Wilkes University Curriculum Committee

PROPOSAL SUBMITTAL FORM

Directions:

• Use this set of forms for all proposals sent to the Curriculum Committee.
• Pages 1-3 of this document are required. Any unnecessary forms should be deleted from the packet before submissions. If multiple forms are needed (course addition, course deletion, etc), simply copy and paste additional forms into this packet.
• Note that all new programs (majors and minors), program eliminations, significant program revisions and all general education core revisions must be reviewed and approved by the Provost and Academic Planning Committee (APC) prior to submission to the Curriculum Committee. The Provost will make the decision if a program revision requires APC review.
• Completed and signed forms are due no later than the second Tuesday of every month. Submit one signed original hard copy and a scanned electronic copy with all signatures to the Chair of the Curriculum Committee.

1. Originator: Name: Kenneth M. Klemow, Ph.D., o/b/o Energy Minor Task Force
   Department: Biology (note, this is not a Biology Dept. proposal)
   Phone and email: 570-408-4758, Kenneth.klemow@wilkes.edu

2. Proposal Title: Interdisciplinary Energy Studies Minor

3. Check only one type of proposal: (double click on the appropriate check box and change default value to “checked”).

☒ New Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC. (Approved by APC in March)
☐ Elimination of Program. (Major or Minor Degree Programs). This requires prior review and approval by the Provost and APC.
☐ Program Revision. Significant revisions to a program require review and approval by the Provost. The Provost determines if review and approval by APC is necessary.
☐ General Education Revision. Submissions only accepted from the General Education Committee (GEC). Must be reviewed and approved by the Provost.
☐ Creation of new departments, elimination of existing department. This requires prior review and approval by the Provost and APC.
☐ Course additions or deletions not affecting programs (such as elective courses, transition of “topics” courses to permanent courses).
☐ Change in course credit or classroom hours.
☐ Incidental Changes. Includes changes in course/program title, course descriptions, and course prerequisites. (Although these changes do require approval by the Curriculum Committee, they do not go before the full faculty for approval).
☐ Other (Specify)
Indicate the number of course modification forms that apply to this proposal:

______ Course Addition Form (plus syllabi)
______ Course Deletion Form
______ Course Change Form

4. Executive Summary of Proposal.

Briefly summarize this proposal. The breadth and depth of this executive summary should reflect the complexity and significance of the proposal. Include an overview of the proposal, background and reasoning behind the proposal and a description of how the proposal relates to the mission and strategic long-range plan of the unit and/or university. For incidental changes a one or two sentence explanation is adequate.

The proposed interdisciplinary minor in Energy Studies will consist of courses that are either currently being offered, or are proposed, in which energy is a major theme. Students enrolled in the minor will take six of those courses, representing 18 credits. One of the courses will include an introductory “Energy in Our World”, while another is a research-oriented capstone course. For the other four courses, students will select one course each from three areas: science, policy / humanities / communications, and business. The sixth course can be taken from any of those areas.

The proposed minor in Energy Studies is designed to complement a wide variety of existing majors at Wilkes, including the natural sciences (biology, chemistry, physics, environmental science), engineering, business and economics, social and political sciences, education, humanities, and fine arts. Indeed, a meaningful part of the program will involve the close collaboration of students from different majors to address energy-related issues from different perspectives. The program will also offer opportunities for team-teaching, both across disciplines – and with colleagues employed outside the university.

The Energy Studies minor will attract students seeking to know more about energy issues for career purposes, or simply to be more intelligent energy consumers or leaders in community discourse on energy issues. The proposed curriculum will equip students to deeply understand and provide solutions to vexing problems relating to energy. Students successfully completing the requirements of the minor will have a sophisticated grasp of the complexities of energy production, delivery and consumption – understanding multiple dimensions including policy, business, science, public health, and engineering. They will become critical consumers and productive producers of information relating to energy. They will be able to productively interact with a variety of stakeholders including leaders and employees of energy companies, members of an often-skeptical public, government officials, and members of the media. We expect that graduates of the minor would be marketable for employment by energy companies, engineering and consulting firms, non-profit organizations, print and broadcast media, government regulatory agencies and legislative staffs, and organizations devoted to energy-related research and analyses.

The proposed program aligns closely with Wilkes’s Mission, Vision, and Values. The interdisciplinary nature of the program – focused on a critically important and dynamic component of our lives that has global implications – embodies Wilkes’s goal of “liberally educating our students
for lifelong learning and success in a constantly evolving and multicultural world.” Much of the program will be based on teamwork and emphasizing close scholarly interactions between faculty mentors and students, thereby fulfilling Wilkes’s “commitment to individualized attention, exceptional teaching, scholarship and academic excellence.” The program’s intent to have students derive much of their learning though addressing the many energy issues facing our region satisfies Wilkes’s “commitment to community engagement.” The program promises to be highly innovative, leading to creative solutions to vexing energy-related challenges. It will also seek to bring together diverse perspectives on energy, helping us rise above factious debates that too often play out in the media and public meetings. Components of the program focused on research and application will help foster outstanding collaborative scholarship within and between disciplines like natural sciences, engineering, social sciences, public policy, arts, business, and communications.

The program will have an effect on Wilkes by providing a focus to a critically important issue facing society, and touched on in dozens of courses at Wilkes. The program will also help to set an example for the development of other interdisciplinary programs on campus. Significantly, the Energy Studies minor is being planned to dovetail with the Energy 101 initiative being pursued by the Department of Energy in collaboration with the University of Maryland and Harford Community College in Maryland (see https://www1.eere.energy.gov/education/energy_101.html). The collaboration between a large research university and a community college provides opportunities for a small university like Wilkes to serve as a national model for developing a truly interdisciplinary program that focuses on undergrads in a 4-year setting.

5. Other specific information. (Not applicable for incidental changes.)

What other programs, if any, will be affected by this proposal? Describe what resources are available for this proposal. Are they adequate? What would be the effect on the curriculum of all potentially affected programs if this proposal were adopted? Include any potential effects to the curriculum of current programs, departments and courses.

By its interdisciplinary nature, this program will likely interrelate with nearly all programs at Wilkes. The Energy Studies minor will draw faculty from diverse disciplines including natural science, engineering, social sciences, humanities, fine arts, business and economics. Most of the courses will be regular offerings offered to satisfy requirements for majors. A few will likely specially created for the Energy Studies Minor. We anticipate that most of those courses would be available to students from various majors, simply wanting to take those courses as free electives. Two possible exceptions may be PHY 203 / EGY 206: General Physics III and PHY 311 / EGY 301: Thermodynamics and Statistical Mechanics, which are existing courses that will allow Engineering students to fit the minor into their programs.

Three categories of courses are being proposed:

• EGY 105 – Introduction to Energy is the gateway course required of all majors
• EGY 2xx – More advanced courses that focus on a specific topic in energy
• EGY 291 – A required capstone course in which students will work on a team-based project

Within the advanced (2xx) courses, three sub-categories are being proposed:
• EGY 20x (301) – Science / Engineering-oriented courses
• EGY 21x – Humanities / Policy-oriented courses
• EGY 22x – Business-oriented courses

Students will be required to take one 20x, one 21x, and one 22x course as part of their program. They will then be able to take a second course in any one of the areas to fulfill their 18 credits.

The roster of courses eligible for the minor are as follows:

• EGY 105 – Introduction to Energy (previously taught, but proposed as new course)
• EGY 202 – Environmental Impacts of Energy Development (proposed)
• EGY 203 / EES 210 – Global Climate Change (existing)
• EGY 204 / EES 2xx – Data Mining, Geospatial Analysis, and Remote Sensing: Methods to Assess Energy Development (proposed)
• EGY 205 / EES 2xx - Solid Earth Energy and Mineral Resources (proposed)
• EGY 206 / PHY 203 – General Physics III (existing)
• EGY 301 / PHY 311 – Thermodynamics and Statistical Mechanics (existing)
• EGY 211 / PS xxx - Introduction to Energy Policy (proposed)
• EGY 212 / HST xxx - The Development and Transformation of the International Oil Industry (proposed)
• EGY 213 / COM 2xx – Communicating Energy Issues (proposed)
• EGY 218 / EES 218 / PHL 218 - Environmental Ethics (existing)
• EGY 221 / BA 3xx – The Business of Energy (proposed)
• EGY 291 – Capstone Course in Energy (proposed)

Since most of the courses will be developed within the majors, we anticipate that effects will be minimal – and indeed should benefit the programs hosting energy-related courses. Specifically, we foresee the following impacts for each category of course:

EGY 105 – Energy in Our World will be the entrée course to the minor, and will count as an Area II elective. For the past two years, the course has been offered as BIO/EES 105, with a combined enrollment of 35-42 students. Future enrollments will likely be similar. The course is currently taught by Dr. Ken Klemow, who receives loading from within Biology. Other faculty may teach it in the future - or it may be team-taught. Loading will be determined. Judging from enrollment patterns over the past two years, the incorporation of students into the existing courses has been done with minimal effect to enrollments in the other BIO / EES 105 courses. We anticipate that trend to continue.

Six courses will be offered in the sciences and engineering. Of those, three (EGY 203 / EES 210 – Global Climate Change, EGY 206 / PHY 203 – General Physics III, and EGY 301 / PHY 311 – Thermodynamics and Statistical Mechanics) are existing offerings. Thus, there will be no new costs associated with their inclusion in the Energy Studies minor. The other three courses (EGY 202 –
Environmental Impacts of Energy Development, EGY 204 / EES 2xx – Data Mining, Geospatial Analysis, and Remote Sensing: Methods to Assess Energy Development, and EGY 205 / EES 2xx - Solid Earth Energy and Mineral Resources) are being proposed by Drs. Klemow, Bruns, and Halsor, respectively. They will fit the courses into their normal teaching rotations. Those courses should also be attractive to students in Environmental Engineering, Environmental Science, Earth Sciences, and Biology – even if they are not pursuing the Energy Minor. Therefore, their presence should enhance the curriculum, especially of the Environmental Engineering and Earth Sciences program.

Four courses are being offered within the humanities and social sciences. One of the courses (EGY 218 / PHL 218 - Environmental Ethics) is an existing offering in philosophy, and is even cross-listed with Environmental Sciences. The other three courses (EGY 211 / PS xxx - Introduction to Energy Policy, EGY 212 / HST xxx - The History of the Oil Industry, and EGY 213 / COM 2xx – Communicating Energy Issues) are being proposed by Drs. Baldino, Kuiken, and Churcher, respectively. They will also fit their respective courses into their normal teaching rotations. Those courses should be attractive to students throughout the university, especially those majoring in Political Science, Sociology, Communications, and History.

EGY 221 / BA 3xx – The Business of Energy is still under development. It will likely be offered within the Sidhu School, where it will be incorporated into the roster of courses for Business Administration. The course will either be taught by a single faculty member, by a team of 2-4 faculty, or by an adjunct. If the latter, funding has been included in the budget for that purpose.

EGY 291 - Capstone Course in Energy is envisioned as a problem-based course in which interdisciplinary teams of students will be supervised by 1-3 mentors having shared interest and expertise in the topic under investigation. Faculty would be loaded for their mentorship, as per the formula used university-wide. Anticipating that there would be more than one team in a given semester, another faculty member would organize and supervise the course. It is likely that supervisory responsibilities would rotate among faculty from year to year, as their schedules permit.
6. Program Outline. (Not applicable for incidental changes).

A semester-by-semester program outline as it would appear in the bulletin for a new program or any modified program with all changes clearly indicated.

<table>
<thead>
<tr>
<th>First semester</th>
<th>Second semester</th>
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<tbody>
<tr>
<td>FYF 101</td>
<td>Major courses</td>
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<td>Major courses</td>
<td>Core courses</td>
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<td>Core courses</td>
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<tr>
<th>Third semester</th>
<th>Fourth semester</th>
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<tbody>
<tr>
<td>EGY 105 (3)</td>
<td>EGY elective (3)</td>
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<tr>
<td>Major courses</td>
<td>Major courses</td>
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<tr>
<td>Core courses</td>
<td>Core courses</td>
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<tr>
<th>Fifth semester</th>
<th>Sixth semester</th>
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<tbody>
<tr>
<td>EGY elective (3)</td>
<td>EGY elective (3)</td>
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<tr>
<td>Major courses</td>
<td>Major courses</td>
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<tr>
<td>Core / FE courses</td>
<td>Core / FE courses</td>
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<tr>
<th>Seventh semester</th>
<th>Eighth semester</th>
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<tbody>
<tr>
<td>EGY elective (3)</td>
<td>EGY capstone (3)</td>
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<tr>
<td>Major courses</td>
<td>Major courses</td>
</tr>
<tr>
<td>Core / FE courses</td>
<td>Core / FE courses</td>
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</tbody>
</table>
7. Signatures and Recommendations. (please date)
   • Signatures of involved Department chair(s) and Dean(s) indicate agreement with the proposal
     and that adequate resources (library, faculty, technology) are available to support proposal.
   • If a potential signatory disagrees with a proposal he/she should write “I disagree with this
     proposal” and a signed statement should be attached to this submission.

