



SYLLABUS

Your Course Learning Plan

COURSE: PPT 120: Energy Industry Fundamentals

INSTRUCTOR: Liz Peters

TIME & DAY/ TIME FRAME: January 12, 2015 to May 4, 2015; class runs from 8:00 AM to 10:45 AM on Fridays

A. Instructor Contact & Communications

Classroom Location:	CVAG57 Room 120
YC Email Address:	<i>elizabeth.peters@yc.edu</i>
Office/Campus Location:	CTEC Room 161A
Office/Lab or Online Hours: (if applicable)	Mondays through Thursdays 11:30AM-1:00PM
Separate Web Address: (if available)	N/A

B. General Course Information, Content, & Learning Outcomes

Course Purpose & Credit Hours:	Course in the Electric Utility Technology program provides students with a foundation in energy industry fundamentals.
General Education:	This course is on a General Education list X This course is not on a General Education list ** S/U grading is not an option for courses applied to the Arizona General Education Curriculum (AGEC).
Course Description:	Commercially used fuels and power sources and their conversion to usable energy, with a focus on generated electrical power and its transmission and distribution to the point of use. Includes exploration of the energy industry, safe and healthy work environments, natural gas transmission and distribution, and career/entry requirements. Preparation for the Energy Industry Fundamentals (EIF) Certification exam.
Prerequisite/Co-requisite:	None
Course Content	<ol style="list-style-type: none">1. Energy industry2. Safe and healthy work environment3. Electric power generation4. Electric power transmission5. Electric power distribution6. Natural gas transmission and distribution7. Energy related careers and entry requirements8. Energy topics, hot topics, regulatory topics and emerging technologies

<p>Learning Outcomes</p>	<p>Upon successful completion of this course, the learner will be able to:</p> <ol style="list-style-type: none"> 1. Explain the basic and emerging principles and concepts that impact the energy industry. (1) 2. Apply compliance with procedures necessary to ensure a safe and healthy work environment. (2) 3. Describe electric power generation. (3) 4. Describe electric power transmission. (4) 5. Explain electric power distribution. (5) 6. Explain natural gas transmission and distribution. (6) 7. Identify and describe energy related careers and entry requirements. (7) 8. Discuss and analyze energy and regulatory topics. (8)
<p>Assessment Measures</p>	<p>Homework Questions Worksheets Unit exams Lab experiments Team projects Final exam</p>
<p>Grading (credit) criteria:</p>	<p><u>Homework Questions:</u> 14 @ 10 points possible; 10 points for 70% correct; 0 points for less than 70% correct.</p> <p><u>Unit exams:</u> 14 @ various points possible; percentage score equals number correct divided by total possible.</p> <p><u>Review Scenarios:</u> 14 @ 10 points each; 10 points for 70% correct; 0 points for less than 70% correct.</p> <p><u>Team Projects:</u> 1 @ 100 points; graded by project rubric</p> <p><u>Final exam:</u> 150 points possible; percentage score equals number correct divided by total possible.</p> <p>Homework Questions: 140 points possible Unit exams: 536 points possible Review Scenarios: 140 points possible Team Project: 100 points possible Final exam: 150 points possible Total points possible: 1,066</p> <p>Grading: A = 959-1,066 points (90%) B = 853-958 points (80%) C = 746-852 points (70%) D = 640-745 points (60%) F = 639 or less</p> <p><i>I will do my best to respond to email, voice mail within 24 hours during the week. I will return graded assignments within 7 <u>days after the scheduled due date</u>. If you have questions regarding an assignment, contact me <u>prior to the due date</u> so your question can be answered in a timely manner.)</i></p>
<p>C. Textbooks, software, supplies, equipment and/or tools</p>	<p>CEWD Energy Industry Fundamentals Student Material (located on BlackBoard) Safety glasses Scientific calculator</p>

