Agenda
Campus Curricula Committee Meeting
April 6, 2011
11 a.m. Room 117 Fulton Hall

Review of submitted DC forms:
DC 0381, Electrical Engineering, Bachelor of Science, approved effective Fall 2011.
A proposal to modify the current ABC electives list by deleting El Eng 208 and El Eng 209.

DC 0383, Information Technology, Bachelor of Science, approved effective Fall 2011. A proposal to create a new bachelor of science degree for the students at American National College in Sri Lanka only.

DC 0384, Sustainability minor, approved effective Fall 2011. A proposal to create a multi-disciplinary undergraduate minor program in sustainability.

Review of submitted CC forms:
CC 8121, Electrical Engineering 391, Electrical Engineering Senior Project I, effective Fall 2011.

CC 8122, Electrical Engineering 254, Electronics II, effective Fall 2011.

CC 8123, Computer Engineering 417, Computer Science 417, Network Performance Analysis, effective Fall 2011.

CC 8125, ERP 442, Customer Relationship management in ERP Environment, effective Fall 2011.

CC 8126, ERP 342, Customer Relationship Management in ERP Environment, effective Fall 2011.

CC 8127, Petroleum Engineering 121, Intro to Oil Well Drilling, effective Fall 2011.

CC 8128, Petroleum Engineering 331, Drilling and Well Design, effective Fall 2011.

CC 8129, Petroleum Engineering 314, Advanced Drilling Tech, effective Fall 2011.

CC 8130, Petroleum Engineering 325, Well Completion Design, effective Fall 2011.
CC 8131, Petroleum Engineering 338, Finite Element Analysis with Applications in Petroleum Engineering, effective Fall 2011.

CC 8132, Petroleum Engineering 406, Advanced Reservoir Simulation, effective Fall 2011.

CC 8133, Engineering Graphics 212, Computer Aided Drafting, effective Fall 2011.

CC 8134, Engineering Graphics 200, Special Problems, effective Fall 2011.

CC 8135, Math 305, Modern Algebra I, effective Fall 2011.

CC 8136, Math 309, Advanced Calculus I, effective Fall 2011.

CC 8137, Statistics 355, Statistical Models in Actuarial Science, effective Fall 2011.

CC 8139, Biological Science 364, Global Ecology, effective Fall 2011.

Review of submitted EC forms:
EC 2321, Petroleum Engineering 301, Well Stimulation, effective Fall 2011.

EC 2322, Petroleum Engineering 401, Advanced Well Stimulation, effective Fall 2011.

EC 2332, ERP 301, ERP Systems in Health Care, effective Summer 2011.

EC 2333, Petroleum Engineering 301, Well Stimulation, effective Fall 2011.

EC 2334, Petroleum Engineering 401, Advanced Well Stimulation, effective Fall 2011.

EC 2335, Petroleum Engineering 401, Advanced Natural Gas Engineering, effective Fall 2011.

EC 2336, Petroleum Engineering 401, Advanced Well Test Analysis, effective Fall 2011.
Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:
Electrical Engineering B.S. Program

Department: Electrical & Computer Engineering

Briefly describe action requested (Attach documentation as appropriate):
The El Eng ABC Electives list is modified to delete the 1-hour laboratories El Eng 208 and El Eng 209. These are optional laboratories associated with El Eng 205 and El Eng 207. The unnecessary "the" in Footnote 14 is also deleted. The complete list in Footnote 14 is then "El Eng Electives A, B, and C must be chosen from El Eng 205, 207, 225, 231 or 235, 243, 254, Cp Eng 213." Modification to Undergraduate EE Requirements per ECE Faculty 1/20/2011.

Recommended by Department:  

(Chair signature)

Date: 4 Feb 11

Recommended by Discipline Specific Curricula Committee:  

(Chair signature)

Date: 2/23/11

Approved by Curricula Committee:  

(Chair signature)

Date:  

Approved by Faculty Senate:  

(Chair signature)

Date:  

02/04/11

(Revised 1/31/2008)
Effective Year: 2011  
Effective Term: Summer ☐ Fall ☒ Spring ☐  
(Creating or modifying a degree program must be effective for a Fall term)

Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:  
Bachelor of Science in Information Technology

Department: Business and Information Technology

Briefly describe action requested (Attach documentation as appropriate):  
Create a new bachelor degree for the students at American National College (ANC) in Sri Lanka only. This program will not be included in accreditation with the Association for Accreditation for Colleges and Schools of Business (AACSB) while the BS in IST is included. This will allow the BIT department to move forward with accreditation without having to wait to get three years of data on the Sri Lanka program and without having to have our faculty members teach the courses in Sri Lanka via distance. AACSB accreditation is vital for recruiting students and employers.

To make the program eligible for a waiver from AACSB accreditation, we have removed the business courses. We have also modified the IST requirements to match the knowledge requested by companies in Sri Lanka which differ from the requirements of companies in the U.S. Sri Lankan businesses are not interested in ERP, for example.

Details of the new program are in the new program proposal.

Recommended by Department: ___________________________ Date: 2/18/11
(Chair signature)

Recommended by: ___________________________ Date: _____
Discipline Specific Curricula Committee  (Chair signature)

Approved by Curricula Committee: ___________________________ Date: _____
(Chair signature)

Approved by Faculty Senate: ___________________________ Date: _____
(Chair signature)

02/18/11  
(Revised 1/31/2008)

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NEW DEGREE PROGRAM PROPOSAL

Sponsoring Campus: Missouri University of Science and Technology

College or School: NA

Department: Business and Information Technology

Program Title: Bachelor of Science in Information Technology

Degree: Bachelor of Science

Option: __________________________

CIP Classification: __________________________

Emphasis areas: None

Implementation Date: Fall 2011

Expected Date of First Graduation: Spring 2013

Author of Proposal: Caroline Fisher

Name and Phone Number of Person to Contact for More Information:

Robert Schwartz, VPAA, 573-341-7887

Individual(s) Responsible for Success of Program:

Chair, Business and Information Technology
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Executive Summary

This proposed degree program is designed to achieve four objectives. The first objective of this initiative is to create a degree that matches the needs of the Sri Lankan businesses. This degree will fulfill a market need for an undergraduate program in Sri Lanka in information technology, an area where local businesses express a need for more employees.

The second objective is to create a degree that does not need Association for Advancement of Colleges and Schools of Business (AACSB) accreditation, allowing American National College (ANC) in Sri Lanka to hire teaching faculty who are professionally and academically qualified but not active in research and publication to the higher level of AACSB standards. The current situation is that ANC is offering our degree (BS in IST), subject to AACSB review, and that could ultimately jeopardize Missouri S&T’s accreditation application. This has already held up accreditation approval for at least one year. Faculty who meet AACSB standards are very difficult to find outside the U.S.

The third objective is to establish better name recognition for Missouri S&T in Sri Lanka and increase the number of students selecting Missouri S&T as their U.S. location for study. This goal will be achieved by increasing the number of transfer students who start their degree program in Sri Lanka and choose to complete the final portion at Missouri S&T’s home campus in the U.S. A fourth objective is to generate income for Missouri S&T to help cover the expenses of maintaining and improving our programs both on campus and at a remote location.

The degree being proposed is the Bachelor of Science in Information Technology. The American National College of Colombo, Sri Lanka will provide the physical infrastructure and administrative support while also covering all salaries and operating expenses at the remote location. This degree will fulfill a market need for an undergraduate program in Sri Lanka in information technology. This program will provide the high-quality education that S&T is known for providing.

American National College currently has 12 students enrolled in our BS IST degree program now being offered there. ANC officials report that 15 to 20 students ready to enroll in this program as soon as it is approved. Based on our experience with offering the BS in Psychology, enrollment should grow rapidly. Breakeven will be reached by year three. The downside risk is minimal in that the contract requires ANC to provide adequate marketing, facilities, and faculty members for the program. We will have invested a minimal amount of funding to coordinate the program should we decide to terminate our participation in the future.

The proposed Bachelor of Science in Information Technology is a 120 credit hour program including 54 hours of general education credit. The proposed BS in Information Technology will be offered only to students who start the program in Sri
Lanka; it will not be offered to students in the U.S. Students who begin the program in Sri Lanka will be allowed to transfer to the S&T campus where they can change majors to the IST bachelor program offered on campus with no or minimal loss of credit. The major difference for these students will be that they must take four business courses for the IST degree that are not required by the IT degree.
1. Introduction

The proposed Bachelor of Science in Information Technology is a 120 credit hour degree program including 54 hours of general education credit. Students are required to take 54 credit hours in information science and technology or enterprise resource planning, 54 credit hours in general education, and 12 hours of free electives. The proposed BS in Information Technology degree program will be offered only to students who start the program in Sri Lanka; it will not be offered to students in the U.S. Students who begin the program in Sri Lanka will be allowed to transfer to the S&T campus to complete the IT or the existing IST bachelor baccalaureate degree program.

S&T is currently offering its BS in Information Science and Technology to 12 students at ANC Sri Lanka. The course selection was modified to best meet the requirements of employers in Sri Lanka. The first 13 students entered into this program in January 2010; 1 student dropped out of the program, leaving 12. This program is being discontinued because it is difficult to administer within the requirements of accreditation by the Association for Accreditation of Colleges and Schools of Business (AACSB). The program in Sri Lanka has held up S&T's accreditation for at least one year. The new BS IT program will be accredited by North Central but AACSB accreditation will not be required.

The department of Business and Information Technology and its department chair are responsible for the administration of this new program.

2. Fit With University Mission and Other Academic Programs

2.A. Alignment With Mission and Goals

The proposed Bachelor of Science in Information Technology degree program is well aligned with the S&T mission of integrating “education and research to create and convey knowledge to solve problems for our State and the technological world.” S&T is recognized as Missouri’s technological university and is among the top five technological research universities in the U.S. A program in information technology fits directly into this mission. Information technology is critical to the efficient functioning of all organizations in their work to solve problems. It is changing constantly and is one of the fastest growing career areas around the world.

A basic component of Missouri S&T’s mission is to educate both domestic and foreign students at the undergraduate and graduate level. The portion of the education mission aimed at educating foreign students is partially met by our partnership with ANC in Sri Lanka.

Missouri S&T continually updates its strategic planning with regard to recruiting the correct mix of students that make up its total student population. A student recruitment committee chaired by the Vice Provost and Dean of Enrollment
Management and representing a broad cross section of campus constituencies meets regularly to assess the current enrollment situation and examine the impact of identified enrollment trends. This planning undertaken by this committee involves establishing recruitment plans for both graduate and undergraduate and domestic and foreign students. The need for the proposed change in student recruiting was brought about by the increasing difficulty and cost of recruiting foreign students, who are needed for two reasons.