Dr. Brian Whitman (EEES)  
Dr. David Carey (EE&P)  
Dr. Michael Steele (Biology / HS)  
Dr. Mark Stine (Communications)  
Dr. John Hepp (GHI&P)  
Dr. Kyle Kreider (Political Science)  
Dr. Jennifer Edmonds (AFM)  
Dr. Linda Paul (PITL)  

Print Name/Title: Signature: Date:
Department chair(s) of all potentially affected programs

Dr. Terese Wignot (CSE)  
Dr. Tom Baldino (CAHSS)  
Dr. Jeffrey Alves (Sidhu School)  

Print Name/Title: Signature: Date:
Dean(s) of any potentially affected College/School.

Registrar

Provost (For new programs, significant revisions and revisions to the General Education Program
revisions only).

Provost should check here ___ if this proposal is a program revision AND the significance of the
revision requires review and approval by APC prior to Curriculum Committee.

Chair, Academic Planning Committee. For new programs, program revisions sent via the provost.
Signature indicates that the proposal has been reviewed and approved by APC.
## List of Proposed Syllabi for New Courses
(note, pagination will be updated after all syllabi are in place)

<table>
<thead>
<tr>
<th>Course title</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>EGY 105 – Introduction to Energy</td>
<td>9</td>
</tr>
<tr>
<td>EGY 202 – Environmental Impacts of Energy Development</td>
<td>13</td>
</tr>
<tr>
<td>EGY 204 / EES 2xx – Data Mining, Geospatial Analysis, and Remote Sensing: Methods to Assess Energy Development</td>
<td>16</td>
</tr>
<tr>
<td>EGY 205 / EES 2xx - Solid Earth Energy and Mineral Resources</td>
<td>21</td>
</tr>
<tr>
<td>EGY 211 / PS xxx - Introduction to Energy Policy</td>
<td>25</td>
</tr>
<tr>
<td>EGY 212 / HST xxx - The Development and Transformation of the International Oil Industry</td>
<td>31</td>
</tr>
<tr>
<td>EGY 213 / COM 2xx – Communicating Energy Issues</td>
<td>36</td>
</tr>
<tr>
<td>EGY 221 / MGT 298 – The Business of Energy</td>
<td>44</td>
</tr>
<tr>
<td>EGY 291 – Capstone Course in Energy</td>
<td>48</td>
</tr>
</tbody>
</table>
1. Course Title: **Energy in Our World**

2. Course Number: ____ EGY 105____________________
Coordinate with Registrar to insure course number is available

3. Course Credit Hours: 3 credits
   - w/o lab: Classroom Hours 3 ___ Lab Hours 0 ___ Other 0 ___
   - w/ lab: Classroom Hours 2 ___ Lab Hours 3 ___ Other 0 ___

4. Course Prerequisites:

5. Course Description (as proposed for the Bulletin): Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

This course discusses energy issues from a number of perspectives, including its physical and biological basis, heat transformation and space heating, energy audits, history, policy, economics, and presentation in the fine arts. The benefits and drawbacks of each type of fossil fuel and major form of alternative energy will be discussed, along with transmission and utilization patterns.

6. Required Documentation:
   - Proposed Syllabus
     Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) informations, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

See next page
Note: This is one version; other faculty might offer a variant:

**Course Syllabus: EGY 105 – Energy in Our World**

Fall 2015
Instructor: Kenneth M. Klemow, Ph.D.,
Professor of Biology and Environmental Science

**Context for the course**

Energy is an important part of our everyday lives. It is a basic concept in most disciplines of science. It is involved in laws of physical motion, chemical reactions, and biological processes for cells, organisms, and ecosystems.

Most people rightfully think of energy as something that we have to purchase to power our vehicles, heat, cool, and light our homes, and run our computers and appliances. We normally don’t think about energy unless it becomes unavailable, or the price increases sharply.

Energy issues are often covered heavily in the media, and are frequently controversial. Our primary sources of energy (coal, oil, gas, nuclear) pose risks to health and the environment. The common alternatives (wind, solar, geothermal, hydropower) may not be sufficient to power our modern lives. Energy also must be transported from point of production to point of consumption via power-lines, pipelines, truck or rail – and those methods also pose risks. Many people are concerned that we do not use energy wisely, and that we need to engage in strict conservation.

Despite its importance, there is a growing sense that we simply don’t know enough about basic energy concepts to make intelligent decisions about how we produce, transport, or consume it. More must be done to improve energy literacy. This course aims to do that for Wilkes students.

**Course Objectives:**

Students completing NRG 105 will be able to:

- Understand the physical basis of energy in our universe, its importance in biological systems, and various ways in which it is measured.
- Understand the history of energy use both worldwide and in “developed” countries.
- Understand current trends of energy production and consumption locally, nationally, and worldwide.
- Critically evaluate arguments about the sustainability of fossil fuels and nuclear energy
- Learn and critically evaluate information about the benefits and weaknesses of potential sources of alternative energy source from a variety of perspectives (potential energy yield, economic, environmental, sociopolitical)
- Examine whether we can improve energy efficiency and reduce consumption
- Develop a well-reasoned personal philosophy about the present energy situation and the best way to move forward on developing and implementing alternative sources.
- Develop the ability to meaningfully participate in a group seeking to understand a complex issue from a variety of perspectives, and communicate its findings to others.
- Understand employment opportunities that relate to energy.

**Long-Term Objective**

Students will develop a mature attitude about - and lifelong interest in - energy issues, and will assert leadership on that topic long after the course is completed, whether as citizens or through careers that involve energy in some way.
EGY 105 – Schedule of Topics

(Note: A day-by-day listing of topics is not provided, since schedules of potential guest speakers are still being finalized)

<table>
<thead>
<tr>
<th>Topic / Activity</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Course introduction:</td>
<td>1-31</td>
</tr>
<tr>
<td>a. Overview, context</td>
<td></td>
</tr>
<tr>
<td>b. Course objectives, organization, grading</td>
<td></td>
</tr>
<tr>
<td>c. Energy literacy</td>
<td></td>
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<tr>
<td>II. Energy: Physical basis and measurements</td>
<td>31-122</td>
</tr>
<tr>
<td>a. Definitions, forms of energy</td>
<td></td>
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<tr>
<td>b. Newtonian motion</td>
<td></td>
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<tr>
<td>1. Speed, acceleration, gravity</td>
<td>31-42</td>
</tr>
<tr>
<td>2. Momentum, force, weight, mass</td>
<td>42-58</td>
</tr>
<tr>
<td>3. Newton’s laws</td>
<td>59-70</td>
</tr>
<tr>
<td>4. Energy vs power vs work</td>
<td>42-58</td>
</tr>
<tr>
<td>c. Conservation of energy, laws of thermodynamics, efficiency</td>
<td>71-92</td>
</tr>
<tr>
<td>d. Temperature and heat</td>
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<tr>
<td>1. Definitions</td>
<td>93-100</td>
</tr>
<tr>
<td>2. Heat transfer</td>
<td>101-102</td>
</tr>
<tr>
<td>3. Specific heat, conduction vs convection vs radiation</td>
<td>102-122</td>
</tr>
<tr>
<td>e. Energy consumption</td>
<td></td>
</tr>
<tr>
<td>1. Basic concepts</td>
<td>123-150</td>
</tr>
<tr>
<td>2. Space heating, role of insulation, energy audits</td>
<td>123-150</td>
</tr>
<tr>
<td>III. Energy in living systems</td>
<td></td>
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<tr>
<td>a. Basic concepts</td>
<td></td>
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<td>b. Energy in individual organisms</td>
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<tr>
<td>c. Energy in ecosystems</td>
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<tr>
<td>IV. Introduction energy problem assignment; Information on the web</td>
<td>346-375</td>
</tr>
<tr>
<td>V. Energy production - Conventional energy</td>
<td>193-274</td>
</tr>
<tr>
<td>a. Coal</td>
<td></td>
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<tr>
<td>b. Petroleum</td>
<td>193-274</td>
</tr>
<tr>
<td>c. Conventional natural gas</td>
<td>193-274</td>
</tr>
<tr>
<td>d. Unconventional natural gas</td>
<td>193-274</td>
</tr>
<tr>
<td>e. Hubbert curve</td>
<td>193-274</td>
</tr>
<tr>
<td>f. Climate change</td>
<td>275-304</td>
</tr>
<tr>
<td>e. Nuclear</td>
<td>413-527</td>
</tr>
<tr>
<td>VI. Energy production – Alternative energy</td>
<td>151-192; 374-387</td>
</tr>
<tr>
<td>a. Solar</td>
<td></td>
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<tr>
<td>b. Wind</td>
<td>388-399</td>
</tr>
<tr>
<td>c. Hydropower</td>
<td>400-412</td>
</tr>
<tr>
<td>d. Hydrogen</td>
<td>332-337</td>
</tr>
<tr>
<td>e. Ethanol</td>
<td>528-570</td>
</tr>
<tr>
<td>f. Biomass / Biodiesel</td>
<td>528-570</td>
</tr>
<tr>
<td>g. Geothermal</td>
<td>528-570</td>
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<tr>
<td>VII. Energy distribution and electricity</td>
<td>305-332</td>
</tr>
<tr>
<td>VIII. Energy conservation</td>
<td></td>
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<tr>
<td>IX. Student presentations – controversies and energy</td>
<td></td>
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</tbody>
</table>
Information delivery

Students will gain information by way of:
- Presentations and handouts given by the course instructor
- Presentations given by guest lecturers
- The Hinrichs and Kleinbach textbook
- Information provided by students

Textbook


Attendance

Attendance is mandatory, and will be taken at each session. Students missing more than six total sessions or three consecutive sessions without a valid excuse will be readmitted to the course only with a note from a Student Dean. Students missing an exam will not be allowed to take a retest. If the excuse is legitimate, the average of the remaining exams will be used. If the excuse is not legitimate, the student will receive a grade of 0.

Assessment and Grading

Students will be assessed via:
- Writing assignments and problem sets
- Group presentations (in which each student will present)
- Periodic exams

Grading System (subject to change; students will be given fair notice of any changes):

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
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<tbody>
<tr>
<td>Exams</td>
<td>250</td>
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<tr>
<td>Writing assignments, problem sets</td>
<td>70</td>
</tr>
<tr>
<td>Group oral report, writing project</td>
<td>80</td>
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<tr>
<td>Total</td>
<td>400</td>
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</tbody>
</table>

Grades will be assigned as follows: >90% = 4.0; 85-90% = 3.5; 80-85% = 3.0; 75-80% = 2.5; 70-75% = 2.0; 65-70% = 1.5; 60-65% = 1.0; <60% = 0.0. These cutoffs may be adjusted downward.

Miscellaneous

Office: CSC 231; Phone (570) 408-4758; FAX: (570) 408-7862; e-mail: kenneth.klemow@wilkes.edu
Office Hours: MTWRF, 10:00-11:00 A.M.
Course webpage: http://klemow.wilkes.edu/BIO-EES-105.html
Facebook: http://www.facebook.com/DrKlemow

Academic Honesty:

Academic Honesty requires students to refrain from cheating and to provide clear citations for assertions of fact, as well as for the language, ideas, and interpretations found within the works of others. Failure to formally acknowledge the work of others, including Internet resources, written material, and any assistance with class assignments, constitutes Plagiarism. Cheating and plagiarism are serious academic offenses that cannot be tolerated in a community of scholars. Violations of academic honesty will be addressed at the programmatic and university levels and may result in a decision of course failure or program dismissal. (see University Student Handbook).

University Statement on Intellectual Responsibility and Plagiarism

At Wilkes the faculty and the entire University community share a deep commitment to academic honesty and integrity. The following are considered to be serious violations and will not be tolerated:
1. Plagiarism: the use of another’s ideas, programs, or words without proper acknowledgment
2. Collusion: improper collaboration with another in preparing assignments, computer programs, or in taking examinations.
3. Cheating: giving improper aid to another, or receiving such aid from another, or from some other source.
1. Course Title: Environmental Impacts of Energy Development

2. Course Number: __________ EGY 202 __________
   Coordinate with Registrar to insure course number is available

3. Course Credit Hours: 3
   w/o lab: Classroom Hours ___3____  Lab Hours ___0___  Other ___0___
   w/ lab:  Classroom Hours ___2____  Lab Hours ___3____  Other ___0___

4. Course Prerequisites: EGY 105

5. Course Description (as proposed for the Bulletin):
   Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   EGY 202 will understand the often-complex environmental issues associated with development, transport, and utilization of different forms of energy. The primary focus will be on impacts to land, water, and air caused by individual energy sources. Students will understand the scientific basis behind those impacts, procedures for measuring them, and attempts for amelioration / reclamation.