Student Resources (as applicable)	
Campus Resources:	Campus Resources available through Student Services (http://www.yc.edu/v4content/student-services/default.htm).
myYC Portal:	All Yavapai College students will be required to use the myYC Portal to register, add, or drop classes online at http://my.yc.edu/ . First-time students will create a log-on username and password. The myYC Portal includes: Links to your College email Your degree audit system – <i>DegreeWorks</i> – to track your progress Registration information - also your schedule View transcripts, update information, and more! For assistance with the Portal, go to http://portalinfo.yc.edu/support.asp
Student Email Accounts:	Yavapai College requires enrolled students to have an e-mail address to which official College communications can be sent called 'Scholar', accessed by clicking on the email icon in your myYC portal. Students are expected to check their Yavapai College Scholar account for college-related information and for class information and announcements, as directed by the instructor. For assistance, go to http://www.yc.edu/content/myyc/emailinfo.htm Students may elect to forward their e-mail to an address different from their official Yavapai College account (see instructions on website), but assume full responsibility for reading e-mail at the forwarded location.
Library Services:	Library services are available at the Prescott and Verde Valley Campuses. Both are members of a countywide library network, which provides access to a wide range of information and resources at libraries throughout Yavapai County. Both libraries also include public computer access.
Learning Centers & Tutoring:	Learning Centers are available on both the Prescott and Verde Valley Campuses. These centers provide a variety of learning support for students including tutoring, adaptive computer and learning equipment for students with disabilities, and a networked general computer lab for registered students. Please call for details: Prescott - 776-2085, or Verde Valley – 634-6562. Web link: http://www.yc.edu/v4content/learning-center/
Online resources and services:	Online writing tutoring for any academic subject is available at http://www.yc.edu/v4content/learning-center/
Open Computer Labs:	Most campuses have open computer lab hours for currently-enrolled students. Please check your campus site for availability and schedules.
Holidays & Closures:	Monday, January 19th – Martin Luther King, Jr. Day (no classes) Monday through Friday, March 9th – 13th – Spring Break (no classes)
Important Dates:	Instruction Begins – January 12, 2015 Last Day to Add/Drop Regular class – January 18, 2015 Last Day for 100% refund – January 18, 2015 Last Day of Student-initiated Withdrawals (no refunds) – March 8, 2015 Last Day of classes – May 4, 2015

Institutional Policies and Instructor Procedures	
Attendance:	Students are expected to attend and participate in all class meetings, laboratories, and field trips. A student who expects to be absent due to another school-sponsored activity or compelling personal reason must make prior arrangements with the instructor. All course work must be made up as directed by the instructor. A student who does not adhere to instructor and College attendance requirements may be dropped from the course as defined in the Yavapai College General Catalog.