First, current students graduate and go to work in a world that is heavily involved in international competition on all fronts. Corporate America no longer works within the confines of the US boundaries and graduates need to be exposed to other cultures. This exposure is created in part by bringing international students to the Rolla campus.

Second, there is an increasing need to boost the research capability of Missouri S&T if it is to remain competitive among its peer institutions in producing high quality research and supplying US industry with technologically capable employees. One critical component of improving Missouri S&T's research capability is increasing graduate student research capability. There is a national declining interest in science and engineering among the US student body. This declining interest creates a need to recruit more high quality foreign students to take the place of the declining domestic graduate student body. This trend is reflected not only in institutions of higher learning throughout the US but also in US high tech industry. For example: The National Science Board report for 2004 Science and Engineering Indicators and published by the National Science Foundation indicates that 56% of the engineering PhDs in the U.S. were awarded to foreign born students. Furthermore, this same report indicates that 38% of the PhD-holders in the US science and technology workforce in 2000 were foreign born.

This program is of very high priority because it will address a problem that is causing S&T to be delayed in receiving accreditation from the Association for Accreditation of Colleges and Schools of Business (AACSB). This accreditation is vital for the growth of the department of business and information technology that is part of S&T's strategic plan. The proposed degree program assists in the accreditation process of our on-campus programs while still meeting the primary (and other) purposes for S&T to offer an IT degree in Sri Lanka.

2.B. Duplication and Collaboration Within Campus and Across System

No similar program exists at S&T, in the UM system, or in the state of Missouri.
3. Business-Related Criteria and Justification

3.A. Market Analysis

3.A.1. Need for Program

Two types of students will be served. The first type will be those students who wish to obtain their entire degree program at the Sri Lanka location. It is expected that these will be students of lower income levels. The second type of students will be those wishing to study in the U.S. These students will either start their degree in Sri Lanka and then transfer to the U.S. or enroll directly in Missouri S&T’s U.S. campus as the result of local exposure to Missouri S&T offerings. This expectation of transfer students has been validated by other US universities offering degree programs through ANC.

ANC has conducted marketing studies to determine the need for a bachelor degree in the area of information technology. It found significant need for graduates with IT skills.

The growth pattern of existing programs currently in place at the American National College provides evidence of the viability of this institution. This growth rate is shown in the table below.

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>210</td>
<td>264</td>
<td>282</td>
<td>324</td>
<td>507</td>
<td>710</td>
<td>752</td>
<td>722</td>
</tr>
</tbody>
</table>

3.A.2. Student Demand for Program

ANC has 15 to 20 students ready to enter this proposed BS in IT degree program once it is approved. It enrolled 13 students in the BS IST who started the program in spring 2010; 1 student has since dropped out of the program. ANC is in charge of student recruiting and retention. Based on our experience with offering the BS in Psychology, enrollment should grow rapidly. The numbers below are conservative given our experience and that of Northwood University who has also partnered with ANC to offer a bachelors degree in business.

Table 2. Student Enrollment Projections Based on Market and Student Demand.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full-Time</td>
<td>28</td>
<td>30</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Part-Time</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>28</td>
<td>30</td>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

3.B. Financial Projections

See Financial Projections below and in the attached spreadsheet.

3.B.1 Additional Resources Needed

S&T costs are associated primarily with reviewing the academic course structure, the selection and use of course materials and the review of student work. An on-site administrator will reside in Colombo, Sri Lanka at ANC expense. In addition to the oversight provided by this individual, an S&T IT degree representative will visit Colombo once during the academic year at an estimated cost of $3,000. The Business and Information Technology (BIT) department will require an additional $10,000 to cover the annual expenses of monitoring its program.

The proposed program maximizes the use of existing faculty for development and implementation. Existing S&T faculty members will provide syllabi, assignments, tests, and other teaching-related items to ANC. They will spot check grading to verify that the quality of the ANC program matches those of the programs at the S&T campus to assure consistency in grading. Recorded lectures from courses offered on campus will be made available to ANC for most courses. S&T faculty will be available for consultation to the ANC faculty.

S&T will provide oversight to insure that the courses offered are identical in content (for identical courses) and quality level to the courses offered on the S&T campus in Rolla, Missouri. This oversight will be accomplished through yearly site visits and the continual review of all course material. These materials will be collected and sent to the appropriate S&T BIT faculty member by S&T's on-site administrator at ANC. The on-site administrator will be thoroughly informed of S&T policies regarding students and faculty and will be responsible for insuring that these policies are carried out at ANC. The adherence to these policies has been made part of the contract to be signed by both parties.

Additional resources for this program will be the teaching faculty at American National College in Sri Lanka. ANC is responsible for recruiting and compensating those faculty members. Hiring is approved by the Department of Business and Information Technology at S&T. ANC will also provide the physical facilities, computers, library books, and other necessary resources.

3.B.2. Revenue
ANC will pay S&T 12% of gross revenue collected from students enrolled in the IT degree program. ANC charges $4,000 (US) per student per year with students usually taking 12 credit hours per semester. Student growth and revenue projections are shown in the table below and are expected to stabilize at 60 students.

Transfer students from ANC will generate additional return for S&T. Each transfer student from ANC will generate additional revenue for S&T of approximately $38,000/year (including room and board). Northwood University of Midland, Michigan experiences a transfer rate of 1 student for every 3 to 4 students enrolled in its business degree programs at ANC. At the projected fifth year enrollment of 60 students, this would mean an additional 15 to 20 students on the S&T campus. Based on 2010-11 non-resident fees and 20 students taking a 15 credit hour load per semester this would bring in approximately $400,000 per semester (not including the IST supplement, board, and room charge). Using 12-SCH semesters would yield approximately $290,000 per semester in additional tuition revenue.

3.8.3. Net Revenue

A table summarizing the revenue and expense categories is shown immediately below and illustrates the fact that a positive cash flow is available after an initial start up period. All calculations are based on 2010-11 costs. Beyond the second year the positive cash flows provide the opportunity to return greater amounts to the departments involved, the School of Extended Learning and S&T's general operating fund.

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrollment</th>
<th>Gross Tuition</th>
<th>S&amp;T Gross Income</th>
<th>S&amp;T Expenses</th>
<th>S&amp;T Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13</td>
<td>$52,000</td>
<td>$6,240</td>
<td>$13,000</td>
<td>($6,760)</td>
</tr>
<tr>
<td>2</td>
<td>28</td>
<td>$112,000</td>
<td>$13,440</td>
<td>$13,000</td>
<td>$440</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>$120,000</td>
<td>$14,400</td>
<td>$13,000</td>
<td>$1,400</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>$160,000</td>
<td>$19,200</td>
<td>$13,000</td>
<td>$6,200</td>
</tr>
<tr>
<td>5</td>
<td>60</td>
<td>$240,000</td>
<td>$28,800</td>
<td>$13,000</td>
<td>$15,800</td>
</tr>
</tbody>
</table>

Table 4. Enrollment at the End of Year 5 for the Program to Be Financially and Academically Viable.

<table>
<thead>
<tr>
<th>Enrollment Status</th>
<th>Full-Time</th>
<th>Part-Time</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>28</td>
<td>0</td>
<td>28</td>
</tr>
</tbody>
</table>
Table 5. Financial Projections for Proposed Program for Years 1 Through 5.

<table>
<thead>
<tr>
<th>A. One-time</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>New/Renovated Space</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Library</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total one-time: 0 0 0 0 0

<table>
<thead>
<tr>
<th>B. Recurring</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>$3,000</td>
<td>$3,000</td>
<td>$3,000</td>
<td>$3,000</td>
<td>$3,000</td>
</tr>
<tr>
<td></td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
</tbody>
</table>

Total recurring: $13,000 $13,000 $13,000 $13,000 $13,000

Total expenses (A+B): $13,000 $13,000 $13,000 $13,000 $13,000

2. Revenue per year

<table>
<thead>
<tr>
<th>Tuition/Fees</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional Resources</td>
<td>$6,240</td>
<td>$13,440</td>
<td>$14,440</td>
<td>$19,200</td>
<td>$28,800</td>
</tr>
<tr>
<td>State Aid -- CBHE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Aid -- Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total revenue: $6,240 $13,440 $14,440 $19,200 $28,800

3. Net revenue (loss) per year

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>($6,760)</td>
<td>$440</td>
<td>$1,440</td>
<td>$6,200</td>
<td>$15,800</td>
</tr>
</tbody>
</table>

4. Cumulative revenue (loss)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>($6,760)</td>
<td>($6,320)</td>
<td>($4,880)</td>
<td>$1,320</td>
<td>$17,120</td>
</tr>
</tbody>
</table>
3.C. Business and Marketing Plan: Recruiting and Retaining Students

American National College in Sri Lanka will provide the physical facilities (classrooms, laboratories, computers, and office space) and administrative infrastructure to support the program and cover all salaries and operating expenses at its location.

In addition, ANC will recruit students and provide financial support for the recruiting and hiring of all academic and nonacademic personnel required to support the degree offerings including, office staff, faculty and an on-site administrator. S&T will have final approval authority in the hiring of the on-site administrator and all faculty members.

The normal student satisfaction/course evaluation surveys conducted on the S&T campus will also be conducted on the ANC campus as part of the oversight function. In addition, faculty performance reviews will be conducted by the on-site administrator for all S&T programs on behalf of the S&T degree granting departments. S&T will bear the cost associated with S&T’s home campus activity necessary for this oversight.

Current tuition rates are projected at $4,000 (US) per student per year with an anticipated student body of 60 students once the program reaches steady state within five years. S&T will receive 12% of the gross proceeds collected from student tuition. This return to S&T will be split 50/50 between the central administration and the Business and Information Technology Department.

In addition to the projected revenue from ANC, it is anticipated that S&T will receive a major benefit from increased exposure in this part of the world, resulting in a greater number of applications from students wanting to receive undergraduate and graduate degrees from S&T’s home campus in the U.S. Northwood University of Midland, Michigan currently has a business degree program in cooperation with ANC and experiences a transfer rate of 1 student for every 3 to 4 students enrolled in its degree programs at ANC.

All marketing of the program will be handled by American National College (ANC) in Sri Lanka. It is already operating: recruiting students, educating students, and placing graduates. S&T will provide ANC with sets of its promotional materials for modification at its discretion.