6. Required Documentation:
   Proposed Syllabus  Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

   See next page.
Course Syllabus: EGY 202 - Environmental Impacts of Energy Development
Instructor: Kenneth M. Klemow, Ph.D.
Professor of Biology and Environmental Science
(Course may include Co-instructors)

Objective:
Students completing NRG 315 will understand the often-complex environmental issues associated with development, transport, and utilization of different forms of energy. The primary focus will be on impacts to land, water, and air caused by individual energy sources. Students will understand the scientific basis behind those impacts, procedures for measuring them, and attempts for amelioration / reclamation.

Prerequisite:
NRG 105 – Introduction to Energy

Topical Outline:

A. Review of basic energy concepts
B. Coal mining
   a. Terrestrial impacts
      i. Culm banks, surface mining, and mountaintop removal
      ii. Impacts to vegetation, soils, and animal life
      iii. Natural revegetation and approaches to land restoration (SMCRA vs FRA)
   b. Aquatic impacts
      i. Impacts to stream hydrology
      ii. Abandoned mine drainage
         1. Hydrological, chemical, and biotic impacts
         2. Approaches to restoration (active vs passive)
C. Oil and gas production
   a. Terrestrial impacts
   b. Surface and subsurface water impacts
   c. Approaches to better practice and restoration
D. Air pollution associated with fossil fuel development
   a. Particulates / BTEX
   b. Greenhouse gas releases
      i. Monitoring release and accumulation
      ii. Approaches to mitigation / carbon sequestration
E. Nuclear power
   a. Terrestrial and aquatic impacts
   b. Impacts associated with waste handling
F. Wind power
   a. Habitat fragmentation / Impacts to birds and bats
   b. Approaches to mitigation
G. Hydropower
   a. Upstream and downstream effects of dams
   b. Approaches to mitigation
H. Biomass energy development
   a. Terrestrial impacts
   b. Impacts to water supply
I. Solar energy
   a. Effects of solar arrays on terrestrial organisms and birds
J. Power lines and pipelines
   a. Habitat fragmentation and aquatic impacts
   b. Approaches to management
   c. Do they cause habitat improvement?
Information delivery

_Students will gain information by way of:_

- Presentations and handouts given by the course instructor
- Presentations given by guest lecturers
- The Hinrichs and Kleinbach textbook
- Information provided by students

Textbook


Attendance

Attendance is mandatory, and will be taken at each session. Students missing more than six total sessions or three consecutive sessions without a valid excuse will be readmitted to the course only with a note from a Student Dean. Students missing an exam will not be allowed to take a retest. If the excuse is legitimate, the average of the remaining exams will be used. If the excuse is not legitimate, the student will receive a grade of 0.

Assessment and Grading

_Students will be assessed via:_

- Writing assignments
- Group presentations (in which each student will present)
- Periodic exams

_Grating System (subject to change; students will be given fair notice of any changes):_

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>300</td>
</tr>
<tr>
<td>Writing assignments</td>
<td>50</td>
</tr>
<tr>
<td>Group oral report</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>400</td>
</tr>
</tbody>
</table>

Grades will be assigned as follows: 

- >=90% = 4.0; 85-90% = 3.5; 80-85% = 3.0; 75-80% = 2.5; 70-75% = 2.0; 65-70% = 1.5; 60-65% = 1.0; <60% = 0.0. These cutoffs may be adjusted downward.

Miscellaneous

Office: CSC 231; Phone (570) 408-4758; FAX: (570) 408-7862;
e-mail: kenneth.klemow@wilkes.edu
Office Hours: MTWRF, 10:00-11:00 A.M.
Course webpage: [http://klemow.wilkes.edu/NRG-315.html](http://klemow.wilkes.edu/NRG-315.html)
Facebook: [http://www.facebook.com/DrKlemow](http://www.facebook.com/DrKlemow)

Academic Honesty:

Academic Honesty requires students to refrain from cheating and to provide clear citations for assertions of fact, as well as for the language, ideas, and interpretations found within the works of others. Failure to formally acknowledge the work of others, including Internet resources, written material, and any assistance with class assignments, constitutes Plagiarism. Cheating and plagiarism are serious academic offenses that cannot be tolerated in a community of scholars. Violations of academic honesty will be addressed at the programmatic and university levels and may result in a decision of course failure or program dismissal. (see University Student Handbook).

Wilkes University _Statement on Intellectual Responsibility and Plagiarism_

At Wilkes the faculty and the entire University community share a deep commitment to academic honesty and integrity. The following are considered to be serious violations and will not be tolerated:

1. Plagiarism: the use of another’s ideas, programs, or words without proper acknowledgment
2. Collusion: improper collaboration with another in preparing assignments, computer programs, or in taking examinations.
3. Cheating: giving improper aid to another, or receiving such aid from another, or from some other source.
Wilkes University Curriculum Committee
COURSE ADDITION FORM – page 1

7. Course Title: Data Mining, Geospatial Analysis, and Remote Sensing: Methods to Assess Energy Development

8. Course Number: __________ EGY 204 / EES 2xx ________________
   Coordinate with Registrar to insure course number is available

9. Course Credit Hours: 3
   Classroom Hours __2____   Lab Hours __3__ Other __0__

10. Course Prerequisites: EGY 105, EES 272, MTH 150, or permission of instructor

11. Course Description (as proposed for the Bulletin): Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

Pennsylvania has had a long history of energy development from the early days of the Industrial Revolution when coal was removed by both strip mining and subsurface extraction. This environmental impact legacy is still with us at a time when there is a renewed energy boom in our region relative to Marcellus Shale gas development and construction of wind turbines on regional mountains and ridgetops. Much of the coal mining in our region predated state and federal environmental agencies with regulatory oversight, yet even today, there are few studies and methods developed for assessing more recent issues of wind energy and shale gas development. This course will encompass a “hands-on” approach to data mining, geospatial analysis, and remote sensing data on land use and land cover relative to assessing the ecological footprint and impact of several energy technologies and related operations in our region.

12. Required Documentation:
   Proposed Syllabus
   Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

   See next page.
COURSE SYLLABUS

EGY 204 / EES 2xx – Data Mining, Geospatial Analysis, and Remote Sensing:
Methods to Assess Energy Development
Dr. Dale Bruns

A. Review of environmental monitoring and assessment design concepts
   1) heuristic ecosystem diagrams
   2) sources of environmental impact and pathways
   3) ecological endpoints and indicators
   4) geospatial scaling: stream reaches, riparian zones, watersheds, landscapes
   5) GIS perspective and use of remote sensing data
   6) Assessment designs: paired watersheds vs. gradient of impacts vs. landscapes

B. Geospatial data and tools for environmental assessment
   1) PA Spatial Data Access; Federal agency data (USGS, NASA, EPA, USDA)
   2) ArcGIS Online and Google Maps
   3) Spatial Analyst: Hydrology (watershed delineation)
   4) Spatial Analyst: Multivariate (image classification)
   5) Model Builder

C. Case study: Geospatial assessment of coal mining impacts in the Wyoming Valley
   1) Review of general environmental impacts (abandoned lands, acid mine drainage, culm banks, acid mine outfalls): on stream biodiversity and water chemistry
   2) SPOT satellite imagery and accuracy assessment for land use and land cover
   3) Watershed delineation and geo-processing
   4) Data exploration and screening: integrating geospatial data with ecological data
   5) Spatial data analysis: correlation, regression, and multivariate stepwise
   6) American Heritage River – Upper Susquehanna-Lackawanna Watershed
      a) Mining land use vs. agriculture, natural forests, urbanization
      b) Mining impacts vs. urban runoff
      c) EPA BASINS: data mining for water quality
      d) CITYgreen and GIS: analysis of Toby Creek for stormwater runoff
   7) Maps, geospatial visualizations, online GIS Web apps

D. Environmental assessment approaches to unconventional oil and gas production
   1) Exploring geospatial data: shale plays, wells, river basins – national perspective
   2) Role of GIS – published environmental literature on shale gas development
   3) Geospatial analysis of impacts: wells drilled vs. wells fracked vs. pads vs. pipelines
   4) Paired watershed analysis: biodiversity, water chemistry, land use comparisons
   5) Geospatial associations and statistics among regulatory violations, wells drilled, wells fracked, pad footprint, and pipeline corridors

E. Wind farm geospatial assessment
   1) Geospatial data for planning
   2) Geospatial criterial and analysis for siting alternatives
   3) Environmental concerns: wildlife, erosion, sedimentation, water quality, forest fragmentation, aesthetics (geospatial viewsheds)

F. GIS and solar energy – Spatial Analyst: solar radiation tool box and graphics
Laboratory Manual

Parece, T., J. Campbell, and J. McGee. (no date). Remote Sensing Analysis in an ArcMap Environment; Tutorial exercises. Developed by VA Tech, VAView, AmericaView (This publication was supported by a grant from the Department of the Interior, United States Geological Survey to AmericaView; “These materials may be reproduced and used by educators for instructional purposes.” [http://virginiaview.cnre.vt.edu/education.html#RSinArcGIS10).

Data integration and analysis will be emphasized from a “hands-on” perspective giving students practical experience in working with emerging environmental assessment methods.

Laboratory topics and exercises:

1) Review of ArcGIS: applications to environmental assessment of energy development
2) Introduction to Spatial Analyst – developing viewsheds and watersheds from digital elevation models (DEM) - applied to environmental assessment of energy development
3) Introduction to Spatial Analyst – applications in hydrology and energy
4) Introduction to Spatial Analyst – applications in image classification for energy
5) Downloading Landsat Imagery using Earth Explorer - Steps to use EarthExplorer on-line system as a source for Landsat imagery. Pages 61 – 78, in Parece et al.
6) Information about your downloaded Landsat Data - Interpreting metadata that accompanies a Landsat scene. Pages 79 – 86, in Parece et al.
7) Displaying your Landsat Imagery - Steps to display the different bands of your Landsat scene and introduction to the Image Analysis window. Pages 87 – 98, in Parece et al.
8) Streaming and Displaying Landsat imagery - Acquire, stream and display Landsat data using Esri’s ArcGIS Landsat Archive. Pages 99 – 118, in Parece et al.
9) Creating a Composite Image from Landsat Imagery - Steps to combine different Landsat bands into one image. Pages 119 – 126, in Parece et al.
11) Sub-setting Landsat Imagery - Steps to create composites and snapshots from multi-band satellite imagery. Pages 143 – 152, in Parece et al.
12) Radiometric, Spatial and Spectral Enhancement of Landsat Imagery, in Parece et al.
14) Classification of a Landsat Image (supervised) and Accuracy Assessment - Creating and assessing informational classes from satellite imagery. In Parece et al.

Faculty information and suggested class and lab schedule
Dale Bruns, Ph.D.; Cohen Science Center 111; 570-408-4603; dale.bruns@wilkes.edu
Office Hours: M 11:00-12:00; W 9:00 – 10:00; R: 10:00 – 11:00
Class Place/time: Lecture in CSC 428 (EEES Department GIS Computer Lab)  MW: 9:00 – 9:50 AM; Lab in CSC 428 R: 2:00 – 4:50 PM
**Academic Honesty:** While some course activities, such as discussions and selected lab exercises, may involve teamwork and the sharing of results and analysis, individual coursework assignments and exams should be the sole work of the student. This course will follow the student handbook (p. 37-38, see excerpt below) regarding plagiarism, cheating, and academic dishonesty. In these cases, the faculty member reserves the right for a reduction in grade, a zero grade on the assignment or exam, or failure in the course – depending on the specific circumstances at hand.

FROM the 2014-15 STUDENT HANDBOOK
“Student Conduct - The primary concern of the University is the welfare of the student. All actions that may affect the future of the student are part of this concern. The following behavior may precipitate disciplinary action: ……

1. Students Plagiarism, academic dishonesty, stealing, or cheating;”

**Additional reference materials and web resources:**
http://blogs.esri.com/esri/arcgis/2015/03/19/making-landsat-on-aws-accessible/
http://landsat.usgs.gov/
https://aws.amazon.com/blogs/aws/start-using-landsat-on-aws/


**Course Objectives:** Understand and apply concepts in:

1. Design principles for environmental monitoring and assessment
2. Spatial data input and editing for streams, watersheds, and landscapes
3. Input, management, and integration of vector (e.g., watersheds) and raster (e.g., satellite imagery) data for environmental assessment applications
   a. Relational database management system (dbms)
   b. Query data and relate to spatial relationships
4. Display integrated data based on cartographic concepts and ArcGIS online
5. Explore, analyze, and interpret geospatial data for energy assessment
6. Be familiar with applications for environmental issues and problems in energy development, including coal, shale gas, and wind.

