



Teaching Energy Industry Fundamentals (EIF) Using a Blended Learning Approach

EIF: The Blended Learning Approach

Energy Industry Fundamentals provides a broad understanding of the electric and natural gas utility industry and the energy generation, transmission, and distribution infrastructure, commonly called the "largest machine in the world," which forms the backbone for the industry. The course includes business models, regulations, types of energy and their conversion to useable energy such as electric power, how generated power is transmitted and distributed to the point of use, emerging technologies, and the connection to careers in the energy industry.

The University of Missouri - Columbia was contracted under the ARRA: Missouri State Energy Sector Partnership and Training grant from the U.S. Department of Labor to develop an online version of this course so that institutions can use a blended learning approach. In this version, the course includes the initial theoretical content, activities, and tests, as well as scenarios designed to provide context to the content being learned.

Enhancements to the online course include:

- Instructor control over student log-ins, can see students' progress.
- Quizzes are graded automatically, providing students with immediate feedback. Instructors can see student scores and the questions each student misses.
- All modules contain scenarios. Assessment scenarios are designed to assess content knowledge in the context of a hypothetical real-life situation.

Can students still earn the Energy Industry Fundamentals accredited certificate (credential)?

Yes, as long as the institution becomes an Approved Course Provider. More information on the requirements along with a course provider application can be found at:

<http://cewd.org/curriculum/about-the-eif-certificate.php>.

There are several requirements to be aware of to ensure that the blended learning quality is equivalent to the experience a student would have with the fully in-person version of the course.

- For each institution interested in offering this course to their students a new course instance needs to be created and instructors assigned to lead the course.
- The created instance of the course must have specific start and end dates.
- The students cannot register for the course themselves.
- Instructors need to have **synchronous** interactions with the students face to face.

Recommended Format and Sequence for Using a Blended Learning Approach

Orientation

Have a projector and a laptop with Internet access ready to use. Take the students on a tour of the online portal at www.portal.cewd.org. Demonstrate how students should set up their accounts.

Provide each student with pdf copies of the student guides from the in-person class. This will serve as backup if there are technical issues with the portal. Students can also complete the review activities in writing (guided note-taking, vocabulary and other review activities, but NOT the end of module quizzes) for homework.

Subsequent Classes

At each class, students should have read all of the material from the module, completed the review activities, taken the module quiz online, and received their grades. In class, students turn in copies of their homework.

The instructor uses a variety of methods to discuss the content from the past week. See the pointers below. At the end of the session, the instructor assigns what should be completed over the next week. Each module can be taught over a two to three week period.

Last Class

In advance of class, email the student study guide to students to complete for homework in advance. Note—if there is limited time, for example, one week to use the study guide, assign specific sections since the guide contains a lot of exercises.

The student study guide is available at:

<http://www.cewd.org/curriculum/downloads/EIFStudyGuide-Student.pdf>

Spend class time covering selected exercises (they should bring their completed study guide to class) and answer any questions students have about the material in the course.

Final Assessment

Students take the assessment in a computer lab situation. The instructor serves as the proctor.

Pointers for maximizing the impact of the instructor-led, in-person sessions:

- Look at the lesson plans and pacing guides in the instructor guide (available upon request to Julie@cewd.org) to get an idea of how to pace the lessons you will teach in person but use your own judgment about what your students will need.
- Spend more time on modules that are most relevant to the jobs available at the local energy companies. For example, if lineworker positions are/will be in demand, spend more time on the distribution section and less time on the natural gas module. However, all modules must be covered since the final assessment will take into account the five modules.
- Use the in-person time to teach conceptual ideas (e.g. AC/DC) not topics that can only be learned by recall and memorization (e.g. names of government agencies).

- Use storytelling to bring the content to life. For example, talk about parts of your job that you were passionate about when you worked at a utility. Or, relate concepts the students are studying to situations that are relevant to them. For example, if there was a blackout for an extended period of time, how would this impact their personal technology?
- The instructor guide is full of labs, projects, and group activities. Select at least one for each session you meet with the students to be completed in class.
- Invite guest speakers to talk about their careers.
- If possible, conduct field trips at the local energy companies.

How do I get access to the online version?

For initial access go to portal.cewd.org and register. If you would like to have a shell set up for your institution, please contact Julie Strzempko at Julie@cewd.org. Otherwise register and login to the Energy Industry Fundamentals – V3.0.

How do the students access the final assessment?

Schools must be Approved Course Providers to access the assessment. The requirements and process to order the assessments are detailed on pages 13 and 14 of the [Approved Course Provider Handbook](#).

Where can I learn more about how others are teaching EIF?

Contact Julie Strzempko, CEWD consultant at Julie@cewd.org.