Existing competition in the Sri Lanka market is very limited. The public university can only provide higher education for five percent of the qualified high school graduates. The country lacks programs in information technology so we will have no real competition for this program.
4. Institutional Capacity

S&T Faculty members will coordinate the courses at ANC. This is expected to require about 2% of their total semester work time per course. This does place an additional load on the department faculty, but the load is less than what the existing program (BS in Information Science and Technology) requires of them. The full-time faculty equivalent grows from 12% in the first year to 36% in the second.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Instructor</th>
<th>Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 1</td>
<td>Information Systems</td>
<td>Yu-Hsien Chiu</td>
<td>1</td>
</tr>
<tr>
<td>Spring 1</td>
<td>Implementation of IS I</td>
<td>Dr. Mike Hilgers</td>
<td>1</td>
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<tr>
<td>Summer 1</td>
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<td>Dr. Mike Hilgers</td>
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<td></td>
<td>Web &amp; Digital Media Design</td>
<td>Richard Hall</td>
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<td></td>
<td>Computer Internals</td>
<td>Dr. Barry Flachsbart</td>
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<td></td>
<td>Information Systems</td>
<td>Yu-Hsien Chiu</td>
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<tr>
<td>Fall 2</td>
<td>Telecommunications Networks</td>
<td>Staff</td>
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<td></td>
<td>Database Management</td>
<td>Dr. Barry Flachsbart</td>
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<td>Human Computer Interaction</td>
<td>Dr. Hong Sheng</td>
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<td>Dr. Mike Hilgers</td>
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<tr>
<td>Spring 2</td>
<td>Systems Analysis</td>
<td>Dr. Vincent Yu</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Modular Software Systems</td>
<td>Matt Becker</td>
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<td></td>
<td>E-Commerce</td>
<td>Staff</td>
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<td>Richard Hall</td>
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<td>Computer Internals</td>
<td>Dr. Barry Flachsbart</td>
<td>2</td>
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<tr>
<td>Summer 2</td>
<td>Multi-Media Development</td>
<td>Dr. Richard Hall</td>
<td>1</td>
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<tr>
<td></td>
<td>Law &amp; Ethics in E-Commerce</td>
<td>Eric Anderson</td>
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<tr>
<td></td>
<td>Database Apps in Business</td>
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<td>IS Project Management</td>
<td>Dr. Barry Flachsbart</td>
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<td>Systems Analysis</td>
<td>Dr. Vincent Yu</td>
<td>2</td>
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<td></td>
<td>Modular Software Systems</td>
<td>Matt Becker</td>
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<td></td>
<td>E-Commerce</td>
<td>Staff</td>
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<td>Yu-Hsien Chiu</td>
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<td>Advanced Networking</td>
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<td></td>
<td>Network Performance Design</td>
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<td></td>
<td>Telecommunications Networks</td>
<td>Staff</td>
<td>2</td>
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<tr>
<td></td>
<td>Database Management</td>
<td>Dr. Barry Flachsbart</td>
<td>2</td>
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<td>Human Computer Interaction</td>
<td>Dr. Hong Sheng</td>
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<td>Implementation of IS I</td>
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<td>Spring 3</td>
<td>Multi-Media Development</td>
<td>Dr. Richard Hall</td>
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<td>Database Apps in Business</td>
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<td>Web &amp; Digital Media Design</td>
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<tr>
<td></td>
<td>Computer Internals</td>
<td>Dr. Barry Flachsbart</td>
<td>3</td>
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</tbody>
</table>
5. Program Characteristics

5.A. Structure

The program is structured after the Bachelor of Science in Information Science and Technology, except no business courses are required. The program includes 54 credit hours in general education, 54 credit hours in Information Science and Technology or Enterprise Resource Planning, and 12 hours of general electives, for a total of 120 credit hours.

1. Total credits required for graduation: 120 credit hours

2. Residency requirements, if any: Last 60 credit hours restricted to S&T.

3. General education (Provided by Patton University.)

Total credits for general education courses: 54

Table 7. General Education Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Course</th>
<th>Hrs</th>
<th>Course</th>
<th>Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech or Tech Com Elective</td>
<td>3</td>
<td>Fine Arts, Social Sciences, or Humanities Elec.</td>
<td>6</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>Practicum in Tech Com</td>
<td>3</td>
<td>History Elective</td>
<td>3</td>
<td>Business Calculus</td>
<td>4</td>
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<tr>
<td>Psychology</td>
<td>3</td>
<td>Micro Economics</td>
<td>3</td>
<td>Statistics I</td>
<td>3</td>
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<tr>
<td>Principles of Speech</td>
<td>3</td>
<td>Macro Economics</td>
<td>3</td>
<td>Science Elective</td>
<td>3</td>
</tr>
<tr>
<td>Exposition &amp; Argumentation</td>
<td>3</td>
<td>American Government</td>
<td>3</td>
<td>Science Elective with Lab</td>
<td>4</td>
</tr>
<tr>
<td>Intro to Tech Com</td>
<td>3</td>
<td>Intro to College Success</td>
<td>1</td>
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</tbody>
</table>

These courses have been preapproved through an articulation agreement with Patton University. Transfer of the credits is handled by the Registrar's office when the students apply for the IT program.

4. Major requirements

Total credits specific to degree: 54

Table 8. Major Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs</th>
<th>Course</th>
<th>Hrs</th>
<th>Course</th>
<th>Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Systems</td>
<td>3</td>
<td>Implementation of IS</td>
<td>6</td>
<td>Database Management</td>
<td>3</td>
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<tr>
<td>Computer Internals</td>
<td>3</td>
<td>Telecommunications Networks</td>
<td>3</td>
<td>E-Commerce</td>
<td>3</td>
</tr>
</tbody>
</table>
5. Free elective credits

Total free elective credits: 12

6. Requirement for thesis, internship or other capstone experience: None

7. Any unique features such as interdepartmental cooperation:

The general education courses will be provided by Patton University on the ANC campus. As stated above, the courses are part of an existing articulation agreement.

5.B. Faculty and Administration

Administration

Caroline Fisher, Ph.D., Chair, Department of Business and Information Technology
3% of time year round)

S&T Faculty

Eric Anderson, JD, Adjunct Faculty
Yu-Hsien Chiu, Assistant Teaching Professor
Craig Claybaugh, Ph.D., Assistant Professor
Scott Dalton, Adjunct Faculty
Barry Flachsbart, Ph.D., Professor
Richard Hall, Ph.D., Professor
Mike Hilgers, Ph.D., Professor
Bih-Ru Lea, Ph.D., Associate Professor
Hong Sheng, Ph.D., Assistant Professor
Vincent Yu, Ph.D., Associate Professor

All S&T faculty members must have at least a masters degree with five years of professional experience or a doctorate in the area of teaching. These faculty members will oversee the classes taught at American National College, including providing materials, collecting and evaluating assignments for outcomes assessment, checking grading, and verifying final grades. Each course will require about 5% of a faculty member’s time for the semester in which it is taught.

ANC Faculty

Shantha Jayalal, Ph.D.
Kapila Ponnamperuma, Ph.D.
Keerthi Wijayasiriwardhane, Ph.D.
Ruwan Wickramarachichi, Ph.D.

All ANC faculty members must have at least a masters degree with five years of professional experience or a doctorate in the area of teaching.

All courses will be taught by ANC faculty members in conjunction with S&T faculty members. S&T faculty members will be responsible for the syllabus, textbooks, assignments, and examinations.

5.C. Student Preparation

All ANC students must meet the requirements for admission to Missouri University of Science and Technology. Admissions are handled through S&T's Registrar. Students in Sri Lanka have limited choices for a college education. The public university can only handle about five percent of the Sri Lankan students qualified to attend a university.

5.D. Program Outcomes

Learning Outcomes

- Students will be able to write a professional letter of inquiry about a career opportunity.
- Students will be able to make a professional business presentation.
- Students will be able to make a satisfactory score on the Business Critical Thinking Skills test.
- Students will be able to work well in teams to accomplish an objective.
- Students will be able to navigate Visual Basic and windows file structure; They will create and save a program in the environment and then send that program following the correct procedures.

Learning outcomes are assessed through assignments given in classes. The same assignments will be used for this program as are currently used for the BS in IST offered on the S&T campus.

5.5. Program Design and Content

The program was designed based on the Bachelor of Science in Information Science and Technology currently offered on S&T's campus and now offered to 12 students in Sri Lanka. Program requirements were modified to meet local workplace needs and to assure that the program could be waived from S&T AACSB accreditation.

The courses included in this program are all part of the BS in IST offered on S&T's campus. The prerequisites and sequences are the same. No courses are unique to this program.
5.F. Program Goals and Assessment

The following program goals will be measured and tracked by ANC and by Dr. Henry Wiebe, Vice Provost and Dean, Missouri S&T.

- Expect 90% placement rates in related fields.
- Expect 25 to 33 percent to transfer to Missouri University of Science and Technology campus.
- Expect 5 percent to continue on to the MS in IT.
- Build reputation of S&T in the Southeast Asia region.

5.G. Alumni and Employer Survey

- Expect 80% satisfaction at 2, 7, and 12 years from graduation with e-survey.
- Expect 80% satisfaction rates from employers 1 year after hire using e-survey.