**Course Outcomes:**

1. Be able to access, evaluate and analyze environmental data (e.g., water quality, biodiversity) regarding energy development assessment
2. Create and prepare geospatial data (e.g., watersheds and satellite imagery) for GIS environmental applications.
3. Conduct basic geospatial analysis of integrated data for environmental assessment
4. Learn how to integrate, analyze, and visualize data with spatial maps and graphics
5. Develop and/or test a GIS lab dataset and exercise for another course (portfolio).
Course Assessment

- 3 exams
- Products and deliverables from laboratory exercises and applications (including examples for a geospatial portfolio)
- Class participation and discussion

Information delivery

Students will gain information about geospatial environmental assessment of energy development by:

- Presentations given by the course instructor
- Laboratory presentations given by course instructor
- Class discussions, including the peer reviewed literature
- Readings made available by the class instructor
- Information provided by fellow students
- Web sites with geospatial data and information

Methods: Instructional methods include lectures, laboratories, written exercises, class discussion, plus data, maps and information from the Web, along with examinations and use of literature.

Attendance: Most concepts and factual information are presented and highlighted in the lectures and laboratory exercises. Student absences in either lecture or lab are detrimental to understanding of the subject matter. Your attendance record, along with class and lab participation will be considered in your final grade. An unexcused absence for a scheduled examination may result in a zero grade for that exam. Makeup exams for excused absences may involve oral exams, including questions about use and application of software and data. Quizzes, scheduled or unannounced, may be used by the instructor at any time to assess student progress in keeping up with assignments and maintaining attendance.

Assignments: Reading and homework assignments are given to supplement the lecture materials. Unless changed by the instructor, it is assumed that the student will have completed the assignment prior to coming to lecture on the due date. Several relatively brief homework exercises may be assigned during the semester to ensure that the procedures and concepts discussed in lecture or lab are understood. Students are expected to do the homework assignments individually and not collectively. Homework turned in after the due date but before the next class may receive up to a 20 percent reduction in grade.
2. Course Title: Solid Earth Energy and Mineral Resources

3. Course Number: _____EES 2xx / EGY 205___________________
   Coordinate with Registrar to insure course number is available

4. Course Credit Hours:
   Classroom Hours ___3___  Lab Hours ___0___  Other ______

5. Course Prerequisites: EGY 105 or instructor permission.

6. Course Description (as proposed for the Bulletin): Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   Our nation is a voracious consumer of energy and natural resources. These two commodities go hand in hand. Natural resources like iron and zinc-bearing minerals are used to drill for accumulations of oil and natural gas; coal is used to generate electricity that powers machinery used to mine minerals. Most people have a sense of what the products they use in everyday life are made of but far fewer understand where these materials come from. Similarly, most people know where to buy the energy they need but know far less about where it comes from and how it is processed into a form they can use. This course aims to improve literacy about earth’s energy and mineral resources—the materials that form much of the foundation of modern life. As the demand for energy and mineral resources continues to increase, so does the need for informed decision-making in the search, extraction, use and management of these critical resources. Achievement of a deeper understanding of where these resources come from and how they are used will help students navigate the resource challenges in their future.

7. Required Documentation:
   Proposed Syllabus   Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

   See next page.
Course Syllabus: EGY 205/EES 2XX – Solid Earth Energy and Mineral Resources

Fall 201x

Instructor: Sid P. Halsor, Ph.D.,
Professor of Geology

Context for the course:
The earth is a dynamic planet and the fact that it is in a continual state of change is a distinguishing quality in our solar system and one that has had a profound effect on life. The same forces that drive geological hazards such as volcanic eruptions, earthquakes, landslides and floods also drive processes that enable the earth to be habitable and provide natural resources that humankind cannot exist without. Tectonic forces and the slow but steady outward flow of heat energy have combined to convert the organic remains of plants and animals into vast accumulations of fossil fuels—coal, crude oil and natural gas—legacy energy sources that have both driven worldwide modernization and environmental degradation. Similar forces have resulted in potent sources of geothermal energy harnessed to generate electrical power. Although this energy source is minor compared to fossil fuels, it produces negligible amounts of greenhouse gases.

Another source of energy inside the earth is in the form of a mineral. Unlike fossil fuels that occur as either a liquid, gas or organic-rich rock, the raw materials for nuclear fuel occur as minerals that are concentrated in zones within the earth’s crust. The geologic forces that concentrate radioactive minerals in earth’s crust are similar to the forces that concentrate non-fuel “ore” minerals valued for the metals they contain. Ore deposits of gold, silver, lead, zinc, copper and increasingly important rare-earth elements are essential for economic development and sustaining our quality of life.

Our nation is a voracious consumer of energy and natural resources. These two commodities go hand in hand. Natural resources like iron and zinc-bearing minerals are used to drill for accumulations of oil and natural gas; coal is used to generate electricity that powers machinery used to mine minerals. Most people have a sense of what the products they use in everyday life are made of but far fewer understand where these materials come from. Similarly, most people know where to buy the energy they need but know far less about where it comes from and how it is processed into a form they can use.

This course aims to improve literacy about earth’s energy and mineral resources—the materials that form much of the foundation of modern life. As the demand for energy and mineral resources continues to increase, so does the need for informed decision-making in the search, extraction, use and management of these critical resources. Achievement of a deeper understanding of where these resources come from and how they are used will help students navigate the resource challenges in their future.

Course Objectives:
Students completing NRG/EES 220 will be able to:

- Describe the distinguishing events in earth’s geologic history and their effect on the formation of solid earth natural resources
- Understand the geologic factors that govern the inequitable global distribution of energy and mineral resources
- Understand the contrasting pace of resource formation and human utilization within the trajectory of geologic time
- Explain the mechanisms that accumulate commercial quantities of crude oil and natural gas and understand the differences between conventional and non-conventional plays
- Understand the origin and principle types of metal and non-metal mineral resources
- Describe advances in technology that improve exploration strategies and reduce environmental impacts of resource extraction
- Understand the work and energy flow from raw material to commercial product
- Describe the career opportunities in solid earth energy and mineral resources industries
Textbook under consideration:

Content delivery:
Students will gain subject matter by way of:
- Presentations and handouts given by the course instructor
- Presentations given by guest lecturers
- The O’Hara textbook and online resources
- Field trips to local/regional energy and/or ore mineral extraction sites

Schedule of Topics:

<table>
<thead>
<tr>
<th>Topic / Activity</th>
<th>Chapters</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Course introduction:</td>
<td>1-3</td>
</tr>
<tr>
<td>a. Overview and expectations</td>
<td></td>
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<tr>
<td>b. Energy/minerals and science of geology</td>
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<tr>
<td>c. Instructor’s professional experiences in topic</td>
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<tr>
<td>II. Hydrocarbon fuels</td>
<td>9</td>
</tr>
<tr>
<td>a. Role in economic development</td>
<td></td>
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<tr>
<td>b. The haves and have nots—global distribution</td>
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<tr>
<td>1. Space and time</td>
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<td>2. Geologic controls</td>
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<td>3. Production and reserves</td>
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<td>4. Peak oil and future trends</td>
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<td>III. Formation and accumulation of hydrocarbon fuels</td>
<td>10-11</td>
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<tr>
<td>a. Sedimentary basins</td>
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<td>b. Maturation and fuel product</td>
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<tr>
<td>1. Coal</td>
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<td>2. Crude oil</td>
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<td>3. Natural gas</td>
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<td>c. Traps</td>
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<td>1. structural</td>
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<td>2. stratigraphic</td>
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<td>d. Reservoir and source rock</td>
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<tr>
<td>1. conventional vs. nonconventional</td>
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<tr>
<td>2. technological advances in extraction</td>
<td></td>
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<td>3. impact on reserves and energy development</td>
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<td>e. Exploration techniques</td>
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<tr>
<td>1. traditional geophysical methods</td>
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<td>2. technology-enhanced methods</td>
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<td>IV. Geothermal energy</td>
<td>12</td>
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<tr>
<td>a. National and global status</td>
<td></td>
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<td>b. Distribution</td>
<td></td>
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<td>c. Heat flow in rocks</td>
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<td>d. Wet vs dry systems</td>
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<tr>
<td>e. Technology and future outlook</td>
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<tr>
<td>V. Nuclear energy</td>
<td>13</td>
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<tr>
<td>a. Distribution and current trends</td>
<td></td>
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<tr>
<td>b. Nature of fuel source</td>
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<tr>
<td>c. Mechanisms for geologic deposits</td>
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<tr>
<td>d. Extraction methods</td>
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<tr>
<td>e. Modern power plant operation</td>
<td></td>
</tr>
</tbody>
</table>
Schedule of Topics (con’t):

f. Future role in energy supply

VI. Earth mineral resources 5-7
   a. Distribution
   b. Metal ore deposits
   c. Nonmetals and industrial minerals
   d. Mineral exploration
   e. Mine development
   f. Energy flow
   g. Environmental impacts

Research project:
A research project is required in this course. The instructor will present a list of topics but topics off-list can be proposed. A proposed topic requires the instructor’s approval. The findings of your research will be presented in the form of a summary paper and oral presentation. Guidelines for the research project will be distributed in the third week of the semester.

Field trips:
Our region includes active coal mining, shale gas development and nuclear power generation. Arrangements will be made to visit an example of each of these facilities over the course of the semester.

Grading:
Grade-point distribution

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research summary paper and presentation</td>
<td>100</td>
</tr>
<tr>
<td>2 midterm exams @ 100 pts</td>
<td>200</td>
</tr>
<tr>
<td>1 final exam</td>
<td>100</td>
</tr>
<tr>
<td>4 homework problems@25pts</td>
<td>100</td>
</tr>
<tr>
<td>Participation in field trips and small group discussions</td>
<td></td>
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</tbody>
</table>

final grade is based on 600 total points

Attendance:
It is the student’s responsibility to inform the instructor of an upcoming excused absence from class as soon as possible. Make ups for such absences will be at the discretion of the instructor. There will be absolutely no make ups for unexcused absences. You should strive to contact the instructor if circumstances arise that conflict with attending class; avoid contacting the instructor after any unexcused absence.

Intellectual responsibility and plagiarism:
Plagiarism and other forms of academic dishonesty will not be tolerated. Students engaging in misconduct or dishonest practices on exams, quizzes, or other assignments will be dealt with according to the guidelines established by the university. You must review the institution’s policies in the Student Handbook at:

Mobile phones:
All communication devices must be turned off when class or lab starts. If your work situation requires that you be on call, please notify the instructor prior to class. Text messaging is not permitted in this class.

Help Along the Way:
Students who lack prior exposure to earth science may encounter some difficulty while learning important concepts and processes. Geology is a visual science and processing image and graphical information (not just viewing but analyzing) is critical to its understanding. Like all challenging endeavors, practice is the key to successful performance. If your “practice” sessions need help, I urge you to seek me out for assistance. Other means by which you can maximize your performance in this class include: attendance (don’t miss class), ask questions (to me or your peers) and keep pace with subject material (manage your time).

See you in class and best of luck!
8. Course Title: Introduction to Energy Policy

9. Course Number: _____PS xxx / EGY 211___________________
   Coordinate with Registrar to insure course number is available

10. Course Credit Hours:
    Classroom Hours ___3___ Lab Hours ___0___ Other ______

11. Course Prerequisites:

12. Course Description (as proposed for the Bulletin): Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

This course is a survey of energy policy that focuses mainly on the US with occasional references to global or international policies where appropriate. Energy, as used in this course, encompasses all forms: renewable and fossil fuels. We will examine how energy policies emerge, and the forces that both support and oppose efforts to generate energy or extract different types of fossil fuels. This requires some basic knowledge of the American political system and the policy making process. As important as the formal governmental system is to the policy process, the informal or extra-governmental actors, systems, and processes are equally critical. We will review the history of energy development internationally and domestically to understand how technological changes affect energy production, policy and the public’s perception and use of energy.

13. Required Documentation:
   Proposed Syllabus Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

   See next page.
Dr. Thomas J. Baldino  
Office Phone: 570-408-4474  
Office: 327-D Breiseth Hall  
Email: thomas.baldino@wilkes.edu

Spring 2xxx  
Office Hours: M-W 3:00-5:00 pm; T-R 4:00-5:00 pm and by appointment

Course Description: This course is a survey of energy policy that focuses mainly on the US with occasional references to global or international policies where appropriate. Energy, as used in this course, encompasses all forms: renewable and fossil fuels. We will examine how energy policies emerge, and the forces that both support and oppose efforts to generate energy or extract different types of fossil fuels. This requires some basic knowledge of the American political system and the policy making process. As important as the formal governmental system is to the policy process, the informal or extra-governmental actors, systems, and processes are equally critical. We will review the history of energy development internationally and domestically to understand how technological changes affect energy production, policy and the public’s perception and use of energy.