Course Withdrawal:	<p>A student-initiated drop date is established by the College. For Fall semester 2014, this date is March 8th, 2015. Students are responsible to drop a class through the Self-Service option on the myYC Portal. If you have not withdrawn from a class by the student-initiated drop date, you will receive the letter grade earned in the course at the end of the semester. An instructor may withdraw students from class after the student-initiated date. If a student does not follow official procedures for withdrawing from a course, failing grades may be posted on your student permanent record.</p>
Satisfactory (S) Unsatisfactory (U) Grades	<p>An “S” grade is defined as equivalent to a grade of “C” or better on the conventional grading scale of A-F. A course completed with an “S” grade indicates appropriate subject area knowledge to satisfy the prerequisite requirement of a related higher-level course. Specified courses are graded only S/U. Students who prefer the S/U grading option must notify the class instructor. Conditions of Satisfactory/Unsatisfactory (S/U) grading:</p> <ul style="list-style-type: none"> • Since some college and universities limit the number of credits completed with S/U grading that will transfer, or restrict the way that such credits may be applied to degree requirements, it is recommended that students preparing to transfer select the S/U grading option only for elective courses. • A maximum of twelve (12) hours of “S” credit from 100- and 200-level courses may be applied toward Yavapai College graduation requirements. • S/U grading is not an option for courses applied to the Arizona General Education Curriculum (AGEC). • S/U grades are not computed in the student’s Yavapai College grade point average.
Academic Integrity:	<p>Honesty in academic work is a central element of the learning environment. It will be assumed that you will present your own work. The presentation of another individual’s work as one’s own or the act of seeking unfair academic advantage through cheating, plagiarism or other dishonest means are violations of the College’s Student Code of Conduct.</p> <p>Definitions of plagiarism, cheating, and violation of copyright and penalties for violation are available in the Yavapai College Student Code of Conduct (http://www.yc.edu/v4content/student-services/code-conduct.htm)</p>
Student Code of Conduct:	<p>Respect for the rights of others and for the College and its property are fundamental expectations for every student. The “Code of Conduct” outlines behavioral expectations, and explains the process for responding to allegations of student misconduct.</p> <p>Students are expected to respond and write in a professional and appropriate manner when activities are assigned to create scenarios, discuss opinions, present on a selected subject, or post to the web discussion board. Inappropriate language or objectionable material will not be tolerated and could result in disciplinary measures and/or a failing grade for the class.</p> <p>Web link for the Student Code of Conduct – http://www.yc.edu/v4content/student-services/code-conduct.htm</p>
Internet Downloading:	<p>Yavapai College technological equipment and resources must be used in accordance with the Copyright Guidelines. Use of Yavapai College equipment and resources to illegally copy, download, access, print or store copyrighted material or download pornographic material is strictly prohibited. For example, file swapping of copyrighted material such as music or movies is strictly prohibited. Users found to violate this policy will have their privileges to use Yavapai College technological equipment and resources revoked.</p>

Disability Resources:	Yavapai College is committed to providing educational support services to students with documented disabilities. Accommodations for a student must be arranged by the student through the Disability Resources Coordinator (Prescott Campus: 928-776-2079 or Verde Valley Campus: 928-634-6563).
Cell Phone, Pages & Texting:	Yavapai College is committed to providing a quality learning environment. All cell phones and pagers must be placed in a non-audible mode while in classrooms, computer labs, the library, the learning center, and testing areas. Cell phones and pagers need to be used outside these facilities.
Tobacco Use:	Yavapai College is committed to limiting exposure to the harmful effects of primary and secondary smoke to campus students, visitors, and employees. If you use the facilities at Yavapai College, we comply with ASRS 36-301.01, Smoke Free AZ. Smoking is prohibited indoors and 25 feet from all doors, windows and vents. In order to reduce the harmful effects of tobacco use and maintain a healthful working and learning environment, the district prohibits the use of tobacco except in specific areas. Tobacco use on college property is defined as lighted pipes, cigars, cigarettes, and the use of snuff and smokeless tobacco in any form.
Drug & Alcohol Free Environment:	Yavapai College's policy is to provide an environment free of drugs and alcohol. The use of illegal drugs and abuse of alcohol pose significant threats to health and can be detrimental to the physical, psychological, and social well-being of the user and the entire Yavapai College community, and is prohibited.
Additional Instructor Information & Procedures:	LATE WORK: Assigned work (worksheets, labs, review questions and exams) will be accepted after the due date defined in the calendar only if prior notice is given of an absence to the instructor in advance of the class meeting (via e-mail or phone). In other words, if you miss class and don't let me know about it in advance you will not be allowed to make up any work that you missed. <u>Note: All assignments including labs and worksheets are due the next class meeting.</u>
Online System & Assignment Requirements	All course materials are available 24/7 at the course shell in Blackboard.