5.H. Program Accreditation

No separate accreditation will be sought for this program.
Appendix

Existing Contractual Relationship with ANC

In any relationship of the type described above, the two partners have distinct and separate yet complementary responsibilities. These are split as described below

S&T shall be responsible for the following:

a) To provide oversight of academic administration and instruction for all its Degree Programs and educational courses.
b) To be in full control with regard to the approval of all academic courses for which it offers credit, approval of the appointment of faculty and academic staff, and consulted on the termination of faculty and academic staff. S&T shall consult with ANC where necessary on the matters set out in this clause.
c) To provide support to coordinate the collaboration between S&T and ANC.
d) To provide oversight and approval for the hiring of competent and professionally prepared faculty to teach S&T courses at ANC.
e) To prepare a curriculum sequence and publish a schedule of courses in consultation with ANC to be offered at ANC, projected for a minimum of two academic years.
f) To provide course syllabi and to select textbooks for all S&T’s courses.
g) In collaboration with ANC, be consulted with regard to establishing the beginning and ending dates of each semester. The number of contact hours required for each course shall be the responsibility of S&T and shall be in keeping with the accepted standards for US Colleges and Universities.
h) To develop, establish and conduct assessment policies and practices to ensure the academic integrity and quality of S&T’s courses at ANC.
i) To approve the appointment of all academic personnel. Other non-S&T administrative staff employed by ANC shall be the sole responsibility of ANC.
j) To coordinate with ANC to ensure that necessary materials and textbooks are available to students for purchase in a timely manner.
k) To approve the appointment of an individual who will serve as an academic administrator, (with a title to be designated by S&T), to be responsible for S&T’s Programs at ANC.
l) To establish admissions requirements, course registration procedures, and provide transcripts for completed S&T courses.
m) To advise students with regard to course selection and transfer of S&T’s credits to S&T (USA).
n) To send a representative from the S&T campus to ANC a minimum (it is S&T’s intention to conduct quarterly onsite visits) of twice each year to
meet with faculty and review and assess matters related to S&T's course offerings and student related administration matters.

q) To approve all promotional literature for S&T courses.

p) To obtain prior approval in writing from ANC for any expenditure for which S&T expects to be reimbursed not covered in this agreement (e.g., travel, providing promotional materials, advertising for academic personnel, etc.).

q) To list ANC as a S&T extension site in its official university website and catalogues. ANC shall cooperate with S&T to provide the necessary logistical support to establish a hyperlink between the S&T and ANC websites and to provide S&T students ID cards for students enrolled in the ANC campuses in S&T programs. {This has been completed.}

r) To provide registered students of ANC access to S&T's virtual libraries. S&T shall, in this respect provide ANC with the necessary passwords and other access information. ANC shall bear the responsibility if there are additional costs for these services.

s) To instruct and assist ANC as it seeks to develop educational resources to support students by providing the necessary information with regards to the requirements for a fully equipped library and Science/IT laboratories.

ANC shall be responsible for the following:

a) To attain required authorization to offer S&T courses from the related government authorities or agencies responsible for educational programs in Sri Lanka, India and the Sub-Continent. {This has been completed.}

b) To operate ANC in compliance with all applicable local laws, regulations and codes, including the procurement of permits and licenses when needed, in the performance of this Agreement.

c) To provide the financial resources to create and maintain a high quality educational facility that will satisfactorily support S&T's academic course offerings.

d) To market and promote S&T's courses and Programs including the design and publication of accurate promotional materials. It is understood that final approval of all published materials related to S&T's courses is subject to advance written approval from S&T.

e) To recruit qualified students from Sri Lanka and the surrounding region who meet the admission policies and standards required by S&T.

f) To provide technological and library resources needed to support S&T's courses. S&T shall provide ANC with the requisite specifications and assist ANC towards the establishment of facilities that meet the educational needs of students.

g) To provide financial resources and supervise all academic personnel and non-academic administration and support services needed to facilitate S&T's academic courses and Programs at ANC.

h) To provide the financial resources and processes, whereby all salaries for faculty and administrative staff, and bills for both non-academic and
academic functions required to facilitate a quality academic program at ANC will be paid.

i) To staff and supervise ANC's admissions department as it relates to student recruitment and marketing of S&T's courses and Programs at ANC.

j) To maintain complete and accurate financial information and student records for ANC. ANC shall provide S&T with reports each semester showing in accurate detail ANC income and expenses pertaining to the tuition, academic staff and faculty compensation and benefits and any other income or expense that is related to S&T courses and Programs. ANC shall deliver written reports to S&T's designated personnel, and ANC shall respond fully and promptly to all inquiries of S&T as to the status of ANC. All inquiries in this respect shall be directed to the Executive Director of ANC.

k) To undertake all activities at ANC in accordance with S&T academic policies as stated in the S&T Faculty Handbook, copies of which are attached hereto, as the same may be amended from time to time provided that ANC is kept aware of such amendments within a reasonable period of time of it occurring.

l) To disseminate and support the S&T policies contained in the University Policies and Student Discipline of the S&T Student Handbook.

m) To be responsible for hiring, training, compensating, evaluating and terminating when necessary, all personnel.

n) To implement S&T registrar, records and admissions policies and procedures which may be amended from time to time by both parties by mutual consent.

o) To remit to S&T all student admission, enrollment and registration material after the ADD/DROP period of the semester for which students are enrolling.

Joint responsibilities:
- Provide oversight of academic administration
- Development of recruiting materials for faculty and students (S&T to give guidance)
- Recruiting faculty (S&T to provide hiring approval)
- Recruiting students (S&T to provide suitable information on its home website)
- Enrolling students (S&T to provide minimum standards for acceptance)

ANC will pay S&T 12% of gross revenue collected from students enrolled in the IST degree program. It is planned to charge $4,000 (US) per student per year. Student growth and revenue projections are shown in the table below and are expected to stabilize at 100 students.

S&T costs are associated primarily with reviewing the academic course structure, the selection and use of course materials and the review of student work. An on-site
administrator will reside in Colombo. In addition to the oversight provided by this individual, it will be desirable for an S&T IT representative to visit Colombo once during the academic year at a cost of $3,000. The Business and Information Technology department will require $10,000 (in addition to the $3,000 visit cost) to cover the expenses of monitoring its program.
Degree Change Form (DC)

This form is to be used for creating or modifying degree programs, emphasis areas, and minors.

Title of degree program, emphasis area, or minor:
Sustainability (minor)

Department: Sustainability Advisory Committee (Special Program)

Briefly describe action requested (Attach documentation as appropriate):
A multi-disciplinary undergraduate minor program in sustainability is proposed to help S&T address sustainability, largely as identified through efforts of the National Science Foundation in collaboration with the National Academy of Engineering in generating the “Grand Challenges for the 21st Century.” These challenges are principally focused upon sustainable energy, environment and resources and relate not just to the development of technologies, but also to political and cultural structure and acceptance of practices that lead to a more sustainable society. These comprehensive aspects relate to the majority of Missouri S&T students, but are not comprehensively included in any existing program of study.

Students would be required to take 15 credit hours (five 3 credit hour classes). Students would also be required to have at least 9 credit hours from outside their major degree program. Students will have an advisor for the minor that will help identify courses and plan the curricula to attain a sustainability minor.

Additional information is attached.

Recommended by Department: [Chair signature]  Date: 2-28-11

Recommended by: Discipline Specific Curricula Committee [Chair signature]  Date: _______

Approved by Curricula Committee: [Chair signature]  Date: _______

Approved by Faculty Senate: [Chair signature]  Date: _______

(Revised 1/31/2008)
Program of Study, Sustainability Minor.

SUBMIT TYPED ORIGINAL. NO HANDWRITTEN FORMS.

Name ____________________________

Email ____________________________

Major Field ____________________________ Major Field Advisor ____________________________

Expected graduation date __________

Student ID ____________________________

Phone ____________________________

Students must take a minimum of 15 credit hours from courses to be selected from EnvE 301 - Sustainability and at least two courses each from Lists 1 and 2. At least nine credit hours in the Program of Study must be from outside the student's major degree program.

Any revisions to the Program of Study must be approved and initialed by your advisor and the Sustainability Minor Chair before resubmitting this form to the Registrar's Office.

Environmental Eng 301 - Sustainability (Sem & Yr): __________

<table>
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<th>Add (A)</th>
<th>Delete (D)</th>
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<th>Course Title</th>
<th>Sem &amp; Year</th>
<th>Indicate Cr Hrs where appropriate</th>
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List 1 (Social Science Courses)

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<th>Course Title</th>
<th>Sem &amp; Year</th>
<th>Indicate Cr Hrs where appropriate</th>
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List 2 (Technical and Science Courses)

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<th>Course Dept. &amp; No.</th>
<th>Course Title</th>
<th>Sem &amp; Year</th>
<th>Indicate Cr Hrs where appropriate</th>
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</table>

Total credit hours (15 minimum)

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<th>Delete (D)</th>
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<th>Course Title</th>
<th>Sem &amp; Year</th>
<th>Indicate Cr Hrs where appropriate</th>
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</table>

Signatures:

Candidate ____________________________ Date: ________

Sustainability Advisor ____________________________ Date: ________

Chair of Sustainability ____________________________ Date: ________

This fax was received by GFI FAXmaker fax server. For more information, visit: http://www.gfi.com
PROPOSED MINOR: SUSTAINABILITY MINOR

Overview and Academic Rationale

Background
A multi-disciplinary undergraduate minor program in sustainability is proposed to help S&T address sustainability, largely as identified through efforts of the National Science Foundation in collaboration with the National Academy of Engineering in generating the "Grand Challenges for the 21st Century." These challenges are principally focused upon sustainable energy, environment and resources and relate not just to the development of technologies, but also to political and cultural structure and acceptance of practices that lead to a more sustainable society. These comprehensive aspects relate to the majority of Missouri S&T students, but are not comprehensively included in any existing program of study.

The Special Program to propose and execute the minor plan was approved by Faculty Senate and the committee below was elected from the faculty:
1. Dr. Diana Ahmad, History & Political Science
2. Dr. Joel Burken, Civil & Environmental Engineering
3. Dr. Michael Davis, Economics
4. Dr. Dev Niyogi, Biological Sciences
5. Dr. Jeff Schramm, History & Political Science
6. Dr. Tom Schuman, Chemistry
7. Dr. Nancy Stone, Psychological Science
8. Dr. Lifeng Zhang, Materials Science Engineering

Academic Rationale
Prior to the completion of their Missouri S&T undergraduate degree, students who complete this minor will have an increased awareness of the societal, political, scientific and technical issues that we will face as a 21st century society. This awareness will prepare Missouri S&T students to be successful in an increasingly constrained workplace driven by efficient energy and materials usage and greenhouse gas emissions. Any Missouri S&T student enrolled in an undergraduate degree program is eligible for the Sustainability Minor program that consists of 15 credit hours from an approved list of courses.

Green Minor in Sustainable Environment and Energy at Missouri S&T
Proposed Green Minor structure: Students would be required to take 15 credit hours (five 3 credit hour classes) including one required course and at least two classes from each list below. Students would also be required to have at least 9 credit hours from outside their major degree program. Students will have an advisor for the minor that will help identify courses and plan the curricula to attain a sustainability minor.
Required Course:
EnvE 301 Sustainability: looks at society-wide issues and the ethos of sustaining our social advancement and infrastructure development.

