electricity and Electronics performance based assessment or certification exam approved by the Electronics Curriculum committee.	Minimum mean score of 70% on the performance based assessment.	End of the academic year in which student graduates.	Who will use the data: Department of Technology, Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually

Result/Observation	Use of Results/Observations	Follow-Up	Resolved
<p><u>09/XX/2011</u>  <u>In Fall 2010, 2 BS students took the exit exam, averaging a score of 80% in the electricity &amp; electronics section.</u>  <u>In Spring/summer 2011, 7 BS students took the exit exam, averaging a score of 71.4% in this section.</u>  <u>Overall, for the 2010-11 academic year 9 BS students took the exit exam, averaging a score of 73.3% in this section.</u></p>	<p><u>09/XX/2011</u>  <u>Based on student performance on the exit exam the areas requiring improvement have been identified as: float/logic level condition, transistor use, flip-flop operation operating regions, logic gate evaluation, communication speed resistor</u></p>	<p><u>Updates proposed in exit exam for reflecting additional content related to electricity and electronics knowledge needed by computer/network service technicians.</u></p>	No
<p><u>Performance assessment: In Fall 2010, the average score of BS students who took the exit was 95% in the electricity &amp; electronics section.</u>  <u>In Spring/summer 2011, the average score of BS students who took the exit was 80% in this section.</u>  <u>Overall, for the 2010-11 academic year, the average score of the 9 BS students who took the exit exam was 83.33% in this section.</u></p>	<p><u>Connections of electrical instruments in simulation and lab activities. Safety of equipment to be discussed and demonstrated in electricity and electronics multiple classes.</u></p>	<p><u>Open-labs planned for student practice. Consider adding optional performance assessment for important activities.</u></p>	No

**BS-CEN4 NET4** Graduates of the Bachelor of Science in the Computer Electronics Networking program will demonstrate the ability to solve technical problems using critical thinking, creativity, and communicate the results to technical and non-technical audiences.

Related Courses: EET 251 – Electricity and Electronics  
 EET 252 – Digital Electronics  
 EET 253 – Microprocessor Systems  
~~EET 254 – Machine Language for Microcontrollers~~  
 EET 257 – Circuits & Electronic Devices  
~~EET NET 302 – PC Troubleshooting & Construction~~  
~~EET NET 303 – LAN's & PC communications~~  
~~EET NET 440 – Fiber-Optics & Communication~~  
~~EET NET 499 – CEN Capstone Project~~  
 TEC 161 – Computer applications in Technology  
~~INF /AEM 406 – Manufacturing Planning Systems~~

Method	Criterion	Schedule for this measure	Who will use the data, how and when?
Capstone project presentation.	Minimum mean score of 70% on the capstone project presentation.	Semester in which the capstone project is completed.	Who will use the data: Department of Technology, Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually
Capstone project portfolio.	Minimum mean score of 70% on the capstone project portfolio.	Semester in which the capstone project is completed.	Who will use the data: Department of Technology, Computer Electronic Networking faculty and advisory committee  How will the data be used: Item analysis/course analysis/program analysis  When will the data be used: Annually



Result/Observation	Use of Results/Observations	Follow-Up	Resolved
The average score on the capstone portfolio was 74.0%.	Additional reminders to be posted in Blackboard regarding the submission of the portfolios. Sample exemplary portfolios to be made available to students, and available for the three different areas. Require a mid-term portfolio review as part of the course grade for getting students to organize. Emphasize importance of organizing project work, and recommend self-assessment based on guidelines prior to submission.	Sample exemplary portfolios for the Networking, Computer Systems, and Electricity and Electronics area to be made available.	No
<p>09/XX/2011 In Spring 2011, 6 BS students who completed the capstone course were evaluated on the project presentation, demonstration and project portfolio. The capstone projects were discussed with the members of the computer electronics advisory committee. The average score on the capstone demonstration presentation including the demonstration of the working project was 86.6%.</p> <p>The average score on the capstone portfolio including the weekly progress reports was 76.6%.</p>	<p>09/XX/2011 Project and time management continues to be an issue. Transitioning from the mid-term group presentation to the individual final project has not been smooth.</p> <p>Emphasize importance of organizing project work, and recommend self-assessment based on guidelines prior to submission.</p>	<p>Use of project planning tools to be integrated into course.</p> <p>Sample exemplary portfolios to be made available to students, and available for the three different areas. Mid-term portfolio reviews to be added.</p>	<p>No</p> <p>No</p>