COURSE CALENDAR (Subject to change with notice)

Date	Activity	Assessment
1/16/2015	<p>Syllabus and course info</p> <p>Unit 1A: History of the U.S. Energy Industry and Infrastructure</p> <ul style="list-style-type: none"> ➤ Static ➤ DC and AC ➤ Monopolies and Holding Companies ➤ Regulatory Agencies ➤ Obligation to Serve <p>For 1/23: read Module 1, Unit A and complete <u>Review Questions #1A</u>: (10 points for 70% correct; 0 for less than 70% correct).</p> <p><u>Note: all labs and assignments are due the next class meeting unless otherwise specified.</u></p>	<p>Pre-test (final exam) does not count towards grade.</p> <p><i>Review Scenarios 1</i></p>
1/23/2015	<p>Unit 1B: The Energy Industry: Structure and Organization</p> <ul style="list-style-type: none"> ➤ Electric Power Systems ➤ Utilities ➤ Utility Business structure ➤ Electric Power Consumers <p>For 1/30: read Module 1, Unit B and complete <u>Review Questions #1B</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>	<p>Unit 1A Exam: (24 points possible)</p> <p><i>Review Scenarios 2</i></p>
1/30/2015	<p>Unit 1C: Energy Flow: Generation, Transmission, and Distribution</p> <ul style="list-style-type: none"> ➤ Generators ➤ Transmission and Distribution ➤ Energy Transformations <p>For 2/6: read Module 1, Unit C and complete <u>Review Questions #1B</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>	<p>Unit 1B Exam: (30 points possible)</p> <p><i>Review Scenarios 3</i></p> <p><u>Scavenger Hunt Worksheet</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>
2/6/2015	<p>Unit 2A: Regulatory, Procedural, and Security</p> <ul style="list-style-type: none"> ➤ Safety Agencies ➤ Safety Regulations ➤ Safety Culture ➤ Safety Plans <p>For 2/13: read Module 2, Unit A and complete <u>Review Questions #2A</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>	<p>Unit 1C Exam: (39 points possible)</p> <p><i>Review Scenarios 4</i></p> <p><u>OSHA Guest Speaker (tentative)</u></p>

2/13/2015	Unit 2B: Preparing for Hazards in the Workplace <ul style="list-style-type: none"> ➤ Types of Hazards ➤ Hardhats ➤ Fire Extinguishers ➤ Safety Glasses and Face Shields ➤ Gloves ➤ Fall Protection ➤ Respirators ➤ Hearing Protection For 2/20: read Module 2, Unit B and complete <u>Review Questions #2B</u> : (10 points for 70% correct; 0 for less than 70% correct).	Unit 2A Exam: (31 points possible) <i>Review Scenarios 5</i> <u>PPE Worksheet:</u> (10 points for 70% correct; 0 for less than 70% correct).
2/20/2015	Unit 2C: Hazards and Response <ul style="list-style-type: none"> ➤ Conductors and Insulators ➤ Wire Color Coding ➤ GFCIs ➤ Fire Hazards ➤ Traffic Hazards ➤ Hazard Communication ➤ MSDS ➤ First Aid For 2/27: read Module 2, Unit C and complete <u>Review Questions #2C</u> : (10 points for 70% correct; 0 for less than 70% correct).	Unit 2B Exam: (40 points possible) <i>Review Scenarios 6</i> <u>MSDS Worksheet:</u> (10 points for 70% correct; 0 for less than 70% correct). <u>Spot the Hazard Worksheet:</u> (10 points for 70% correct; 0 for less than 70% correct).
2/27/2015	Unit 3A: Conventional Electric Power Generation Systems <ul style="list-style-type: none"> ➤ Alternate and Emerging Power Generation Technologies ➤ Furnaces ➤ Boilers ➤ Turbines ➤ Gas Turbines ➤ Nuclear Fission ➤ Power Plants ➤ Efficiency For 3/6: read Module 3, Unit A and complete <u>Review Questions #3A</u> : (10 points for 70% correct; 0 for less than 70% correct).	Unit 2C Exam: (20 points possible) <i>Review Scenarios 7</i> <u>Furnace Theory Worksheet:</u> (10 points for 70% correct; 0 for less than 70% correct). <u>Boiler Theory Worksheet:</u> (10 points for 70% correct; 0 for less than 70% correct). <u>Turbine Theory Worksheet:</u> (10 points for 70% correct; 0 for less than 70% correct).
3/6/2015	Unit 3B: Overview of Generation Fuel Sources <ul style="list-style-type: none"> ➤ Renewable and Nonrenewable Sources ➤ Hydrocarbons ➤ Combustion ➤ Petroleum 	Unit 3A Exam: (46 points possible) <i>Review Scenarios 8</i>