Course Goals and Student Outcomes:
1. To have the student become adept at identifying the major issues involved in energy policy as well as the actors, their motivations and their goals. To accomplish this goal, students are required to read assigned materials, and engage in class discussion in which we will practice these tasks.
2. To enhance the student’s research skills. To accomplish this goal, students are required to conduct research using primary and secondary sources which involves compiling a bibliography and writing a paper of 10-15 pages. (See discussion below).
3. To improve the student’s writing skills. To accomplish this goal, students write a major paper and answer essay questions on examination.
4. To improve the student’s public speaking skills. To accomplish this goal, students are required to participate in class discussions. Students are graded on class participation.
6. To have the students become aware of arguments over current energy policies, e.g., the arguments for and against government support of renewable energy sources, the use of hydraulic fracturing to extract gas and oil, and the safety of nuclear energy. To accomplish this objective, students must read about current political events and public policies in a quality newspaper, or listen to quality radio programming, or view on quality TV news programming. Students will be expected to incorporate current policies examples in classroom discussion.

Requirements and Policies:

Class Attendance
I will formally take attendance on a daily basis to determine whether students are attending class. It has been my experience that students who miss more than four classes are likely to receive significantly lower grades than those students who miss only one or two classes; therefore, students who miss more than four classes for any reason will be penalized by having 10 points deducted from the attendance portion of the grade for each class missed. Students who miss classes at which a test or assignment is due will have an additional 10 points deducted for that class.

Plagiarism and Academic Dishonesty
All work submitted by a student in any class must be the student’s own work. A student should never submit material prepared to meet a graded assignment in one course to an instructor in a second course unless both instructors have been consulted and given their approval.

Plagiarism: Plagiarism is theft of another person’s work and ideas. It is defined in the Student Handbook. I accept this definition of plagiarism. I firmly believe that all plagiarism is wrong, and that if a student is found to have plagiarized material, the student will receive a ZERO for the assignment and be reported to the Provost and the Dean of Students. If the same student is found plagiarizing again or to have plagiarized in the past, then that student will receive a ZERO in the course and will be referred to the Provost and the Dean of Students for disciplinary action. If a student does not
understand the definition of plagiarism or this policy, the student should seek clarification immediately. Claiming ignorance of plagiarism will not absolve a student of guilt if a student is found to have plagiarized material.

*Types of Plagiarism:* 1) Word-for-word plagiarism – the exact transcription of the words, phrases, sentences and organization of another without quotation marks and proper citation of the source. 2) The Mosaic – words, phrases, sentences moved from the author’s original order and rearranged in a new pattern without quotation marks and proper citation of the source. 3) The Apt Term – when a student finds a felicitous phrase or interesting concept and employs it without quotation marks and proper citation of the source. 4) Plagiarism of the Idea – the complete rewording of the ideas of an author without acknowledging the author either by name or footnote.

The simplest way to avoid plagiarizing material is to always use quotation marks when taking material directly from a source and give the citation; or, if paraphrasing, be sure to include the citation. When in doubt, provide a citation.

**Cheating on Examinations:**

Students who take unauthorized material into an exam and consult that material during the exam are cheating, as are students who copy answers from other students. Students who use cell phones or other small electronic devices to answer exam questions are also cheating. Students who cheat place themselves at an advantage that all the other students in a class do not enjoy, and therefore are intellectually dishonest. I will take all reasonable steps to insure that cheating does not occur during an examination. **Students MAY NOT have any electronic devices in their possession during an exam other than a cell phone.** Cell phones must be turned off during the exam. **Students who are discovered to be cheating on an exam will be given a grade of ZERO on that exam.** If a student is found cheating on another exam or to have cheated on an exam in the past, that student will receive an F for the course, and will be referred to the Dean of Students for disciplinary action. Students who wish to appeal any action taken under the policies described above may do so. The department adheres to the university’s grade appeal policies described in the *Student Handbook.*

**Classroom Comportment, Punctuality, and Timeliness**

Civility in the classroom is essential for learning. Students are expected to treat one another with respect and to demonstrate restraint when encountering views with which they may disagree. It is possible to express disagreement with another’s position without personalizing the reasons for the disagreement.

Cell phones must be silenced during class. Making or receiving calls during class is extremely rude and disruptive to learning. Exceptions for special circumstances that are approved by the instructor in advance may be granted.

Students are expected to appear for class at the start of class. Students who arrive late should enter the room as quietly as possible, preferably by a door in the rear of the room, if one is available, and sit in the back of the classroom. Students who routinely arrive excessively late for class (more than 15 minutes), or are disruptive upon arrival will be asked to drop the class. Prompt arrival is especially important on quiz and examination days.

Written assignments are due in class on the day listed in the syllabus. If a student cannot make a due-date, the student must request permission to submit the paper late. Likewise, if a student cannot be present for a quiz, exam, or debate, the student must request permission in advance and schedule a make-up. N.B. Make-up quizzes and exams are likely to be more difficult than the original exam or quiz. Valid excuses for missing a due-date, quiz, or exam are serious illness and death of a close relative. Should something occur on the day of an assignment or test, students are required to contact the instructor as soon as possible by phone or email. Do not wait several days!!!!

**Email/Fax Policy**

Students are encouraged to use email as a form of communication with me as well as fellow students and, when necessary, as a method of submitting course assignments. However, there have been abuses in the past with email by students who have used it as an excuse to turn in assignments late or even not at all. As a result, I will not accept assignments submitted either as email attachment or by fax unless the situation is an extreme emergency. Should such an emergency arise, I will respond to the assignment submitted electronically within one working day and inform the student that I am in receipt of the assignment and that I can read it. If you do not receive a response from me in that time period, you must assume that I have not received the assignment and resubmit it electronically or submit it in some other way. A failed email attempt will not be accepted as a legitimate excuse for not having an assignment submitted on time unless you can corroborate that you attempted to send it. The same logic applies to fax submissions. If you fax (570-408-7871) an assignment to me, call the secretary at 408-4040, or me, to assure that the fax was received. If you do not call the secretary or me, I will assume you did not fax anything to me. All assignments submitted by email must be as an attachment in Word or Excel. Do NOT send Works files as attachments.
Grades and Extra Credit Policy

Education is mocked when a poor, sloppy, and unoriginal paper receives a higher grade than it deserves. A 4.0 is reserved for a paper that is excellent. Criteria for excellence include: a paper that is submitted on time, is clear, well reasoned, well written, complete, analytically coherent, and grammatically correct. Papers that fail to meet these criteria are not excellent.

Grades are based upon the quality of the work, not whether you “need” a certain grade. If you are in “need” of a certain grade, it is important that you work towards that goal the entire semester and not burden the instructor with that information at semester’s end, e.g. right before finals. Also keep in mind that grades are not assigned, rather they are earned by the students.

Opportunities for extra credit may occur during the semester, and will be announced in class. As a rule, however, I do not offer extra credit opportunities on an ad hoc basis to individual students. Thus, students should not plan for or anticipate that extra credit will be granted if a student discovers that his or her grade is unsatisfactory after the drop period ends.

Evaluation: Student grades rest on the following factors:

<table>
<thead>
<tr>
<th>Component</th>
<th>Due Date</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bibliography</td>
<td>(Due: )</td>
<td>100</td>
</tr>
<tr>
<td>Paper</td>
<td>(Due: )</td>
<td>300</td>
</tr>
<tr>
<td>Mid term examination</td>
<td>( )</td>
<td>200</td>
</tr>
<tr>
<td>Final examination</td>
<td>(Finals week)</td>
<td>200</td>
</tr>
<tr>
<td>Attendance</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Participation</td>
<td></td>
<td>100</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>1000</strong></td>
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Examinations: There are two examinations in the course: a mid term and a final. Both will be essay questions and students will have several questions from which to choose.

Paper: The paper assignment is divided into two parts: a bibliography and the actual paper. Each student must select a very specific energy policy. The choice of the policy will be left to the student, but it is must clearly be energy or energy related. For example, a student may wish to examine the regulation of Marcellus Shale fracking, or the permitting of a new nuclear power plant. Paper topics must be submitted in advance to the instructor for approval.

Once the topic is selected, each student must compile a bibliography of between 15 and 20 sources. Sources must be books, scholarly articles from professional journals, and articles from high quality newspapers (e.g. The New York Times) or magazines (e.g. The New Republic, The National Review, The Atlantic Monthly, Congressional Quarterly Weekly Report). No more than half of the sources may come from periodical literature. The bibliography is due on January ---. Students are urged to move quickly to compile the bibliography so that, should books or articles need to be obtained via interlibrary loan, there is ample time for the materials to arrive.

In searching for sources, students should seek books and scholarly articles that treat the policy topic theoretically as well as those articles that give contemporary or historical background information. Be aware that, while I expect the sources to be relatively current (i.e., dates should not be much older than five years), there may be classic books or articles that the student should include, because these sources are widely regarded as laying a foundation for the study of the policy area. For example, The Prize: The Epic Quest for Oil, Money & Power, by Daniel Yergin is still highly regarded and widely quoted even though it was published in 1991. One way to be certain that a book or article is a classic is to see how often it is cited by later authors among their references. Grading rubrics for the bibliography and paper appear later in the syllabus. Students are urged to read and follow closely both rubrics as they write the assignments.

Papers must be 10-15 pages, typed, double-spaced, with one-inch margins on all sides. Employ the Times New Roman in 12-point font, like the font used in this syllabus. There should be a title page that contains team members’ names, the date, and the title of the paper. All papers are due on ---, April ---.

Required Texts:
COURSE SCHEDULE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>To be developed</td>
</tr>
</tbody>
</table>

**PS xxx / EGY 211  Introduction to Energy Policy**  
**Grading Rubric: Bibliography Assignment**

The bibliographic assignment will be evaluated using the following criteria. To assure a good grade, be certain to include all aspects/components of the assignment and meet all the criteria.

1. **Introduction.**  
   The bibliography must begin with an introductory paragraph or paragraphs in which the student provides:
   - a. a clear statement of the policy topic selected by the student
   - b. some reasons why this topic was selected
   - c. a brief summary background (several sentences) of the policy topic itself
   - d. a list of any preconceived notions, opinions or biases that the student holds about this policy topic
   25 points

2. **Fifteen to 20 sources**  
   - Are there 10 to 15 sources?  
   - Are the sources from scholarly journals, quality periodicals or books?  
   - Are the sources the proper mix of scholarly journals, books and periodical literature?  
   25 points

3. **Proper APSA format**  
   - Are all the sources cited using the APSA format?  
   25 points

4. **Source relevance to topic**  
   - Are each of the sources relevant to the policy topic in some manner, either theory or example?  
     (If it’s not clear from the title of an article or book, the student should include a brief annotation explaining why the source is appropriate or relevant.)  
   - How current are the sources? More than five or six years; if so, why?  
     For seminal or classic articles or books, the date is much less important.  
   25 points
PS xxx / EGY 211 - Introduction to Energy Policy
Policy Analysis Paper Grading Rubric

The energy policy paper will be evaluated using the following criteria. To assure a good grade, be certain to include all aspects/components of the assignment and meet all the criteria.

1. A clearly and carefully stated policy problem  
   25 points

2. Identify the causes or sources of the conflict in the policy area and explain how the source of conflict came into being.  
   50 points

3. Identify the major actors, governmental and non-governmental. Essentially, whose interests are at stake and who are the decision-makers.  
   50 points

4. Identify the motivations and goals of the major actors, i.e., what does each major actor stand to gain  
   25 points

5. Identify the strengths and weaknesses of the positions of the major actors.  
   25 points

6. Identify the tactics and strategies employed by the major actors.  
   50 points

7. Discuss and analyze the solution (or solutions) that has (have) been offered to date.  
   50 points

18. Quality of writing: grammar, syntax, spelling, etc.  
   25 points

   **Total:** 300 points
Wilkes University Curriculum Committee
COURSE ADDITION FORM – page 1

14. Course Title: The Development and Transformation of the International Oil Industry

15. Course Number: __________ HST xxx / EGY 212 ____________
   Coordinate with Registrar to insure course number is available

16. Course Credit Hours:
   Classroom Hours __3__      Lab Hours __0__      Other ______

17. Course Prerequisites:

18. Course Description (as proposed for the Bulletin): Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

The development and transformation of the international oil industry is one of the great vehicles for studying the intertwining web of empire, business, international rivalry and environmental concern. Spreading from its roots in the United States, the oil industry circled the globe in search of the petroleum with which to power the economies of the developed world. But what initially began as a story of Western dominance over the developing world was transformed through the growth of political and resource nationalism. This occurred as the developed economies became increasingly ‘addicted to oil’ and made the quest for secure sources of supply a political and diplomatic necessity. This course will trace this evolution and study the impact it had on decolonization, Cold War politics, consumer culture and the globalization of business.