## Critical Thinking, Creative Thinking & Communication Skills

***EKU will graduate informed, critical and creative thinkers who can communicate effectively.***



<http://qep.eku.edu/>



<https://sites.google.com/site/qepcafe/>

26

## Quality Enhancement Plan (QEP) at ECU










<http://qep.eku.edu/>

## QEP Initiatives

**QEP Café** – This website discusses models of critical thinking as well as **16 different critical/creative thinking techniques**, under the categories Explore, Evaluate, Expand and Express (*E<sup>4</sup>*)

<https://sites.google.com/site/qepcafe/>

## Curriculum Committee Meetings & Faculty Blackboard Log

<input type="checkbox"/> Forum	Description	Total Posts	Unread Posts	Total Participants
<input checked="" type="checkbox"/> <a href="#">Fall 2011 Semester Wrap-up</a> 	Course Number/Name:  Student performance in course highlighting strengths and weaknesses:  Suggestions for changes or updates in future offerings of the course:	5	0	1
<input type="checkbox"/> <a href="#">Spring 2011 Semester Wrap-up</a> 	Semester wrap-up of courses taught in the Spring 2011 semester by Computer Electronics faculty - Jeff, Ray, Vigs and part-time faculty (Jeremy)	4	0	1
<input type="checkbox"/> <a href="#">Fall 2010 Semester wrap-up</a> 	Semester wrap-up of courses taught in the Spring 2010 semester by Computer Electronics faculty - Jeff, Ray, Vigs and part-time faculty (Tom )	3	0	1
<input type="checkbox"/> <a href="#">Spring 2010 Semester wrap-up</a> 	Semester wrap-up of courses taught in the Spring 2010 semester by Computer Electronics faculty - Jeff, Ray, Vigs and part-time faculty (Tom )	5	0	2
<input type="checkbox"/> <a href="#">Fall 2009 Semester Wrap-up</a> 	Semester wrap-up of courses taught in the Fall 2009 semester by Computer Electronics faculty - Jeff, Ray, Vigs and part-time faculty (Dale, Jeremy, Tom )	7	0	2
<input type="checkbox"/> <a href="#">Spring 2009 Semester Wrap-up</a> 	Semester wrap-up of courses taught in the Fall 2008 semester by Computer Electronics faculty - Jeff, Ray, Dale, Vigs and part time faculty (Jeremy and Cheryl)	5	0	2
<input type="checkbox"/> <a href="#">Fall 2008 Semester Wrap-up</a> 	Semester wrap-up of courses taught in the Fall 2008 semester by Computer Electronics faculty - Jeff, Ray, Dale and Vigs	4	0	1
<input type="checkbox"/> <a href="#">Spring 2008 Semester Wrap-Up</a> 	Semester wrap-up of courses taught in the Spring 2008 semester by Computer Electronics faculty - Jeff, Ray, Dale and Vigs	4	0	1
<input type="checkbox"/> <a href="#">Fall 2007 Semester Wrap-up</a> 	Semester wrap-up of courses taught in the Fall 2008 semester by Computer Electronics faculty - Jeff, Ray, Dale and Vigs	4	0	1
Format for posts: <b>Course number/name:</b> <u>Student performance in course highlighting strengths and weaknesses:</u> <u>Suggestions for changes or updates in future offerings of the course:</u>				