List 1 (Social Science Courses):
History 270: History of Technology to 1900
History 271: 20th Century Technology and Society
History 275: History of Science
History 361: American Environmental History
Pol. Sci. 315: Principles of Public Policy
Pol. Sci. 325: Science, Technology & Politics
Pol. Sci. 350: Politics of the Third World
Econ 345 Energy Economics
Econ 340 Environmental & Natural Resources Economics
Psych 315 Environmental Psychology
(More classes may be added via the course approval process described below)

List 2 (Technical and Science Courses):
EnvE 261 Introduction to Environmental Engineering
Arch E/CE 348 Green Engineering: Analysis of Constructed Facilities
GE/CerE 352 International Engineering Design
GE 356 Renewable Energy Systems
GE 347 Introduction to International Engineering & Design
ChE 301 Alternative Fuels
ME 381/AE 311 Introduction to Composite Materials and Structures
ChemE 301 Hazardous Materials Management
ME/AE 301 Alternative Energy Engineering
EnvE/CE 363 Solid Waste Management
(More classes may be added via the course approval process described below)

Advisory Committee Membership, Election and Function

Membership
Members of the Advisory Committee will consist of eleven full-time, ranked faculty according to the following distribution from participating academic discipline specific areas:

- Four members from the departments that are included in the Engineering Discipline Specific Curriculum Committee (DSCC);
- Two members from the Science DSCC;
- Two members from Social Sciences DSCC;
- Two members from Arts and Humanities DSCC; and
- One at-large member.
Nomination and Election of Advisory Committee Representatives

Nominations will be solicited by the Vice Provost for Academic Affairs in March of each year, except during the first year of the program, during which nomination and election of committee representatives will occur following approval of the program. Individuals initially elected to serve as representatives will thus serve longer terms, with the exception noted below. As indicated in the Faculty Bylaws, election of members of the advisory committee will be by and from members of the faculty. Self-nominations are permitted. Following the standard practice of the Rules, Procedure & Agenda Committee, the names of all nominees submitted will be on the ballot that is forwarded to the faculty; none will be removed. The role of the Vice Provost for Academic Affairs will be solely to administer the process.

The election of committee members will be conducted by the Vice Provost for Academic Affairs in April of each year. All faculty members from the academic departments associated with the Engineering DSCC will vote for four representatives. The four individuals receiving the highest vote totals will be elected as the representatives. A similar procedure will be used to elect representatives from the Science, Social Science, and Arts and Humanities Departments, with each of these discipline areas electing two representatives. The at-large member will be the nominee receiving the greatest number of votes.

Advisory Committee members shall serve for a term of two years. Committee members may be re-elected and may serve consecutive terms. The terms of five of first committee members will be one year, in order to establish a process whereby one half of the committee membership is elected annually. The Program Leader will determine in a fair and equitable manner which five initial committee members will serve a single year term with balance among the various disciplines.

Program Leader

The Advisory Committee will elect its own chairperson who will also serve as the Program Leader. The Program Leader will have ultimate responsibility for maintaining lists of approved courses. The Program Leader will convene the committee when appropriate for establishment and maintenance of lists of approved courses, to discuss advising issues that arise, and to conduct other business pertinent to the program.

The Program Leader is the only designated signature authority for the program and is responsible for working with the Registrar to see that “Sustainability Minor” is noted appropriately on the student transcript. The Program Leader also has the responsibility to respond to inquiries regarding the program, to serve as a “point of contact” for the program, and to interface with the Provost’s Office and Campus Curriculum Committee, as required.

Course List Management

The initial list of courses recommended (above) by the Advisory Committee shall be provided to the Campus Curriculum Committee for review and approval via the standard
“DC” form process. For inclusion of courses in the minor, a course may be nominated along with the syllabus of the most recent offering. The Advisory Committee will then evaluate the course and vote on the inclusion of the course. Approval will be by majority vote. Courses may be nominated at any time to an Advisory Committee member, and course nominations will be actively sought annually, at the initiation (first 5 weeks) of the fall semester. As for other curriculum changes, these changes will utilize the standard “CC” form and process (approval by the Campus Curriculum Committee, Provost and Faculty Senate).
Course Change Form (CC)

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

- [ ] New Course
- [ ] Course Deletion
- [ ] Credit Hours
- [ ] Prerequisites
- [ ] Course Title
- [ ] Catalog Description
- [ ] Course Number
- [ ] Co-listing

**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **Department:** Electrical & Computer Engineering

2. **Discipline and Course Number:** Present: EE 391

3. **Course Title:** Present: Electrical Engineering Senior Project I

   **Abbreviated Course Title:**
   
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** *(40 Words or Less)*

   **Present:** A complete design cycle. Working in small teams, students will design, document, analyze, implement and test a product. Topics include: Iteration in design, prototyping, group dynamics, design reviews, making effective presentations, concurrent design, designing for test, ethics and standards, testing and evaluation.

   **Proposed:**

5. **If course requires field trip check box:**

6. **Credit Hours:**

   **Present:** Lecture: 0.5

   **Proposed:** Lecture: 0.5

   **Total:** 0.5

7. **Prerequisites:**

   **Present:** Stat 217, Cp Eng 111, Econom 121 or 122, Sp&M 85, English 160, at least 3 of the following: El Eng 205, El Eng 207, El Eng 265, El Eng 267, El Eng 271, El Eng 254.

   **Proposed:** Stat 217, Cp Eng 111, Econom 121 or 122, Sp&M 85, English 160, at least 3 of the following: El Eng 205, El Eng 207, El Eng 215, El Eng 217, El Eng 271, El Eng 253.

8. **Required for Majors:** ☑

9. **Elective for Majors:** ☐

10. **Justification:** El Eng 265 and El Eng 267 (old curriculum, courses no longer exist) are deleted and replaced with El Eng 215 and El Eng 217 (equivalent courses in the new curriculum). El Eng 254 is deleted and replaced with El Eng 253 (typographical error in list). Modification to Undergraduate EE Requirements per ECE Faculty 1/20/2011.

11. **Semesters previously offered as an experimental course (101, 201, 301, 401):**

    1) 2) 3)

    4) 5) 6)

    **Recommended by Department**

    [Signature]

    **Date:** 4/2/01

    **Recommended by Discipline Specific Curricula Committee**

    [Signature]

    **Date:** 2/23/01

    **Approved by Curricula Committee:**

    [Signature]

    **Date:**

    **Approved by Faculty Senate:**

    [Signature]

    **Date:**
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes
(Check all changes.)
New Course □ Course Deletion □ Credit Hours □ Prerequisites □
Course Title □ Catalog Description □ Course Number □ Co-listing □

Course Information
(1-9 Must Be Completed. Leave “Proposed” items blank if no change is being made.)

1. Department: Electrical & Computer Engineering

2. Discipline and Course Number: Present: EE 254 Proposed:

3. Course Title: Present: Electronics II Proposed:

  Abbreviated Course Title:
  (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)
Present: Continuation of Elec Eng 253. Diode and transistor circuits, small signal analysis, amplifier
design, differential and operational amplifiers, flipflop circuits and waveshaping.

Proposed:

5. If course requires field trip check box: □

6. Credit Hours:
   Present: Lecture: 3 Lab: Total: 3
   Proposed: Lecture: Lab: Total:

7. Prerequisites:
   Present: Elec Eng 253 and Elec Eng 255 each with a grade of “C” or better. Elec Eng 256 is a
   corequisite.
   Proposed: Elec Eng 253 and Elec Eng 255 each with a grade of “C” or better. Elec Eng 256 is
   optional, but recommended.

8. Required for Majors: □ Elective for Majors: □

9. Justification: The associated laboratory Elec Eng 256 is changed from required to optional.
   Modification to Undergraduate EE Requirements per ECE Faculty 1/20/2011. The
   course is used as an ABC Elective which does not require laboratory credit.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
1) 2) 3) 4) 5) 6)

   Recommended by Department
   [Signature]
   (Chair signature)

   Recommended by Discipline Specific Curricula Committee
   [Signature]
   (Chair signature)

   Approved by Curricula Committee: [Signature]
   Date: __________

   Approved by Faculty Senate: [Signature]
   Date: __________
Course Change Form (CC)

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)
- New Course ☑
- Course Deletion ☐
- Credit Hours ☐
- Prerequisites ☐
- Course Title ☐
- Catalog Description ☐
- Course Number ☐
- Co-listing ☐

**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **Department:** Electrical & Computer Engr

2. **Discipline and Course Number:**
   - Present: CPE 401
   - Proposed: CPE 417

3. **Course Title:**
   - Present: Network Performance Analysis
   - Proposed: Same

4. **Abbreviated Course Title:** Network Perf Analysis
   - (24 Spaces or Less. Only needed for New Courses or Title Changes.)

5. **Catalog Description (300 Character Spaces or Less.):**
   - Present:
     This course provides an introduction to performance modeling and analysis for computer communication networks. Topics covered include stochastic processes; performance measurement and monitoring; quantitative models for network performance, e.g., Markovian models for queues; simulation; and statistics.
   - Proposed:
     Provides an introduction to performance modeling and analysis for computer networks. Topics include stochastic processes; performance measurement and monitoring; quantitative models for network performance, e.g., Markovian models for queues; simulation; and statistical analysis of experiments.

5. **If course requires field trip check box:** ☐

6. **Credit Hours:**
   - Present: Lecture: 3, Lab: 0, Total: 3
   - Proposed: Lecture: 3, Lab: 0, Total: 3

7. **Prerequisites:**
   - Present:
     CPE 319 or CS 365 or Stat 217 or 343
   - Proposed: Same

8. **Required for Majors:** ☐

9. **Elective for Majors:** ☑

10. **Justification:** The theoretical background and practical techniques introduced in this course are useful in design and evaluation of a broad range of networks and systems. The material taught is especially useful for formal presentation of quantitative system models—a task required for many academic publications.

11. **Semesters previously offered as an experimental course (101, 201, 301, 401):** FS 10 & FS 09

12. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**

   1) CS 417 ☑
   2) ☐
   3) ☐
   4) ☐
   5) ☐
   6) ☐

   **Recommended by Department**

   **Recommended by Discipline Specific Curricula Committee**

   **Approved by Curricula Committee:**

   **Approved by Faculty Senate:**

   (Chair signature)

   (Chair signature)

   (Chair signature)

   (Chair signature)

   **Date:** 9 Feb 2011

   **Date:** 2/23/11

   **Date:** _______
Course Change Form (CC)
This form is for creating or modifying permanent courses.

Course Changes  (Check all changes.)
New Course □  Course Deletion □  Credit Hours □  Prerequisites □
Course Title □  Catalog Description □  Course Number □  Co-listing □

Course Information  (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)
1. Department: Business & Info Tech
2. Discipline and Course Number:  Present: ERP 442  Proposed:
3. Course Title:  Present: Customer Relationship Management in ERP Environment
Proposed: Adv Customer Relationship Management in ERP Environment
Abbreviated Course Title: Adv CRM
(24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description  (300 Character Spaces or Less.)
Present:  This course emphasizes identification (targeting), acquisition, retention, and development (expansion) of (profitable) customers. It also covers effective and efficient management of customers with utilization of information technology. The SAP CRM and SAS BI tools are used to enhance student educa
Proposed:

5. If course requires field trip check box: □
6. Credit Hours:
   Present:  Lecture: 3.0  Lab:  Total: 3.0
   Proposed:  Lecture:  Lab:  Total:
7. Prerequisites:
   Present:  ERP345 or ERP444 or IST444
   Proposed:

8. Required for Majors: □  Elective for Majors: □
9. Justification:  Revised title to allow for undergraduate version of course (ERP 342), to be taught concurrently. Students may not receive credit for both ERP 342 and ERP 442.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1)  2)  3)
   4)  5)  6)
   Recommended by Department  
   (Chair signature)  
   Date: 2/9/11
   Recommended by Discipline Specific Curricula Committee  
   (Chair signature)  
   Date: 2/10/2011
   Approved by Curricula Committee:  
   (Chair signature)  
   Date: 
   Approved by Faculty Senate:  
   (Chair signature)  
   Date: 

(Revised 1/29/09)
Course Change Form (CC)
This form is for creating or modifying permanent courses.