	<ul style="list-style-type: none"> ➤ Coal ➤ Natural Gas ➤ Hydroelectric <p>For 3/13: read Module 3, Unit B and complete <u>Review Questions #3B</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>	
3/13/2015	<p>Unit 3C: Overview of Emerging and Alternative Generation Technologies</p> <ul style="list-style-type: none"> ➤ Solar ➤ Wind ➤ Geothermal ➤ Bioenergy ➤ Ocean Wave / Tidal <p>For 3/20: read Module 3, Unit C and complete <u>Review Questions #3C</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>	<p>Unit 3B Exam: (57 points possible) <i>Review Scenarios 9</i></p>
3/20/2015	<p>Unit 4A: Introduction to Electric Power Transmission</p> <ul style="list-style-type: none"> ➤ Conductors and Insulators ➤ Transmission Lines ➤ Transformers ➤ Power Grid ➤ AC Waveforms ➤ AC Phase <p>For 3/27: read Module 4, Unit A and complete <u>Review Questions #4A</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>	<p>Unit 3C Exam: (51 points possible) <i>Review Scenarios 10</i></p>
3/27/2015	<p>Unit 4B: Transmission Governance, Stability, and Emerging Technologies</p> <ul style="list-style-type: none"> ➤ Ownership ➤ Stability / Reliability ➤ Redundancy ➤ Brownouts and Blackouts ➤ Smart Grids ➤ Balancing Authorities ➤ Investor-Owned Utilities vs. Co-ops <p>For 4/3: read Module 4, Unit B and complete <u>Review Questions #4B</u>: (10 points for 70% correct; 0 for less than 70% correct).</p>	<p>Unit 4A Exam: (31 points possible) <i>Review Scenarios 11</i></p>

4/3/2015	Unit 5A: Introduction to Electric Power Distribution <ul style="list-style-type: none"> ➤ Substations ➤ Distribution Circuits ➤ Service Drops ➤ Capacitors For 4/10: read Module 5, Unit A and complete <u>Review Questions #5A</u> : (10 points for 70% correct; 0 for less than 70% correct).	Unit 4B Exam: (32 points possible) <i>Review Scenarios 12</i>
4/10/2015	Unit 5B: Distribution Governance, Stability, and Emerging Technologies <ul style="list-style-type: none"> ➤ Ownership ➤ Stability / Reliability ➤ Redundancy ➤ Brownouts and Blackouts ➤ Smart Grids ➤ Control, Data, and Infrastructure For 4/17: read Module 5, Unit B and complete <u>Review Questions #5B</u> : (10 points for 70% correct; 0 for less than 70% correct).	Unit 5A Exam: (57 points possible) <i>Review Scenarios 13</i>
4/17/2015	Unit 5C: Natural Gas Distribution <ul style="list-style-type: none"> ➤ Composition ➤ Uses ➤ Pressure Regulation ➤ Regulations For 4/24: read Module 5, Unit C and complete <u>Review Questions #5C</u> : (10 points for 70% correct; 0 for less than 70% correct).	Unit 5B Exam: (31 points possible) <i>Review Scenarios 14</i>
4/24/2015	For 11/20: Team Project #2 Due (100 points possible)	Unit 5C Exam: (47 points possible)
5/1/2015		FINAL EXAM (150 points possible) Certification (100 bonus points possible)

*** end of PPT 120: Energy Industry Fundamentals syllabus ***