Eastern West Virginia Community and Technical College
COURSE ASSESSMENT REPORT

Course Title and Number: **WTT 160 Power Generation and Transmission**	**Academic Term and Year of Assessment Activity (Ex: Fall, 2014)** **Spring 2015**
Report Submitted By: Skip Landes	**Number of Students Assessed: 13**
Date Report Submitted: 05-26-15	**Number of Sections Included: 1**
Course Delivery Format (list all modalities used in sections assessed. Ex: web based, VDL, traditional section, hybrid course, etc.): Lecture / Hand-On Lab and traditional delivery	

Course Role in the Curriculum

Provide a description of the role the course serves in the curriculum (i.e. general education requirement, program technical core, restricted elective, etc.). Note all as appropriate.

This course is a study of the components and process of electrical power generation, control, and delivery systems for wind energy. This course will serve as the basis for an understanding of power generation and distribution. Students will learn how power is transported from the wind farm to homes and businesses. Troubleshooting techniques and procedures will be discussed and demonstrated. This course will cover working with very high voltage transmission equipment and safety procedures. Program Technical Core.

Assessment Methods

Provide a description of the assessment process used. Include description of instrument and performance standards in description. Note all methods.

Because electric power is generated at such a high voltage, it would be hard to do any study in a lab situation. We are able to study many properties of generated power by using our Lab-volt equipment in the lab. This assessment will use the final examine for this 2015 Spring semester to analyze how well the students understand the course work. The text used for this course is "Electric Power System Basics" (For the Nonelectrical Professional). It was written by Steven W. Blume. The lab projects were made up of Lab-volt experiments and exercises, using the Lab-volt simulator equipment. This equipment is capable of generating both 120 VAC single phase and 208 VAC three phase power that can be studied safely. Because the labs had no task sheets with them, it is better to use the final examine for the analytical assessment at this time.

The Outcomes being assessed and method of assessment used are as follows:

- **Understanding of power how power is generated.**
  Final Question #22 – Power out of the generator is a function of _____ _____
  Answer – rotor angle

- **Understanding of single and three phase power systems**
  Final Question #16 – What are the four conditions that must be met first in order to safely connect two three-phase systems?
  Answer – Frequency
  Voltage
  Phase angle
  Rotation

- **Demonstrate circuit theory and use of schematics to analyze circuits**
  Final Question #14 – A _____ _____ is a simple drawing of the system or a portion of the system that shows the electrical placement of all major equipment.
  Answer – one-line diagram

- **Discuss fusing and circuit protection equipment**
  Final Question #12 – Name two disadvantages of a solid state protective relay?
  Answer – external power required
  software can be complex
  many "functional eggs" in one basket

Assessment Results

Provide a summary of results including tables/charts. Incorporate information from previous assessments as appropriate. Append additional pages if necessary. If appending, include notation in box to "See attached".

Course Outcomes	Numbers of Students Answering Correct	Numbers of Students Answering Wrong	Composite Score
Outcome 1 Q - 22	12	1	13
Outcome 2 Q - 16	10	3	13
Outcome 3 Q - 14	12	1	13
Outcome 4 Q - 12	10	3	13
Total Answers	44	8	52
Percentage	85%	15%	100%

Course Level Assessment Summary of Outcomes, Indicators and Results Course Title and Number: Power Generation and Transmission WTT 160 Number of students in assessment sample = 13 Number of Sections in Assessment = 1 Add additional rows to table if necessary				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	**Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)**	**Percent of Correct Responses**	**Percent of Incorrect Responses**	**Performance Standard Met (75%)* (yes or no)**
Outcome 1: Final Test Question # 22	**Understanding of power how power is generated.** Final Question #22 – Power out of the generator is a function of _____ _____ Answer – rotor angle	92%	8%	Yes
Outcome 2: Final Test Question # 16	**Understanding of single and three phase power systems** Final Question #16 – What are the four conditions that must be met first in order to safely connect two three-phase systems? Answer – Frequency Voltage Phase angle Rotation	77%	23%	Yes
Outcome 3: Final Test Question # 14	**Demonstrate circuit theory and use of schematics to analyze circuits** Final Question #14 – A _____ _____ is a simple drawing of the system or a portion of the system that shows the electrical placement of all major equipment. Answer – one-line diagram	92%	8%	Yes
Outcome 4:	**Discuss fusing and circuit**	77%	23%	Yes

Final Test Question # 12	**protection equipment** Final Question #12 – Name two disadvantages of a solid state protective relay? Answer – 1.external power required 2.software can be complex 3.many "functional eggs" in one basket			

* Please note if using a different minimum performance standard.

Conclusions

Provide a brief summary of conclusions derived based on analysis of data. Append additional pages if necessary. If appending, include notation in box to "See attached".

The Course Level Assessment Summary shows that all outcomes for this course has meet performance standards. Outcomes Question #16 and #12 showed lower performance levels but these two questions have a higher degree of difficulty by requiring two and four completion answers. With a higher number of students enrolled in this course, the results has a better chance of showing the real picture of what was learned.

Previous Assessment Reports and Results

Date of Previous Assessment: N/A

List of Outcomes Not Met: N/A

Summary of Actions Taken to Address Unmet Learning Outcomes: Append additional pages if necessary. If appending, include notation in box to "See attached".

Action Plan and Date for Reassessment

Identify action plan for improvement or maintaining current performance levels including outcomes identified for re-assessment, curriculum revision, LOT proposal, new or revised course activities to reinforce learning outcomes, etc. Append additional pages if necessary. If appending, include notation in box to "See attached".

Even though the performance level for this class met standard, there is much more that can be done to improve the learning process. The main item that needs to be addressed is task sheets for the projects. Lab-volt does not provide ready-made task sheets with their experiments. These task sheets would need to be written for each lab exercise and would improve the evaluation of the student's progress while he is completing his work. The co-ordination of the lab review tests with the text review and tests would help to reinforce the learning process.

Assessment Committee Recommendation/Approval

(To be posted by Assessment Committee Chair)
✠ Approved as presented **Date: 09/09/15**

LOT Recommendation/Approval (To be posted by Assessment Committee Chair)
✠ Approved as presented **Date: 09/21/15**