**Course Changes**
(Check all changes.)
- New Course [ ]
- Course Deletion [ ]
- Credit Hours [ ]
- Prerequisites [ ]
- Course Title [ ]
- Catalog Description [ ]
- Course Number [ ]
- Co-listing [ ]

**Course Information**
(1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **Department:** Business & Info Tech

2. **Discipline and Course Number:**
   - Present: [ ]
   - Proposed: ERP 342

3. **Course Title:**
   - Present: [ ]
   - Proposed: Customer Relationship Management in ERP Environment

   **Abbreviated Course Title:** CRM
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description** (300 Character Spaces or Less.)
   - Present: [ ]
   - Proposed: Identification (targeting), acquisition, retention, and development (expansion) of (profitable) customers. Effective and efficient management of customers with utilization of information technology. SAP CRM and SAS BI tools are used to enhance student education with real world applications.

5. **If course requires field trip check box:** [ ]

6. **Credit Hours:**
   - Present: [ ]
   - Proposed: Lecture: 3.0, Lab: 0, Total: 3.0

7. **Prerequisites:**
   - Present: [ ]
   - Proposed: ERP345 or ERP444 or IST444

8. **Required for Majors:** [ ]
   - Elective for Majors: [ ]

9. **Justification:** An undergraduate version of ERP 442, to be taught concurrently. Students may not receive credit for both ERP 342 and ERP 442.

10. **Semesters previously offered as an experimental course (101, 201, 301, 401):**

11. **List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.**
   - 1) [ ]
   - 2) [ ]
   - 3) [ ]
   - 4) [ ]
   - 5) [ ]
   - 6) [ ]

   **Recommended by Department**
   - [Signature]
   - Date: 2/9/11

   **Recommended by Discipline Specific Curricula Committee**
   - [Signature]
   - Date: 2/10/11

   **Approved by Curricula Committee:**
   - [Signature]
   - Date: [ ]

   **Approved by Faculty Senate:**
   - [Signature]
   - Date: [ ]
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes

- [ ] New Course
- [ ] Course Deletion
- [ ] Credit Hours
- [ ] Prerequisites
- [x] Course Title
- [ ] Catalog Description
- [ ] Course Number
- [ ] Co-listing

Course Information

1. Department: Geol Sci and Engineering
2. Discipline and Course Number: Present: Pet Eng 121  Proposed: Pet Eng 121
3. Course Title: Present: Intro to Oil Well Drilling
   Proposed: Intro to Petroleum Engineering
   Abbreviated Course Title: Intro to Petroleum Engrg
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description
   Present: Introduction to the fundamentals of oil and gas well drilling. Fundamental physical principles and calculations used in drilling. Exposure to oil well drilling software.
   Proposed: Introduction to and overview of petroleum engineering topics and fundamental areas of drilling, production, reservoir engineering, mechanical earth modeling, and other topics.

5. If course requires field trip check box: [ ]

6. Credit Hours:
   Present: Lecture: 1  Lab: 0  Total: 1
   Proposed: Lecture: 0  Lab: 0  Total: 0

7. Prerequisites:
   Present: Entrance requirements.
   Proposed:

8. Required for Majors: [x]  Elective for Majors: [ ]

9. Justification: Broaden the class to give freshmen a broader overview of petroleum engineering instead of just drilling.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

   1)
   2)
   3)
   4)
   5)
   6)

Recommended by Department: [Signature]  Date: 2-10-11

Recommended by Discipline Specific Curricula Committee: [Signature]  Date: 2-23-11

Approved by Curricula Committee: [Signature]  Date: 

Approved by Faculty Senate: [Signature]  Date: 
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)
New Course □ Course Deletion □ Credit Hours □ Prerequisites □
Course Title □ Catalog Description □ Course Number □ Co-listing □

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Geo Sci and Engrg

2. Discipline and Course Number: Present: Pet Eng 331 Proposed: Pet Eng 313

3. Course Title: Present: Drilling and Well Design

   Proposed:

   Abbreviated Course Title:
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (300 Character Spaces or Less.)

   Present: This course covers drilling fluids, including mixing and analysis of rheological properties; pressure loss calculations; casing design; well cementing; pore pressure and geomechanical considerations in drilling; completion equipment; and completion design.

   Proposed: This course covers drilling fluids, including mixing and analysis of rheological properties; pressure loss calculations; casing design; well cementing; pore pressure and geomechanical considerations in drilling; completion equipment; and completion design.

5. If course requires field trip check box: □

6. Credit Hours:
   Present: Lecture: 3 Lab: Total:
   Proposed: Lecture: Lab: Total:

7. Prerequisites:
   Present: Pet Eng 121 and preceded or accompanied by Cv Eng 230.

   Proposed: Preceded or accompanied by Cv Eng 230.

8. Required for Majors: □ Elective for Majors: □

9. Justification: Number change: Advanced Drilling is Pet Eng 314, so this number is being changed to 313 to be lower than Advanced Drilling.

   Prereq change: Pet Eng 121 has been changed from a one hour drilling intro to a general intro to Petroleum Engineering.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.

   1) 2) 3)

   4) 5) 6)

   Recommended by Department

   Recommended by Discipline Specific Curricula Committee

   Approved by Curricula Committee:

   Approved by Faculty Senate:

   Date: 2-10-11

   Date: 2/23/11

   Date: 

   Date: 

(Revised 1/29/09)
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes
(Check all changes.)
- New Course □
- Course Deletion □
- Credit Hours □
- Prerequisites □
- Course Title □
- Catalog Description □
- Course Number □
- Co-listing □

Course Information
(1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Geo Sci and Engrg
2. Discipline and Course Number: Present: Pet Eng 314 □ Proposed:
3. Course Title: Present: Advanced Drilling Technology
   □ Proposed:
   Abbreviated Course Title: Advanced Drilling Tech
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
   Present: In-depth studies of directional well planning and bottom hole assemblies, hole problems and
   wellbore stability in deviated wells; computer aided drilling optimization and drill bit selection
   for directional wells. Field trip required.
   □ Proposed:

5. If course requires field trip check box: □
6. Credit Hours:
   Present: Lecture: 3 □ Lab: □ Total:
   □ Proposed: Lecture: □ Lab: □ Total:
7. Prerequisites:
   Present: Pet Eng 331.
   □ Proposed: Pet Eng 313.
8. Required for Majors: □
   Elective for Majors: □
9. Justification: Changed the course number of 331 to 313.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
    1) □
    2) □
    3) □
    4) □
    5) □
    6) □

   Recommended by Department ____________________________
   (Chair signature) ____________________________
   Date: ____________

   Recommended by Discipline Specific Curricula Committee ____________________________
   (Chair signature) ____________________________
   Date: ____________

   Approved by Curricula Committee: ____________________________
   (Chair signature) ____________________________
   Date: ____________

   Approved by Faculty Senate: ____________________________
   (Chair signature) ____________________________
   Date: ____________
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes  
(Check all changes.)
New Course ☐  Course Deletion ☐  Credit Hours ☐  Prerequisites ☐
Course Title ☐  Catalog Description ☒  Course Number ☐  Co-listing ☐

Course Information  
(1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Geological Sciences and Eng

2. Discipline and Course Number: Present: Pet Eng 301  Proposed: Pet Eng 325

3. Course Title: Present: Well Completion Design  Proposed: Well Completion Design

Abbreviated Course Title: Well Compl Dsgn  
(24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description  
(Present: An overview of the hardware, fluids and processes employed in completing oil and gas wells. Examination of types of well completions and their use; influence of well geometry and considerations in designing well completions. Brief overview of sand control, multilaterals, and intelligent completions.

Proposed: An overview of the hardware, fluids and processes employed in completing oil and gas wells. Examination of types of well completions and considerations in their design. Introduction to downhole mechanics and tubing movement and stress calculations.

5. If course requires field trip check box: ☐

6. Credit Hours:  
Present: Lecture: 3  Lab: 3  Total: 3
Proposed: Lecture: 3  Lab: 3  Total: 3

7. Prerequisites:  
Present: Pet Eng 241
Proposed: Pet Eng 241

8. Required for Majors: ☐  Elective for Majors: ☒

9. Justification:  
This course is important to undergraduates being employed in the oil and gas industry. The course has been taught twice successfully and should be made a permanent elective. Enrollment history is Fall 2007 - 12 students; Spring 2010 12 students.

10. Semesters previously offered as an experimental course (101, 201, 301, 401): FS07; SP10

11. List all co-listed courses, initialiaed by Dept. Chair, if signature does not appear below.

1) 2) 3) 4) 5) 6)

Recommended by Department  
(Chair signature)  Date: 2/10/11

Recommended by Discipline Specific Curricula Committee  
(Chair signature)  Date: 2/23/11

Approved by Curricula Committee:  
(Chair signature)  Date: 

Approved by Faculty Senate:  
(Chair signature)  Date: 

(Revised 1/29/09)
Course Change Form (CC)
This form is for creating or modifying permanent courses.