19. Required Documentation:
   Proposed Syllabus    Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) informations, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

See Below
HST xxx / EGY 212
The Development and Transformation of the International Oil Industry
Wilkes University
Fall/Spring 201-

Dr. Jonathan Kuiken
jonathan.kuiken@wilkes.edu
Office: Capin Hall 304
Office Hours: TBD

Course Description

The development and transformation of the international oil industry is one of the great vehicles for studying the intertwining web of empire, business, international rivalry and environmental concern. Spreading from its roots in the United States, the oil industry circled the globe in search of the petroleum with which to power the economies of the developed world. But what initially began as a story of Western dominance over the developing world was transformed through the growth of political and resource nationalism. This occurred as the developed economies became increasingly ‘addicted to oil’ and made the quest for secure sources of supply a political and diplomatic necessity. This course will trace this evolution and study the impact it had on decolonization, Cold War politics, consumer culture and the globalization of business.

Outcomes: Upon successful completion of this course, you should be able to:
1. Critically analyze primary and secondary texts;
2. Assess the role of historical change as a basis for understanding the place of individuals and societies in a global context;
3. Demonstrate a detailed understanding of pivotal events, trends and concepts within the oil industry;
4. Write a mature, advanced, properly documented historical study on a specialized topic;
5. Demonstrate an understanding and practical mastery of historical methodology;
6. Apply historiographical concepts within a specialized research paper;
7. Demonstrate the ability to conduct mature, advanced research;
8. Evaluate the quality of one’s own and one’s peers’ written and oral presentations.
9. Analyze the nature of the relationship, and shifting boundaries between businesses, markets and governments; and
10. Demonstrate an understanding of the historical roots of the modern energy market and the companies which dominate it.
Course Requirements:
The requirements for satisfactory performance in this course are as follows:

1. Regular attendance in class. This course will be a mixture of in-class lecture with a heavy emphasis on discussion. Therefore your regular attendance is vital not only to the success of the class but to your performance in the course.

2. Completion of weekly reading précis. You will be required to write a short (no more than two double-spaced pages) précis of the readings assigned each week. These should briefly describe the reading and provide an analysis of the writers’ main arguments.

3. Research paper. A major objective of this course is to assist you in the writing of a 15-20 page paper based on your own original research. Topics must be discussed and approved by the professor.

4. Midterm and Final Essay. These essays will test your knowledge of the course material from both the lectures and the readings. You will be expected to give an accurate account of the information as well as to provide thoughtful analysis of the broader course trends.

Grading:
Grading Scale:
93-100 – 4.0
87-92 – 3.5
80-86 – 3.0
75-79 – 2.5
79-74 – 2
65-69 -1.5
60-64 – 1
Below 60 – 0

Grading Breakdown:
Participation: 15%
Reading Précis: 25%
Research Paper: 30%
Midterm Essay: 15%
Final Essay: 15%

Attendance Policy:
Attendance in this course is essential for your success. While there is a textbook, it is no replacement for the material that we will be learning through lecture and discussion. Your participation in these discussions is a key portion of your grade. You are allowed THREE unexcused absences. Each additional absence will result in a 3% reduction in your final grade.
**Academic Integrity:**
Academic dishonesty is a serious offense. Please make yourself aware of the University’s policies regarding academic honesty by reviewing the relevant sections of the Student Handbook. For a quick overview of these policies see: [http://bulletin.wilkes.edu/6289.htm](http://bulletin.wilkes.edu/6289.htm). Any violations of these policies will be reported to the appropriate university officials.

**Policy on Late Assignments**
Your assignments will be marked down by 5% for each day past the due date. No assignments more than a week overdue will be accepted unless a legitimate excuse is provided.

**Required Texts:**
Daniel Yergin, *The Prize: the epic quest for oil, money and power* (Free Press, 2008)

**Course Outline**

Week 1: Introduction – Oil’s early years  
*Reading:* <Yergin, *The Prize*, pgs. TBA>  
Roger Olien, and Diana Davids Olien. *Oil and Ideology: The Cultural Creation of the American Petroleum Industry.*  
Brian Black, *Petrolia: the Landscape of America’s First Oil Boom.*

Week 2: The building of an industry – Early industry in the US and the rise of Standard Oil  
*Reading:* <Yergin, pgs. TBA>  
Excerpts from Ida Tarbell. *The History of Standard Oil.*  

Week 3: Empires abroad – Developments in Russia, Persia and the Far East  
*Reading:* <Yergin, pgs. TBA>  
Excerpts from Kent, Marian, *Oil and Empire: British Policy and Mesopotamian Oil, 1900-1920.*

Week 4: The Seven Sisters – Cartels, agreements and the making of an international system  
*Reading:* <Yergin, pgs. TBA>  
Excerpts from Anthony Sampson, *The Seven Sisters: The Great Oil Companies and the World They Shaped.*

Week 5: Threatening the flow – Early resource nationalism in Russia and Mexico  
*Reading:* <Yergin, pgs. TBA>  

Week 6: Oiling the gears of war – The petroleum industry and the Second World War  
*Reading:* <Yergin, pgs. TBA>

Week 7: Gasoline culture – The automobile and the remaking of the American landscape  
*Reading: *<Yergin, pgs. TBA>

Week 8: A brave new world – Early postwar attempts to manage the market  
*Reading: *<Yergin, pgs. TBA>

Week 9: Claiming what is ours – Decolonization, resource nationalism and the rise of OPEC  
*Reading: *<Yergin, pgs. TBA>  
Excerpts from Mostafa Elm. *Oil, Power and Principle: Iran’s Oil Nationalization and Aftermath.*

Week 10: The oil weapon – From the Six Day War to the 1973 Oil Shock  
*Reading: *<Yergin, pgs. TBA>  
Excerpts from Fiona Venn, *The Oil Crisis*

Week 11: Empty tanks – Cultural responses to the Oil Shock  
*Reading: *<Yergin, pgs. TBA>

Week 12: New Horizons – Alaska, the North Sea and Africa, oil’s future  
*Reading: *<Yergin, pgs. TBA>

Week 13: Cheap and plentiful – Consuming in a time of plenty  
*Reading: *<Yergin, pgs. TBA>  
Excerpts from Valerie Marcel. *Oil Titans: National Oil Companies in the Middle East.*

Week 14: Blood for oil – The Persian Gulf War and an attempt to stabilize the market  
*Reading: *<Yergin, pgs. TBA>

Week 15: New frontiers – The collapse of the Soviet Empire and the rise of an energy power  
*Reading: *<Yergin, pgs. TBA>  
Excerpts from Daniel Yergin, *The Quest*
Wilkes University Curriculum Committee
CURSE ADDITION FORM – page 1

20. Course Title: Communicating Energy Issues

21. Course Number: _____COM 2xx / EGY 213___________

Coordinate with Registrar to insure course number is available

22. Course Credit Hours:
Classroom Hours ___3__  Lab Hours ___0__  Other______

23. Course Prerequisites:

24. Course Description (as proposed for the Bulletin):
Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

This course offers a skills-focused and theoretical approach to communicating energy issues from rhetorical, journalistic and public relations standpoints. Through a variety of readings, discussions and practical workshops, students will learn how to access energy information, critically analyze its content and convey that information to the public. Students will also explore, through case studies, past energy campaign success and failures and learn the basics to creating their own messages.

25. Required Documentation:

   Proposed Syllabus   Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

   See next page.
Wilkes University

XXXX: Communicating Energy Issues

3 credits

Course Syllabus Fall XXXX

Breiseth 108, T&R

Instructor: Dr. Kalen Churcher
Office: Capin 305
Phone: (office) 570-408-4165
Email: kalen.churcher@wilkes.edu

Welcome to Communicating Energy Issues (XXX XXX). I'm looking forward to introducing you to the ever-changing and ever-growing field of energy, including energy production, consumption, ownership and distribution. This semester, we'll explore how to communicate some major energy issues from political, journalistic and public relations standpoints. We'll learn how to access information, critically analyze it and convey key points to the public. We'll also discuss how to market and publicize energy issues, utilizing myriad of media and communicative techniques. Finally, we'll learn from history and research the pros and cons of past energy campaigns and news coverage.

If you have any questions about the course or its content, please don't hesitate to contact me. Should you choose to email, please use proper email etiquette in your email messages to others and me. Yes, your email reflects who you are as a person. People often judge you through your communication skills – even email. This holds true in college as well as the work force. Please remember to use a salutation (greeting) and signature as well as spell check.

Email is great, but I strongly encourage you to take advantage of my office hours. If you have a problem, question, or concern, please see me as soon as possible so we can work through things. If I cannot help you, I will direct you to someone who can. It is much better to head problems off at the beginning rather than try to deal with them the week before finals! And, I do enjoy chatting with students. If my door is open outside of office hours, please feel free to drop in.

Required texts/reading material:

- Cox, R. *Environmental Communication and the Public Sphere* (3rd ed.) 2013, SAGE Publications.
- ISBN: 9781412992091
- Other readings may be found on D2L

Wilkes University course description:

This course offers a skills-focused and theoretical approach to communicating energy issues from rhetorical, journalistic and public relations standpoints. Through a variety of readings, discussions and practical workshops, students will learn how to access energy information, critically analyze its content and convey that information to the public. Students will also explore, through case studies, past energy campaign success and failures and learn the basics to creating their own messages.

Course objectives: To...

C1. Introduce students to how media socially construct energy (and energy issues), nature, and the public's relationship to both.
C2. Encourage critical analysis and debate on energy-related media texts.
C3. Generate discussions as to how media producers can better convey energy issues to the public audio.
C4. Provide a brief introduction to access to information laws, including sunshine laws and FOIA.
C5. Equip students with basic journalism and public relations skills to assist in producing energy-related content.

**Course goals:** For students to...

- G1. Understand of how media socially construct the politics of energy, energy issues and nature.
- G2. Rhetorically and/or critically analyze media texts
- G3. Produce basic media content (journalism and public relations) that publicizes and/or informs the public on energy-related issues.
- G4. Research (through interviews and documents) energy-related issues.
- G5. Apply basic public access laws to obtain information.

<table>
<thead>
<tr>
<th>Assessment Instrument</th>
<th>% of Final Grade</th>
<th>Linked to Course Goal #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual assignments</td>
<td>20% or 100 points</td>
<td>1, 2, 3, 4 and 5</td>
</tr>
<tr>
<td>Group assignments</td>
<td>20% or 100 points</td>
<td>1, 2, 3, 4 and 5</td>
</tr>
<tr>
<td>Semester Project</td>
<td>25% or 125 points</td>
<td>1, 3 and 4</td>
</tr>
<tr>
<td>Exams (2)</td>
<td>25% or 125 points</td>
<td>1, 2 and 5</td>
</tr>
<tr>
<td>Case analysis</td>
<td>10% or 50 points</td>
<td>1 and 2</td>
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</tbody>
</table>

**Teaching Method:** For this course, I will utilize short class lectures and discussions, exams, group work and guest speakers to help students produce and analyze energy-related media texts.

This is a very active class that involves considerable class discussion and some in-class work opportunities. Therefore, it is vital you attend all classes prepared and ready to work. Because deadlines are so important in the world of mass media, I will not accept any late assignments except in extreme circumstances. A bit of advice: Do not wait until the last minute to try and complete your assignment. Computers do crash, minor illnesses do occur, and Desire2Learn does create problems from time to time. However, none of these are legitimate excuses for not turning in an assignment on time.

**Policies and Procedures:**

**Attendance:** This is a communications class, so it is pertinent for you to attend all classes and actively participate (communicate)! Exams, writing projects and in-class assignments CANNOT be made up without prior consent by the instructor. Because adhering to deadlines is crucial in the news industry, failure to attend class on the day an assignment is due will result in a zero for that project. Likewise, failure to hand in an assignment at or before its deadline will result in a zero for the assignment.

If an extenuating circumstance exists for turning in a project late, please feel free to discuss it with me immediately. As your professor, I, after consultation with you, will have the final ruling as to whether an absence is valid. You SHOULD work under the premise that all absences are unexcused.

Examination and assignment due dates are listed in this syllabus, so please plan accordingly.

**Important:** Every unexcused absence beyond the first two (one week) will result in my lowering your final grade point average by 0.5 points. For example, if you earned a 3.0 in the course and had five unexcused absences, your final grade would be a 1.5.
Class begins and attendance is taken promptly at -- a.m. If you filter in late, you must see me at the conclusion of class to be marked present.

