

Distance Education Course Proposal Template

Steps to the approval process:

1. Complete the applicable template(s) and email them to the departmental or program curriculum committee chair. (If this is a new course that will include DE, complete Templates A and E. If adding DE to an existing course that is otherwise unchanged, complete Template E only. If revising a course and adding DE, complete Templates A and E.)
2. The curriculum chair emails the proposal to the curriculum committee, then to the department/program faculty for a vote and finally to the department/program chair.
3. The department/program chair emails the proposal to curriculum-approval@iup.edu; this email will also serve as an electronic signature.
4. Curriculum committee staff will log the proposal, forward it to the appropriate dean's office(s) for review within 14 days and post it on the X Drive for review by all IUP faculty and administrators. Following the dean's review the proposal goes to the UWUCC/UWGC and the Senate.
5. Questions? Email curriculum-approval@iup.edu.

Contact Person:	Steven Hovan	Email Address:	Hovan@iup.edu
Proposing Depart/Unit:	Geoscience	Phone:	7-2379

Course Prefix/Number	GEOS 119
Course Title	Geology of Energy Resources
Adding DE to an Already Approved Course	<input type="checkbox"/> Yes – <i>Template E only required</i> <input checked="" type="checkbox"/> No – <i>Template A and E both required</i>
Type of Proposal	(See CBA, Art. 42.D.1 for definition) <input checked="" type="checkbox"/> Online <input type="checkbox"/> ITV
Brief Course Outline – if adding DE to an approved course <i>Give an outline of sufficient detail to communicate the course content to faculty across campus. It is not necessary to include specific readings, calendar, or assignments.</i>	<p>Part A: The Rock Cycle and the Role of Energy An overview of our planet's age and structure External and internal energy that drives the rock cycle The impact of plate tectonics on energy resources</p> <p>Part B: The Geology of Oil and Gas Depositional environments of oil and gas Decay and thermal maturation processes Oil and gas migration and reservoirs Exploration techniques for oil and gas Tar sands, shale gas and other unconventional sources Environmental impacts of oil and gas use</p> <p>Part C: The Geology of Coal Depositional environments of coal Coal ranks and classification Coal mining techniques Environmental impacts of coal use</p> <p>Part D: The Geology of Radioactivity The discovery of fission and fusion Formation of uranium and other ores Environmental impacts of nuclear energy use</p> <p>Part E: Geothermal Energy Distribution of the Earth's internal heat Harvesting heat for power versus heat pumps Environmental impacts of geothermal energy use</p> <p>Part F: Hydroelectric, wave and wind energy</p>

Template E

	<p>Landscape evolution and energy Coastline changes and climate Environmental impacts of water and wind energy Part G: The Future Of Energy Population growth and energy demand US Energy policy and decision-making</p>
<p>Material for Proposal (Required Questions from CBA)</p>	
<p>How is/are the instructor(s) qualified in the Distance Education delivery method as well as the discipline?</p>	<p>Instructors will be approved using the CSNM distance education approval process that assesses prior experience and training to qualify instructors to teach DE. Distance education instructors must be approved by both the department Chair and the College Dean.</p>
<p>For each outcome in the course, describe how the outcome will be achieved using Distance Education technologies.</p>	<p>Objective 1: Students will understand how fossil fuels such as oil, gas and coal are formed by processes of organic decay, sediment formation and geothermal heating. Expected Student Learning Outcomes 1 and 2 Informed and Empowered Learners Achieved through DE technologies: Students will explore US Energy Information Administration website and statistics for particular states to identify main sources of energy development and usage in the U.S.. From these data, we will produce an “energy use heat-map image” which students will use to explore patterns of energy development/usage and define regions of geological sediment basins (oil and gas development), mountainous landscape (hydroelectric generation) and exposure of volcanic/igneous rocks (radioactivity).</p> <p>Objective 2: Students will investigate how fossil fuels can be discovered and produced using conceptual models of ancient geologic environments and past tectonic events. Expected Student Learning Outcomes 1 and 2 Informed and Empowered Learners Achieved through DE technologies: The tectonic history of major oil and gas basins will be explored through tectonic map reconstructions and animations of ancient coastlines and global sea level history. Students will be provided specific basins to summarize an analysis of the basin giving information such as the original geological environment of the basin (coral reef, shallow sea, coastal, etc), the climate of the area at the time of deposition, and the tectonic history of the region since it’s formation.</p> <p>Objective 3: Students will examine how radioactive materials are concentrated into ores by igneous, metamorphic and sedimentary processes, and discover the geologic problems with long-term storage of radioactive waste materials. Expected Student Learning Outcomes 1 and 2 Informed and Empowered Learners Achieved through DE technologies: Students will utilize US Energy Information Administration website and statistics to quantify current US energy production using nuclear reactors. Students will then generate estimates of how many additional nuclear reactors would be required meet the energy demand currently produced through fossil fuels. Students then will be asked to discuss the issues associated with disposal of spent fuel rods, safe operations of facilities, and national security.</p> <p>Objective 4: Students will explore how plate tectonic history and landscape evolution control the availability and economic viability of renewable energy resources such as geothermal, hydro-electric, wave and wind energy. Expected Student Learning Outcomes 1, 2 and 3 Informed, Empowered and Responsible Learners Achieved through DE technologies: Using regional climate data available from the Pennsylvania State Climatology website, students will make a basic wind-assessment map of Pennsylvania to determine which regions may be most viable for wind-energy production. Students will explore how much wind energy is currently produced in PA and offer analysis of how many additional wind-powered generators would be needed to reduce other forms of energy production.</p> <p>Objective 5: Students will integrate an understanding of the environmental impacts of energy exploration, development and usage for every type of fuel and/or power covered in class. Expected Student Learning Outcomes 1, 2 and 3 Informed, Empowered and Responsible Learners Achieved through DE technologies: Students will be asked to search for a SPECIFIC oil or gas field then provide information about the type of oil/gas produced, date of discovery, total value of produced reserves, remaining reserves, etc. Information will be shared with others in the class by posting through</p>

Template E

	<p>D2L. This will be followed by another to read through all of the posts from other students and write a short discussion of whether or not you think this location has passed the point of 'peak oil' production yet. Students will examine outside sources of information to help inform their discussion, but are required to use at least some of the information found by fellow students to support their argument.</p>
<p>How will instructor-student and student-student, if applicable, interaction take place?</p>	<p>All students will be enrolled in D2L forums and required to post classroom assignment analysis for other students to view. Student-student interactions will be encouraged through follow-up assignments that require incorporation of other student postings in their final analysis. In addition, students will be required use forum posts to ask questions about course readings and assignments. A component of the final course grade will be based on the quality of questions/responses made to discussion boards.</p>
<p>How will student achievement be evaluated?</p>	<p>Student achievement in the on-line sections of this course will cover the same learning objectives as the on-campus sections. However, essay exams and writing assignments that require students to incorporate and synthesize assignments, readings and student discussions will be used in the on-line section while the significantly larger class size excepted for brick & mortar sections will necessitate shorter writing assessments and multiple-choice exam questions.</p>
<p>How will academic honesty for tests and assignments be addressed?</p>	<p>Students will be required to log-in using university credentials to view, respond and submit all assignments. In the absence of proctored exams (which would be very difficult for some students to complete, e.g. military personnel) academic integrity will be encouraged through essay questions that require participation and knowledge from the entire course. Each year, unique exams questions will be developed that assess material presented and discussions during that semester of study.</p>