## Sample Faculty Discussion Board Posts

< Jeremy >		Reply Quote Edit Set Flag Delete	
Author:	Vigyan Chandra	Total views:	20 (Your views: 10)
Posted Date:	Wednesday, February 1, 2012 10:31:22 AM EST		
Edited Date:	Wednesday, February 1, 2012 7:07:24 PM EST		

### EET 351 (Programmable Logic Controllers):

#### *Student performance in course highlighting strengths and weaknesses:*

Students do very well in the course with only the rare C occurring. Students have a great understanding of Binary and a good understanding of Boolean logic.

The Biggest weakness seems to be the lack of understanding of how electrical wiring works. I spent a lot of time explaining basic wiring and trying to get the students to grasp how the switch or push button in the real world effects the program code.

#### *Suggestions for changes or updates in future offerings of the course:*

We would like to update the course by redoing the tester boards. In doing this we would incorporate HMI (Human Machine Interfaces) and update the PLCs to ones that we can network. By putting the PLCs on the Ethernet standard it will bring the class up to date with how industry currently is. It will also allow us to expand the class to include HMI programming as well as PLC programming



## **Closing the Assessment Loop – Specific Directions for Change**

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- Sample of changes recommended from Spring 2009:
  - EET 251, Electricity & Electronics: Reduce discussion related to circuit theorems, making room for DC/AC applications.
  - EET 253, Microprocessor Control systems: Review AC/DC class for coverage of schematics and symbols.
  - EET 257, Devices & Electronic Circuits: Simplify project with some design and etching.
  - EET 351, Programmable Logic Controllers: Shorten the basics and spend more time on sequencers and bit-shifter
  - NET 303, LANs & PC Communications: More Linux content
  - NET 399/499, Associate Degree Capstone/Senior Capstone: Include content related to project management and scheduling.



## **ATMAE Accreditation Requirements**

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Competency 6.16 for the Baccalaureate Degree  
Program addresses Program Assessment

1. Program mission statement
  - We operate under the Department's Mission Statement
2. Desired program outcomes/student competencies
  - Directly taken from strategic plan Goals and/or Objectives
3. Evidence that the program incorporates these outcomes/student competencies
  - Cite actual changes that have occurred due to the strategic planning process



## **ATMAE Assessment Requirements Contd.**

4. Assessment measures used to evaluate student mastery of the student competencies stated
  - Exit exam, capstone course, etc.
5. Compilation of the results of the assessment measures
  - Cite Track-Dat data
6. Evidence that results are used to improve the program
  - Provide specific examples such as: PC classes upgraded to improve A+ content or new laboratories added to Microprocessor Systems



## Conclusions

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- Need for aligning strategic goals related to student learning at all institutional levels in consultation with advisory/accreditation
- Streamlining the assessment process for continuous improvement
- Properly envisioned and implemented, this alignment will result in:
  - improved course offerings
  - responsive academic programs
  - student proficiency in the discipline





## A Win-Win-Win Scenario

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Alignment of Strategic Plans  
at all Institutional Levels



Continuous Program  
Improvement,  
Validated by national  
Accreditation

Achievement of Core  
Competencies, Co-ops  
and Employment ...  
Student Success



## Acknowledgements

- BS(NET) and AAS(Technology-Computer Electronics) curriculum committee members:
  - [Prof. Jeff Kilgore](#)
  - [Dr. Ray Richardson](#)
  - [Dr. Danda Rawat](#)
  - Assessment assistance provided by faculty members: [Dr Steve Fardo](#), and Profs. Dale Patrick, Jeremy Witt, Tom Pond and Sheryl Cox
- Department of Applied Engineering & Technology ([AE&T](#))
  - [Dr. Tim Ross](#)
  - [Dr. Ed Davis](#) (former chair, Dept. of Technology) and [CB&T](#) Dean [Dr Bob Rogow](#)
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35