Course Changes
(Check all changes.)
New Course □ Course Deletion □ Credit Hours □ Prerequisites □
Course Title □ Catalog Description □ Course Number □ Co-listing □

Course Information
(1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)
1. Department: Geo Sci and Engrg
2. Discipline and Course Number: Present: Pet Eng 338 Proposed:
3. Course Title: Present: Finite Element Analysis with Applications in Petroleum Engrg
Proposed:
Abbreviated Course Title:
(24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
Present: This course introduces finite element analysis (FEA) methods and applications of FEA in subsurface engineering. The course is intended to provide a fundamental understanding of FEA software and experience in creating meshes for petroleum reservoirs or other subsurface features.
Proposed:

5. If course requires field trip check box: □
6. Credit Hours:
   Present: Lecture: 3 Lab: Total:
   Proposed: Lecture: Lab: Total:
7. Prerequisites:
   Present: Pet Eng 241; Geo 220 or Mi Eng 232.
   Proposed: Pet Eng 241, Geo 220, and Math 204.
8. Required for Majors: □ Elective for Majors: □
9. Justification: Math 204 is essential for this course. Mi Eng 232 is no longer offered.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) 2) 3)
   4) 5) 6)

   Recommended by Department
   (Chair signature) Date: 2-10-11
   Recommended by Discipline Specific Curricula Committee
   (Chair signature) Date: 2/23/11
   Approved by Curricula Committee: (Chair signature)
   Date: 
   Approved by Faculty Senate: (Chair signature)
   Date: 

(Revised 1/29/09)
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes
(Check all changes.)
- New Course □
- Course Deletion □
- Credit Hours □
- Prerequisites □
- Course Title □
- Catalog Description □
- Course Number □
- Co-listing □

Course Information
(1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Geol Sci and Engineering
2. Discipline and Course Number:
   Present: Pet Eng 406
   Proposed: Pet Eng 408
3. Course Title:
   Present: Advanced Reservoir Simulation
   Proposed:
   Abbreviated Course Title: Adv Reservoir Sim
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description
   Present: Advanced techniques in reservoir simulation.
   Proposed:

5. If course requires field trip check box: □

6. Credit Hours:
   Present: Lecture: 3
   Lab: Total: 3
   Proposed: Lecture: Lab: Total:

7. Prerequisites:
   Present: Petr 308
   Proposed:

8. Required for Majors: □
   Elective for Majors: □

9. Justification:
   Achieve consistency with numbers. Petr 308 is the first reservoir simulation course, we want to use Petr 408 as the second course.

10. Semesters previously offered as an experimental course (101, 201, 301, 401): N/A
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1)   2)   3)
   4)   5)   6)

Recommended by Department: [Signature]
Date: 2-10-11
Recommended by Discipline Specific Curricula Committee: [Signature]
Date: 2/23/11
Approved by Curricula Committee: [Signature]
Date: 
Approved by Faculty Senate: [Signature]
Date: 

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Course Change Form (CC)

Course Changes
(Enter all changes.)
New Course ☐ Course Deletion ☒ Credit Hours ☐ Prerequisites ☐
Course Title ☐ Catalog Description ☐ Course Number ☐ Co-listing ☐

Course Information
(1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Mech & Aero Eng
2. Discipline and Course Number: Present: Eng Gr 212 Proposed:
3. Course Title: Present: Computer Aided Drafting Proposed:
   Abbreviated Course Title:
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
   Present: Expanded use of the Missouri S&T computer workstation environments and the use and evaluation of several CAD/CAM software packages.
   Proposed:

5. If course requires field trip check box: ☐
6. Credit Hours:
   Present: Lecture: 2 Lab: 1 Total: 3
   Proposed: Lecture: Lab: Total:
7. Prerequisites:
   Present: Eng Gr 10
   Proposed:

8. Required for Majors: ☐ Elective for Majors: ☒

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initialed by Dept. Chair, if signature does not appear below.
   1) 2) 3)
   4) 5)

Recommended by Department
(Chair signature)

Recommended by Discipline Specific Curricula Committee
(Chair signature)

Approved by Curricula Committee:
(Chair signature)

Approved by Faculty Senate:
(Chair signature)

Date: 2/11/11
Date: 2/23/11
Date:
Date:

(Revised 1/29/09)
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)
- New Course □
- Course Deletion □
- Credit Hours □
- Prerequisites □
- Course Title □
- Catalog Description □
- Course Number □
- Co-listing □

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)
1. Department: Mech & Aero Eng
2. Discipline and Course Number: Present: Eng Gr 200 Proposed:
3. Course Title: Present: Special Problems Proposed:
   Abbreviated Course Title:
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)
4. Catalog Description (300 Character Spaces or Less.)
   Present: Problems or readings on specific subjects or projects in the department. Proposed:
5. If course requires field trip check box: □
6. Credit Hours: Present: Lecture: 0-6 Lab: Total: 0-6
   Proposed: Lecture: Lab: Total:
7. Prerequisites: Present:
   Proposed:
8. Required for Majors: □ Elective for Majors: □

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, Initiated by Dept. Chair, if signature does not appear below.
   1)  
   2)  
   3)  
   4)  
   5)  
   6)  
   Recommended by Department ____________________________ (Chair signature) Date: 2/11/2011
   Recommended by Discipline Specific Curricula Committee ____________________________ (Chair signature) Date: 2/23/11
   Approved by Curricula Committee: ____________________________ (Chair signature) Date: ____________________________
   Approved by Faculty Senate: ____________________________ (Chair signature) Date: ____________________________

(Revised 1/29/09)
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)
New Course [ ] Course Deletion [ ] Credit Hours [ ] Prerequisites [ ]
Course Title [ ] Catalog Description [ ] Course Number [ ] Co-listing [ ]

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Mathematics
   Proposed:

2. Discipline and Course Number: Present: 305
   Proposed:

   Abbreviated Course Title:
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)

3. Course Title:
   Present: Modern Algebra I
   Proposed:
   The abstract concepts of a group and a ring are introduced. Permutation groups, subgroups, homomorphisms, ideals, ring homomorphisms and polynomial rings are studied.

4. Catalog Description (40 Words or Less)
   Present:
   Equivalence relations and functions, basic properties of groups, subgroups, permutations, cosets and Lagrange's Theorem, homomorphisms and isomorphisms, factor groups.

5. If course requires field trip check box: [ ]

6. Credit Hours:
   Present: 
   Lecture: 3
   Lab: 0
   Total: 3
   Proposed:
   Lecture: 
   Lab: 
   Total:

7. Prerequisites:
   Present: Math 209
   Proposed: Math 209 or graduate standing; preceded or accompanied by Math 208.

8. Required for Majors: [ ]
   Elective for Majors: [ ]

9. Justification:
   The new description concurs with what has been taught for the last 15+ years. Experience dictates that graduate students have the maturity necessary for 305 and also that students without exposure to 208 are at a disadvantage.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):
11. List all co-listed courses, initiated by Dept. Chair, if signature does not appear below.
   1) 
   2) 
   3) 
   4) 
   5) 
   6)

Recommended by Department ____________________________
(Chair signature) Date: 2/14/2011

Recommended by Discipline Specific Curricula Committee ____________________________
(Chair signature) Date: 3/9/2011

Approved by Curricula Committee: ____________________________
(Chair signature) Date: ____________________________

Approved by Faculty Senate: ____________________________
(Chair signature) Date: ____________________________

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Course Change Form (CC)

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)

- New Course □
- Course Deletion □
- Credit Hours □
- Prerequisites □
- Course Title □
- Catalog Description □
- Course Number □
- Co-listing □

**Course Information** (1–9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **Department:** Mathematics
2. **Discipline and Course Number:**
   - Present: 309
   - Proposed:
3. **Course Title:**
   - Present: Advanced Calculus I
   - Proposed:
4. **Abbreviated Course Title:**
   - (24 Spaces or Less. Only needed for New Courses or Title Changes.)
   - Present:
   - Proposed:
5. **Catalog Description (40 Words or Less):**
   - Completeness of the set of real numbers, sequences and series of real numbers, limits, continuity and differentiability, uniform convergence, Taylor series, Hahn-Borel theorem, Riemann integral, fundamental theorem of calculus, Cauchy-Riemann integral.
   - Proposed:
6. **If course requires field trip check box:** □
7. **Credit Hours:**
   - Present: Lecture: 3
   - Lab: 0
   - Total: 3
   - Proposed: Lecture: □
   - Lab: □
   - Total: □
8. **Prerequisites:**
   - Present: Math 209 or a 300-level mathematics course or graduate standing.
   - Proposed: Math 22 and Math 209, or a 300-level mathematics course, or graduate standing.
9. **Required for Majors:** □
   - Elective for Majors: □
10. **Justification:** Undergraduate students without Math 22 are at a disadvantage in Math 309 and especially in Math 311, the subsequent course.

11. **Semesters previously offered as an experimental course (101, 201, 301, 401):**
   1) □
   2) □
   3) □
   4) □
   5) □
   6) □

   Recommended by Department □
   - (Chair signature)
   - Date: 2/14/2011

   Recommended by Discipline Specific Curricula Committee □
   - (Chair signature)
   - Date: 3/7/2011

   Approved by Curricula Committee: □
   - (Chair signature)
   - Date: □

   Approved by Faculty Senate: □
   - (Chair signature)
   - Date: □

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(Revised 1/31/08)
Course Change Form (CC)

This form is for creating or modifying permanent courses.

Course Changes (Check all changes.)

New Course □  Course Deletion □  Credit Hours □  Prerequisites □
Course Title □  Catalog Description □  Course Number □  Co-listing □

Course Information (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. Department: Statistics

2. Discipline and Course Number: Present: 355 STAT Proposed:

3. Course Title: Present: Statistical Models in Actuarial Science Proposed:
   Abbreviated Course Title:
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. Catalog Description (40 Words or Less)
   Present: This course covers the statistical foundation of actuarial models and their applications. Topics include survival and severity models, Kaplan-Meier and Nelson-Aalen estimators, aggregate and credibility models for insurance losses, discrete time Markov chains, ruin theory, and simulation.
   Proposed:

5. If course requires field trip check box: □

6. Credit Hours: Present: Lecture: 3  Lab: 0  Total: 3
   Proposed: Lecture:  Lab:  Total:

7. Prerequisites:
   Present: Stat 343
   Proposed: Stat 343 and either Stat 344 or a 200-level stat course

8. Required for Majors: □  Elective for Majors: □

9. Justification: Stat 343 is mainly probability but students also need a statistics background to maximize their success in 355.

10. Semesters previously offered as an experimental course (101, 201, 301, 401):

11. List all co-listed courses, Initiated by Dept. Chair, if signature does not appear below.
   1) 2) 3) 4) 5) 6)

Recommended by Department ____________________________
   (Chair signature) Date: 2/21/2011

Recommended by Discipline Specific Curricula Committee ____________________________
   (Chair signature) Date: 3/7/2011

Approved by Curricula Committee: ____________________________
   (Chair signature) Date:

Approved by Faculty Senate: ____________________________
   (Chair signature)

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Course Change Form (CC)

This form is for creating or modifying permanent courses.