**Academic integrity/plagiarism departmental:**
In accordance with the Wilkes University policy regarding plagiarism, academic dishonesty, and/or cheating, the Communication Studies faculty has developed the following policy for student violations. If you are uncertain about what constitutes plagiarism, collusion, or cheating in a particular professor’s class, read your course syllabus and ask your professor for clarification.

The following violations of academic integrity are considered unacceptable for students in the Communication Studies program and pre-professionals in any communications industry field:

- **Plagiarism**—the use of another’s ideas, printed text, images, or spoken words without proper citation and acknowledgement in the student’s work. Proper acknowledgement requires in-text citation, bibliographic reference, and overt acknowledgement of interview source materials and quotes.

- **Collusion**—improper and/or unsanctioned collaboration with another in preparing assignments, designs, and/or in taking written examinations.

- **Cheating**—giving improper aid to another in an examination or on original written or design work; receiving improper aid from another individual on an examination or on original written or design work; using sources when specifically forbidden to such access (as in notes on an exam that is not open-book).

- **Falsifying documents or records**—falsifying signatures on official documents, fabricating letters or documents.

Penalties for academic theft, collusion, or cheating on exams will result in the following actions:

- The incident will be reported to the offices of Student Affairs and the Provost.

- The student will receive a failing grade (“F” or 0) for the course in question.

- All Communication Studies faculty agree to refrain from writing any letters of recommendation on behalf of the student.

**Important:** If I find that someone has cheated, fabricated information, or plagiarized an assignment (other than an exam), I reserve the right to not only fail the student for the particular assignment, but for the course as well. Please realize that allowing someone to copy off of your paper makes you guilty as well. So, keep your eyes on your own papers and complete your own work honestly. Remember, if you have any questions feel free to ask me…I’m sure others will have a similar question and thank you.

**Note to students with disabilities:**
Wilkes University is committed to providing equal educational opportunity for all students who meet the academic admissions requirements. In addition to providing direct services to students with disabilities as mandated by Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990, the University assists faculty and staff in the development and provision of reasonable accommodations.

Students with disabilities are reminded that it is their responsibility to notify the University of their needs, provide the required documentation, and formally request the specific accommodation(s). For additional information on accommodation procedures see [http://www.wilkes.edu/pages/200.asp](http://www.wilkes.edu/pages/200.asp).

**Participation:** This is a communications class. Therefore, you are expected to actively communicate. You must come to class prepared to participate and initiate discussions about
assignments, readings, or other applicable topics. If you do not participate in discussions on a regular basis, you will see that reflected in your grade.

Any student who has a problem with an aspect of the class, does not fully understand a concept, has an issue with a classmate, or requires special accommodations, is urged to contact me ASAP. Problems cannot be remedied if I am not made aware of them.

Reading assignments are required for a reason. I have found that the students who read the assignments before class are the ones who do the best in this course. If I find that students are not participating in class, and therefore likely completing their reading assignments, I will implement pop quizzes on the chapter readings.

All major writing assignments, as listed in this syllabus, must be submitted directly to the appropriate Desire2Learn drop boxes by their assigned deadlines. I will not accept assignments that are slipped under my door, placed in my mailbox or emailed to me after their deadline. Class work and minor assignments will be submitted in class.

**Cell phones:** Please refrain from using cell phones during class unless you are instructed otherwise.

**Policy on computers and internet usage:** Computers are to remain OFF during class unless you are instructed otherwise.

<table>
<thead>
<tr>
<th>Assessment Instrument</th>
<th>% of Final Grade</th>
<th>Linked to Course Goal #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual assignments</td>
<td>20% or 100 points</td>
<td>1, 2, 3, 4 and 5</td>
</tr>
<tr>
<td>Group assignments</td>
<td>20% or 100 points</td>
<td>1, 2, 3, 4 and 5</td>
</tr>
<tr>
<td>Semester Project</td>
<td>25% or 125 points</td>
<td>1, 3 and 4</td>
</tr>
<tr>
<td>Exams (2)</td>
<td>25% or 125 points</td>
<td>1, 2 and 5</td>
</tr>
<tr>
<td>Case analysis</td>
<td>10 % or 50 points</td>
<td>1 and 2</td>
</tr>
</tbody>
</table>

**Assignments:**

**Individual assignments:** Content-specific individual assignments will be given throughout the semester. Some will be smaller, in-class projects, while others will be more involved out-of-class assignments. Assignments will be a mix of skills-based (writing) assignments and more analytical ones. Individual assignments help gauge fulfillment of G1, G2, G3, G4 and G5. **100 points**

**Group assignments:** Like the individuals assignments, content-specific group assignments will be given throughout the semester. Assignments will be a mix of skills-based (writing) assignments and more analytical ones. Individual assignments help gauge fulfillment of G1, G2, G3, G4 and G5. **100 points**

**Semester project:** Students will be split into “energy groups” and become resident “experts” on their topic. As a group, we’ll decide how we want to present our class project, temporarily named the Luzerne County Energy Information Project. Perhaps we'll hold a public forum, create a newsletter or design a website. The ultimate project is limited only by your creativity. Note: Some individual and/or group assignments will support this class project. The semester project helps gauge fulfillment of G1, G3, and G4. **125 points**

**Exams:** Two exams will be given during the semester. These are designed to measure your knowledge on the readings and course notes. Exams will take place on Thursday, Feb. 26 and Tuesday, April 21. These help gauge fulfillment of G1, G2 and G5. **125 points**
Case analysis: During the final exam time slot, students will present a case analysis dealing with an energy crisis or concern. There is a written and oral component to this assignment. This helps gauge fulfillment of G1 and G2. **50 points**

Grading:
This course is based on 500 points and follows the grading scale shown below on this page. I encourage you to discuss your grades with me at any time. Remember, if my office hours are not convenient for you, please contact me and we will schedule something that works for both of us.

**Note:** I do not give grades; you earn them.

Because of privacy concerns, I won’t discuss grades over the Internet or provide grade information to friends, etc... If you have a question concerning a grade, please see me during office hours or by appointment. I base final grades on the following points/grade scale:

<table>
<thead>
<tr>
<th>Points Range</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>465-500</td>
<td>4.0</td>
<td>Academic achievement of outstanding quality</td>
</tr>
<tr>
<td>435-464.9</td>
<td>3.5</td>
<td>Academic achievement above high quality</td>
</tr>
<tr>
<td>400-434.9</td>
<td>3.0</td>
<td>Academic achievement of high quality</td>
</tr>
<tr>
<td>375-399.9</td>
<td>2.5</td>
<td>Achievement above acceptable quality for graduation</td>
</tr>
<tr>
<td>350-374.9</td>
<td>2.0</td>
<td>Achievement of acceptable quality for graduation</td>
</tr>
<tr>
<td>325-349.9</td>
<td>1.5</td>
<td>Achievement above minimum quality for credit</td>
</tr>
<tr>
<td>300-324.9</td>
<td>1.0</td>
<td>Achievement of minimum quality for credit</td>
</tr>
<tr>
<td>Below 300</td>
<td>0.0</td>
<td>Achievement below minimum required for course credit</td>
</tr>
</tbody>
</table>

**COURSE OUTLINE**
(subject to change based on the individual class)

<table>
<thead>
<tr>
<th>DATE</th>
<th>CLASS TOPIC and TEXT COVERED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week One</strong>&lt;br&gt;T 1/13</td>
<td>Course discussion and syllabus Plans for the semester. What do we know about energy and the environment? Key concepts to know as we begin</td>
</tr>
</tbody>
</table>
| R 1/15 | Reading:  
  - Chapter 1: Study and Practice of Environmental Communication (pp 9-32) |
| **Week Two**<br>T 1/20 | Reading:  
  - Chapter 2: Contested Meanings of Environment (pp 39-54) |
| R 1/22 | Reading:  
  - Chapter 3: Social-Symbolic Constructions of Environment (pp. 59-76) |
| **Week Three**<br>T 1/27 | Why should we care? A discussion of local and current energy issues. What do we know? How do we know it? How are the two related? Reading:  
  - TBA (depending on ‘current events’) |
| R 1/29 | Group activity |
Due: Group project #1

**Week Four**

T 2/3

Reading:
- Chapter 4: Public Participation in Environmental Decisions (pp. 83-105)

R 2/5

What is FOIA?
Accessing information (computer lab day)
Assignment #1: Locating reports

**Week Five**

T 2/10

DUE: Assignment #1
Writing boot camp Day #1
Reading:
- TBA (intro to basic journalism and PR)

R 2/12

Writing boot camp Day #2
Where to find sources, how to get information and how to present it
How do I know if it's the truth?

**Week Six**

T 2/17

Reading:
- Chapter 6: News Media and the Environment

R 2/19

Guest speaker(s): Covering energy issues
DUE: Assignment #2: Writing up a report (group or alone)

**Week Seven**

T 2/24

Reading:
- Chapter 5: Managing Conflict: Collaboration and Environmental Disputes (pp. 111-135)

R 2/26

Exam

**Week Eight**

T 3/3

SPRING BREAK

R 3/5

SPRING BREAK

**Week Nine**

T 3/10

Reading:
- Chapter 7: Social Media and the Environment Online (pp 177-202)

R 3/12

What is public relations?
Reading:
- TBA

**Week Ten**

T 3/17

Reading:
- Chapter 8: Advocacy Campaigns and Message Construction (pp. 209-238)

R 3/19

Guest speaker: Energy industries and PR

**Week Eleven**

T 3/24

Reading:
Chapter 10: Green Marketing and Corporate Campaigns (pp. 283-310)
Discuss class Luzerne County Energy Information Project

R 3/26 (Cont.) Class project discussion
What do we want to do?

Week Twelve
T 3/31 Energy-related field trip

R 4/2 EASTER BREAK

Week Thirteen
Hot topics in energy issues:
• For the next two weeks we’ll be discussing current energy issues locally, nationally and internationally. Students will summarize an energy-related text and present critical analyses of their work.

T 4/7 Hot topics
R 4/9 Hot topics

Week Fourteen
T 4/14 Hot topics
R 4/16 Hot topics
Exam review

Week Fifteen
T 4/21 Exam
R 4/23 Reading:
• Chapter 11: Science Communication and Environmental Controversies (pp. 319-342)

Week Sixteen
T 4/28 Reading:
• Chapter 12: Risk Communication: Environmental Dangers and the Public (pp 349-372)

Final exam: Energy crisis case studies analyses due; class presentations
Day/time: To be announced.

As a final note, it is my desire that this class be as helpful to you as it possibly can. That being said, if there is a topic you would like to discuss that is not mentioned in this syllabus, PLEASE share your thoughts with me. I am more than willing to alter the class schedule to accommodate reasonable requests.
Wilkes University Curriculum Committee
COURSE ADDITION FORM – page 1

26. Course Title: The Business of Energy

27. Course Number: _______BA 3xx / EGY 221___________________
   Coordinate with Registrar to insure course number is available

28. Course Credit Hours:
   Classroom Hours ___3___ Lab Hours ___0___ Other _____

29. Course Prerequisites:

30. Course Description (as proposed for the Bulletin):
   Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   The Business of Energy is a survey course that examines the business side of the much broader field of energy studies. Topics include the economics and economic impact of energy; the regulatory landscape for the energy industry; energy markets and managing the energy value chain and industry structure; and marketing and serving energy customers. Students will engage these topics through readings, research, interviews, and team projects.

31. Required Documentation:
   Proposed Syllabus
   Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

See next page
Meeting Time:
Office Hours:
Office Location: UCOM 216G
Office Phone No.: (570) 408-4719

**EGY 221/MGT 298. T: The Business of Energy**
The Business of Energy is a survey course that examines the business side of the much broader field of energy studies. Topics include the economics and economic impact of energy; the regulatory landscape for the energy industry; energy markets and managing the energy value chain and industry structure; and marketing and serving energy customers. Students will engage these topics through readings, research, interviews, and team projects.

**The objectives of the course are to increase your comprehension of the economic behavior of energy, markets and policies and to develop your ability to apply your critical thinking and analytical skills to discuss domestic and international energy and related policy issues.**

- Demonstrate an understanding of the historic, current, and future applications of energy resources.
- Demonstrate an understanding of the impact of regulatory, policy and legal controls that enhance and/or restrict certain fuel application in the power industry.
- Demonstrate an understanding of the growth (history) of the energy industries and why it has evolved to present day configuration.

**This course will consist of FOUR modules:**

- **POLICY** (R. Hughes),
- **ECONOMICS & INDUSTRY** (J. Edmonds),
- **FINANCE** (D. Frear) **AND**
- **ENTREPRENEURSHIP** (J. Alves).

The order of the modules is subject to change, but each module will consist of 3 weeks of lectures, discussion, seminars and/or guest speakers.

- **WEEK 1: Introduction and History**
- **WEEK 2: Best Practices, Successes & Failures**
- **WEEK 3: Future Impact**
The midterm presentations will occur during classtime at the end of each module (beginning of following module). The final project presentation will be delivered to the entire Sidhu faculty at the conclusion of the course.

REQUIRED READINGS
Readings will include reports and articles drawn from the governmental reports, academic literature and other publications. Readings will be available electronically and will be posted in D2L. Common resources are listed below but are subject to change.

• RFF is a nonprofit and nonpartisan organization that conducts independent research – rooted primarily in economics and other social sciences – on environmental, energy, natural resource and environmental health issues. Resources for the Future improves environmental and natural resource policymaking worldwide through objective social science research of the highest caliber. http://www.rff.org/Publications/Pages/default.aspx

• The U.S. Energy Information Administration (EIA) collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment. EIA provides a wide range of information and data products covering energy production, stocks, demand, imports, exports, and prices; and prepares analyses and special reports on topics of current interest. http://www.eia.gov/todayinenergy/

• The IEA is an autonomous organization which works to ensure reliable, affordable and clean energy for its 29 member countries and beyond. The IEA has four main areas of focus: energy security, economic development, environmental awareness and engagement worldwide. http://www.iea.org/publications/

COURSE ASSIGNMENTS
Weekly Assignments
The majority of the weekly assignments are to be completed individually. Homework files are to be submitted electronically via D2L prior to the start of class, email submissions are not accepted; late submissions are not accepted. Each assignment is worth 25 points (75 points per module).
Mid-term Presentations
The midterm presentations are designed to engage the students in deeper thinking on the material covered. The purpose of these assignments is to sharpen the students’ ability to concisely, yet effectively communicate concepts in business and energy and improve presentation skills. Each student will complete four midterm projects throughout the semester. The case-studies presentation will be completed in groups of three. Each should last no more than 10 minutes. Each midterm project is worth 100 points.

Final Presentations
For the final project/presentation, your team will conduct a small research study pertaining to a particular fuel source. Through this study, you will use the various concepts, ideas and frameworks discussed throughout the semester. Details will be furnished as the course progresses. This presentation should last 10-15 minutes. Each group member is to have a substantial part in the presentation and preparation of the project. The final project is worth 150 points.

STUDENT EXPECTATIONS
• EXCELLENT. To receive a grade in this category, you will have far exceeded the minimum expectations for the course and course assignments. Grades in this category as defined as a 3.5 - 4.0.
• SATISFACTORY. To receive a grade in this category, you will have at least met the minimum expectations for the course and course assignments. Grades in this category as defined as a 2.5 - 3.0.
• POOR. To receive a grade in this category, you will have not met the majority of the minimum expectations for the course and course assignments. Grades in this category as defined as 1.0 - 2.0. Grades below this threshold are not passing.

CLASSROOM POLICIES
Attendance
Attendance at all classes is expected. One or two excused absences are often times unavoidable, so if you must miss a class, the excuse for an absence must come in writing (email is acceptable) BEFORE regular class time. For excessive unexcused absences, points will be deducted from your final grade.

Classroom Etiquette
We will utilize many different lecturing and learning practices. Each student is expected to be attentive and courteous during lectures, classroom exercises and student presentations. At times, you will be required to use your mobile device to interact with the lecture and/or discussion. This is one of the only times it is acceptable for constant exchanges with said mobile device, unless it is being used for other course-related purposes. Excessive monitoring of email, instant messenger or other web-communication services, non-relevant web browsing are examples of unacceptable behavior. Continued violation of this policy could result in ejection from class.

Presentation Etiquette
As a student, and therefore ambassador, of The Sidhu School of Business & Leadership, you are expected to maintain a professional appearance and demeanor during every presentation.
Wilkes University Curriculum Committee
COURSE ADDITION FORM – page 1

32. Course Title: Capstone Course in Energy

33. Course Number: _____ EGY 221
Coordinate with Registrar to insure course number is available

34. Course Credit Hours:
Classroom Hours ___2___ Lab Hours ___0___ Other (project work) ___4___

35. Course Prerequisites:

36. Course Description (as proposed for the Bulletin):
   Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.

   Students taking this course will work as an interdisciplinary team to address a specific energy-related issue that has scientific, policy, business, and communications dimensions. Students will be expected to conduct background research on the topic, and then perform appropriate analyses leading to deliverable product (e.g., report, design process) that will incorporate multiple perspectives.

37. Required Documentation:
   Proposed Syllabus
   Attach proposed syllabus immediately after this document. In some situations the official syllabus may contain information which is beyond the review needs of the Curriculum Committee (such as extensive rubrics, etc). It is permissible to attach an abbreviated syllabus. In general, syllabi (whether full or abbreviated) should contain the following information: Course Title, Course Number, Credit hours, Faculty Information (name contact information, office hours), Course Description, Course Outcomes or Objectives, Assessment (grading) information, required texts (or other things such as tools, software, etc), pertinent policies and a proposed schedule of topics.

(See next page)
EGY 391 – Capstone Course in Energy
COURSE SYLLABUS
Semester: Spring 2016

Course instructor: Dr. XXXXXXXX

Primary Course Objective:

To serve as a capstone experience for students completing the Energy Studies Minor at Wilkes. To that end, students will be expected to integrate information gained in their coursework throughout the major, applying it to a real-world problem relating to energy that would benefit from an approach that incorporates multiple disciplines and perspectives.

By virtue of completing this course, students will:

1. Work as an interdisciplinary team to address a specific energy-related issue that has scientific, engineering, policy, business, and communications dimensions. The problem will be identified in collaboration with faculty mentors and the course instructor, and will have an obvious link to an issue of interest at a level that could range from local to international.

2. Conduct background research on the topic that would include published literature, technical and non-technical reports, the Internet, and information appearing in mass media. The project topic should clearly address an issue for which there is no known answer or level of agreement among different stakeholders.

3. Perform appropriate analyses that could involve data-mining and meta-analyses from other sources (including online information), or design a product or process that would be feasible, solve the identified problem, and be acceptable and cost-effective to the target stakeholder group.

4. Produce a deliverable product (e.g., report, design process) that will incorporate multiple perspectives and would be presented to Wilkes students and interested stakeholders (including the media).

5. Learn best practices relating to presenting research findings through different modes, including oral presentations, posters, and manuscripts.

Instructor Contact Information:

Office: xxxxx  Phone 570-408-xxxx  FAX: 570-408-xxxx
email: xxx.xxx@wilkes.edu
webpage: xxxx
Office hours: xxxxx
EGY 391 – Capstone Course in Energy
Spring 2016

Schedule of topics

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Course introduction: Introduction of students, course objectives, discussion of potential issues for analysis, assembling teams.</td>
</tr>
<tr>
<td>2</td>
<td>Identification of issues by teams; strategies for performing literature research and identifying stakeholders, strategies for analyses. Preparation for first oral presentations.</td>
</tr>
<tr>
<td>3</td>
<td>First team presentations on problem and strategy for solutions.</td>
</tr>
<tr>
<td>4</td>
<td>Evaluating web-based information; team research</td>
</tr>
<tr>
<td>5</td>
<td>How to prepare an effective poster; team research and analyses</td>
</tr>
<tr>
<td>6</td>
<td>How to prepare effective written materials; team research and analyses</td>
</tr>
<tr>
<td>7</td>
<td>How to communicate effectively with the media</td>
</tr>
<tr>
<td>8</td>
<td>Team progress reports (oral)</td>
</tr>
<tr>
<td>9</td>
<td>Team progress reports (written)</td>
</tr>
<tr>
<td>10-12</td>
<td>Team research and analyses</td>
</tr>
<tr>
<td>13</td>
<td>Final oral presentations / poster</td>
</tr>
<tr>
<td>14</td>
<td>Final report presentations</td>
</tr>
</tbody>
</table>

Grading

| Presentation 1: | 10 points (5 team, 5 individual) |
| Presentation 2: | 30 points (15, 15) |
| Presentation 3: | 30 points (15, 15) |
| Poster:        | 40 points (30, 10) |
| Final written materials: | 40 points (40, 0) |
| Mentor recommendation: | 50 points (0, 50) |
| Total:         | 200 points |

Grade assignment:

180 - 200 points = 4.0  
170 – 179 = 3.5  
160 – 169 = 3.0

150 – 159 = 2.5  
140 – 149 = 2.0  
130 – 139 = 1.5

120 – 129 = 1.0  
<110 – 179 = 1.0

Note: Schedule and grading are subject to change. Students will be given appropriate notice of any changes that are implemented.

EGY 391 – Capstone Course in Energy
Spring 2016

Potential Research Problems
(These are suggestions: teams are free to identify their own topics)

- How many natural gas pipelines can Luzerne County support?
- Should abandoned minelands be converted to grassland, forest, or other use?
- What are the comparative health impacts of coal, natural gas, wind, and solar power?
- What is the future of each of the following energy sources in Pennsylvania?
  - Coal
  - Natural gas
  - Wind
  - Solar
  - Hydropower
  - Geothermal
  - Biomass
- Evaluate the regulatory environment for each of the energy sources listed above? Are regulations too stringent, too lax?
- What are the costs and benefits of implementing the smart grid?
- How can we realistically achieve 25% reduction in energy consumption in PA?
- What practices can Wilkes University implement to achieve a 33% cost reduction in energy-related expenditures?
- Do Citizen Science approaches improve public understanding of energy issues?
- Can we improve web-based resources to facilitate public understanding of energy issues?
- How effective is K-12 education as it relates to energy in Pennsylvania?

Course Policies

Attendance Policy:

Attendance is mandatory and will be taken at each session. Absences will be excused with a note from a physician or Student Dean. Since many sessions will involve presentations by class members, it is common courtesy to show up and be respectful. If you arrive late, please slip in during the break between one group and the next. More than two unexcused absences will result in automatically failing the course.

About teamwork:

Students will normally participate in their project with 3-5 other classmates. Working as part of a team reflects changes in the culture of academia over the past twenty years. At a professional level, team members often have complementary experience that allows them to tackle multifaceted questions that no single member can address.
EGY 391 – Capstone Course in Energy  
Spring 2016  
Course Policies (cont.)

About teamwork (cont.):

In EGY 391, participants in a team will likely have differing skills that they can bring to the effort. However, as students, each member will have his / her own aptitude and motivation for the project at hand. Often, challenges will arise regarding responsibilities and accomplishments. Recognizing those dynamics, students will be graded both on their own performance and on the quality of the group effort.

Should a dispute arise among members of a team, all participants will be encouraged to resolve the issue on their own. Should efforts to solve the issue internally not be successful, students should see the faculty mentor. In those cases where the mentor cannot successfully resolve the issue, the course instructor will intervene as a last resort and apply a remedy, which may involve reconstituting the team.

Academic Honesty Policy:

As with all courses at Wilkes, students are expected to adhere to the academic honesty policies outlined in the Wilkes Student Handbook. Any student found to be in violation of any policy will be subject to disciplinary action that may involve a reduced grade or expulsion from the course. Since many students will be taking this course during their last semester at Wilkes, such disciplinary actions may impact graduation status.

Since students will be carrying out work that may be disseminated to a wider scientific or lay audience, students will be expected to adhere to appropriate scientific conduct. In particular, students will properly cite all published sources (including those in print and online media), collect and analyze data with scrupulous honesty, and honestly report their findings. In no case should students fabricate results, merely to “have something to present.” Students found to be in violation of those standards will receive disciplinary action as determined by the Wilkes Biology Department. Should any falsification be discovered after presentation to an outside audience, students would then be subject to disciplinary action under Wilkes’s Research Misconduct Policy.

Working with your mentor:

All students will pursue projects with one or more faculty mentor(s). A successful relationship will involve open and clear communication with your mentor(s), typically achieved through regular meetings.

The primary role of the mentor is to provide guidance during all phases of the project, based on his / her expertise. To that end, they serve as consultants. While some mentors are more hands-on than others, the ultimate responsibility for the success or failure of the project lies with the student team. Students will be expected to meet regularly with their mentors.
Wilkes University Curriculum Committee

COURSE CHANGE FORM

Directions: Use this form to change information relating to an existing course. Please note, changes to course number require separate course addition/deletion forms (not this form!). Only indicate changes that are proposed (existing and proposed), other fields should be left blank.

| Course Number: | __________________________ |
| Course Title: | __________________________ |

<table>
<thead>
<tr>
<th>Existing</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Title</td>
<td></td>
</tr>
<tr>
<td>Course Credit hours. (Indicate classroom, lab or “other” hours.)</td>
<td></td>
</tr>
<tr>
<td>Course Prerequisites</td>
<td></td>
</tr>
<tr>
<td>Course Description (as proposed for Bulletin)(^1)</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Course descriptions provide an overview of the topics covered. If the course is offered on a scheduled basis, i.e. every other year, or only during a set semester, note this in the description. Course descriptions should be no more than two to three sentences in length.