**Course Changes** (Check all changes.)
- New Course [ ]
- Course Deletion [ ]
- Credit Hours [ ]
- Prerequisites [ ]
- Course Title [ ]
- Catalog Description [ ]
- Course Number [ ]
- Co-listing [ ]

**Course Information** (1-9 Must Be Completed. Leave "Proposed" items blank if no change is being made.)

1. **Department:** Biological Sciences
2. **Discipline and Course Number:** Present: BioSci 301
   Proposed: BioSci 364
3. **Course Title:**
   - Present:
   - Proposed: Global Ecology

   **Abbreviated Course Title:** Global Ecology
   (24 Spaces or Less. Only needed for New Courses or Title Changes.)

4. **Catalog Description (40 Words or Less)**
   Present:
   Proposed: This class covers ecological topics at large scales, emphasizing global scales. Topics include global energy balance, biogeochemical cycles of water, carbon, nitrogen, and other biologically important elements, and global biodiversity.

5. **If course requires field trip check box:** [ ]

6. **Credit Hours:**
   - Present: 
   - Proposed: Lecture: 3
   - Lab: NA
   - Total: 3

7. **Prerequisites:**
   - Present:
   - Proposed: BioSci 251

8. **Required for Majors:** [ ]
   **Elective for Majors:** [ ]

9. **Justification:** Course has been taught twice as 301 and is now being given a regular number.

10. **Semesters previously offered as an experimental course (101, 201, 301, 401): FS 2009, SP 2011**

11. **List all co-listed courses, initiated by Dept. Chair, if signature does not appear below.**

12. **Recommended by Department**

   **Recommended by Discipline Specific Curricula Committee**

   **Approved by Curricula Committee:**

   **Approved by Faculty Senate:**

   **Date:**

   **Date:**

   **Date:**

   **Date:**
Experimental Course Form (EC)

This form must be filed with the Secretary to the Campus Curricula Committee, after the department chair’s notation, by the appropriate deadline. Filing deadlines for inclusion in the initial release of the Schedule of Classes are as follows:

Summer and Fall Semester Offerings – January 1
Spring Semester Offerings – August 1

An EC form must be submitted each semester it is to be offered, not to exceed two offerings. An experimental course that is required should be submitted on a CC form. Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: Geological Sciences and Engineering

Discipline and Course Number: Pet Eng 301

Course Title: Well Stimulation

Abbreviated Title (24 spaces or less): Well Stimulation

Instructor(s): Britt/Dunn-Norman

Credit Hours: Lecture: 3 Lab: Total:

Prerequisites: Preceded by PE 241

Semester(s) previously taught: Fall 2006

Brief Course Description: (40 words or less)
This course reviews fundamentals of hydraulic fracturing and builds on the basic theory through the use of STIMPLAN software and hands on industry examples. The course teaches the methods used to plan, execute and evaluate hydraulic fracturing treatments.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 
2) 
3) 
4) 
5) 
6)

Department Chair: [Signature] Date: 1/5/11

Discipline Specific Curricula Committee: [Signature] Date: 2/23/11

Curricula Committee: [Signature] Date: 

01/05/11 (Revised 1/31/2008)
Experimental Course Form (EC)

This form must be filed with the Secretary to the Campus Curricula Committee, after the department chair's notation, by the appropriate deadline. Filing deadlines for inclusion in the initial release of the Schedule of Classes are as follows:

- Summer and Fall Semester Offerings – January 1
- Spring Semester Offerings – August 1

An EC form must be submitted each semester it is to be offered, not to exceed two offerings. An experimental course that is required should be submitted on a CC form. Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: Geological Sciences and Engineering

Discipline and Course Number: Pet Eng 401

Course Title: Advanced Well Stimulation

Abbreviated Title (24 spaces or less): Adv Well Stimulation

Instructor(s): Britt/Dunn-Norman

Credit Hours: Lecture: 3 Lab: Total: 3

Prerequisites: Preceded by PE 241; graduate standing

Semester(s) previously taught: Fall 2006

Brief Course Description: (40 words or less)
This course reviews fundamentals of hydraulic fracturing and builds on the basic theory through the use of STIMPLAN software and hands on industry examples. The course teaches the methods used to plan, execute and evaluate hydraulic fracturing treatments. Students completing this graduate level course will be required to complete a research assignment in addition to other course requirements.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3) 4) 5) 6)

Department Chair: [Signature] Date: 1/5/11

Discipline Specific Curricula Committee: [Signature] Date: 2/23/11

Curricula Committee: [Signature] Date: [ ]

(Revised 1/31/2008)
Experimental Course Form (EC)

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Spring Semester Offerings - August 1

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Department: Business & Information Technology

Discipline and Course Number: ERP 301

Course Title: ERP Systems in Health Care

Abbreviated Title (24 spaces or less): ERP in Health Care

Instructor(s): Joseph Abbott

Credit Hours: Lecture: 3.0 Lab: Total: 3.0

Prerequisites: IST 51 or equivalent; ERP 246 or ERP 346 (ERP 346 may be taken concurrently)

Semester(s) previously taught: None

Brief Course Description: (40 words or less)
Specialization of ERP systems and concepts to the field of Health Care, with special emphasis on Business Process Integration in this environment.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1)  2)  3)  
4)  5)  6)

Department Chair: ____________________________ (Chair Signature) Date: 3/10/11

Discipline Specific Curricula Committee: ____________________________ (Chair signature) Date: 2/10/11

Curricula Committee: ____________________________ (Chair Signature) Date: ____________

02/08/11 (Revised 1/31/2008)
Experimental Course Form (EC)

An EC form must be submitted before an experimental course is to be offered. EC forms approved SP2009 or later allow the course to be offered twice at any time during the following three year period. After an experimental course has been offered twice, a CC form may be submitted to request a permanent course number.

A new course that is required as part of a degree program, minor, or graduate certificate may be submitted on a CC form to receive a permanent course number.

Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: Geol Sci and Engineering

Discipline and Course Number: Pet Eng 301

Course Title: Well Stimulation

Abbreviated Title (24 spaces or less): Well Stim

Instructor(s): Britt/Dunn-Norman

Credit Hours: Lecture: 3 Lab: Total:  

Prerequisites: Pet Eng 241

Semester(s) previously taught: FS 2007

Brief Course Description: (40 words or less)
This course reviews fundamentals of hydraulic fracturing and builds on the basic theory through the use of STIMPLAN software and hands on industry examples. The course teaches the methods used to plan, execute and evaluate hydraulic fracturing treatments.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3)
4) 5) 6)

Department Chair: Shari Dunn-Norman (Chair Signature) Date: 14 FEB 2011

Discipline Specific Curricula Committee: Steve Pletscher (Chair signature) Date: 2/23/11

Curricula Committee: (Chair Signature) Date: 

02/14/11

(Revised 10/12/2010)
Experimental Course Form (EC)

An EC form must be submitted before an experimental course is to be offered. EC forms approved SP2009 or later allow the course to be offered twice at any time during the following three year period. After an experimental course has been offered twice, a CC form may be submitted to request a permanent course number.

A new course that is required as part of a degree program, minor, or graduate certificate may be submitted on a CC form to receive a permanent course number.

Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: Geol Sci and Engineering

Discipline and Course Number: Pet Eng 401

Course Title: Advanced Well Stimulation

Abbreviated Title (24 spaces or less): Avd Well Stim

Instructor(s): Britt/Dunn-Norman

Credit Hours: Lecture: 3 Lab: Total: 

Prerequisites: Pet Eng 241

Semester(s) previously taught: FS 2007

Brief Course Description: (40 words or less)
This course reviews fundamentals of hydraulic fracturing and builds on the basic theory through the use of STIMPLAN software and hands on industry examples. The course teaches the methods used to plan, execute and evaluate hydraulic fracturing treatments. Students completing this graduate level course will be required to complete a research assignment in addition to other course requirements.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.

1) 2) 3)

4) 5) 6)

Department Chair: Shari Dunn-Norman (Chair Signature) Date: 14 FEB 2011

Discipline Specific Curricula Committee: Steve Wathen (Chair signature) Date: 2/23/11

Curricula Committee: (Chair Signature) Date: 02/14/11

(Revised 10/12/2010)

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Experimental Course Form (EC)

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Summer and Fall Semester Offerings – January 1
Spring Semester Offerings – August 1

An EC form must be submitted each semester it is to be offered, not to exceed two offerings. An experimental course that is required should be submitted on a CC form. Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: Geological Sciences and Engineering
Discipline and Course Number: Pet Eng 401
Course Title: Advanced Natural Gas Engineering
Abbreviated Title (24 spaces or less): Adv Nat Gas Engrg
Instructor(s): B. Bai
Credit Hours: Lecture: 3 Lab: Total:
Prerequisites: PE 240 Properties of Hydrocarbon Fluids PE 241 Petroleum Reservoir Engineering

Semester(s) previously taught:

Brief Course Description: (40 words or less)

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3)
4) 5) 6)

Department Chair: ___________ (Chair Signature) Date: 2-10-11
Discipline Specific Curricula Committee: ________ (Chair signature) Date: 2/23/11
Curricula Committee: ____________________________ (Chair Signature) Date: ____________

02/10/11

(Revised 1/31/2008)

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Summer and Fall Semester Offerings – January 1
Spring Semester Offerings – August 1

An EC form must be submitted each semester it is to be offered, not to exceed two offerings. An experimental course that is required should be submitted on a CC form. Co-listed offerings should be submitted on one form, originating from the primary discipline.

Department: Geological Sciences and Engineering

Discipline and Course Number: Pet Eng 401

Course Title: Advanced Well Test Analysis

Abbreviated Title (24 spaces or less): Adv Well Test Analysis

Instructor(s): R. Flori

Credit Hours: Lecture: 3 Lab: Total: 

Prerequisites: Pet Eng 241, Pet Eng 341

Semester(s) previously taught: N/A

Brief Course Description: (40 words or less)
Pressure transient analysis equations, well test analysis for fractured wells, horizontal wells, and other special situations, rate transient analysis.

List all co-listed courses: Include initials of Dept. Chair, if signature is not already included below.
1) 2) 3)
4) 5) 6)

Department Chair: [Signature] Date: 2/10/11

Discipline Specific Curricula Committee: [Signature] Date: 2/23/11

Curricula Committee: [Signature] Date: ___

02/10/11 (Revised 1/31/2008)