

COURSE SYLLABUS



Course Title:	Energy Investment Analysis		Date submitted:	3/1/18 (AAC: 18-10)
Department:	Business and Technology			
Curriculum:	Energy Management Program			
Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.	Course Code: (eg. ACC 101)	NRG*240	Prerequisites:	
	Course Type:	X	C- or better in Spreadsheet Applications (CSA*135), Intermediate Algebra (MAT*137), and Building Efficiency Auditing (NRG*131).	
	A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: Internship M: Seminar P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/Clinical/Lab Z: Combined Lecture/Studio			
	Elective Type:	G		
	AH: Art History E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science			
	Credit Hours:	3	Corequisites:	
	Developmental: (yes/no)	No	None	
	Lecture:	1.5		
	Clinical:	0		
	Lab:	1.5		
Studio:	0			
Contact Hours:	Other: 0			
	TOTAL: 3	Other Requirements:		
Class Maximum:	24	None		
Semesters Offered:	F			
Catalog Course Description:	Enables students to analyze energy investments using spreadsheets to consider total cost-benefits over the life of the investment. Topics include: interest, simple payback and life-cycle cost analysis, time value of money, cash flow equivalence, cost-benefit analysis, effects of tax credits, depreciation, inflation and/or escalating fuel costs on energy investments, and cost estimating procedures. The emphasis will be on analysis of energy investments using spreadsheets to consider total cost-benefits over the life of the investment.			

<p>Topical Outline: List course content in outline format.</p>	<ul style="list-style-type: none"> • Cost Estimating • Income Statements/Balance Sheet/Cash Flow Statement • Income Taxes/Tax Credits • Depreciation • Interval Data • Utility Rate Tariff • Energy Bills • Calculating Project Savings • Incentives • Simple Payback /Return on Investment • Interest/Discount Rate/Time Value of Money • Present Value • Annuity Values • Net Present Value • Internal Rate of Return • Annual Worth • Gradient Values • Quiz (Up to Annual Worth) • Life-Cycle Cost Analysis/Cost-Benefit Analysis • Sensitivity Analysis • Repair vs. Replace • After Tax Cash Flow/Analysis • Project Financing /Performance Contracting
<p>Outcomes: Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.</p>	<p>Upon successful completion of this course, the student will be able to do the following:</p> <ol style="list-style-type: none"> 1. Understand the elements of electric and natural gas utility rate tariffs and their impact on selection technologies for energy savings 2. Determine the energy cost savings associated with the different efficiency improvement strategies utilizing detailed utility rate tariffs 3. Evaluate the energy cost savings generated by implementing efficient electrical and mechanical building technologies 4. Demonstrate the understanding of the income taxes and the ways to evaluate projects considering depreciation and net cash flow 5. Analyze energy projects from a life cycle perspective and develop strategies to influence a potential decision maker to implement developed projects 6. Utilizing skills learned in class, produce a detailed financial energy analysis utilizing spreadsheets <p>PROGRAM: <i>(Numbering reflects Program Outcomes as they appear in the college catalog)</i></p> <ol style="list-style-type: none"> 1. evaluate energy use patterns of residential and commercial buildings 2. recommend energy efficiency and renewable energy solutions for high energy consuming buildings 3. produce energy evaluation technical reports 4. develop and evaluate inferences and predictions that are based on collected data 5. use problem-solving techniques & mathematics to transform concepts into energy related projects <p>GENERAL EDUCATION: <i>(Numbering reflects General Education Outcomes as they appear in the college catalog)</i></p> <p style="text-align: center;">N/A</p>

<p>Evaluation: List how the above outcomes will be assessed.</p>	<p>Assessment will be based on the following criteria:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Class Participation.....</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>Homework Assignments</td> <td style="text-align: right;">25%</td> </tr> <tr> <td>Quizzes (3).....</td> <td style="text-align: right;">45%</td> </tr> <tr> <td>Final Exam</td> <td style="text-align: right;"><u>20%</u></td> </tr> <tr> <td></td> <td style="text-align: right;">100%</td> </tr> </table>	Class Participation.....	10%	Homework Assignments	25%	Quizzes (3).....	45%	Final Exam	<u>20%</u>		100%
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Final Exam	<u>20%</u>										
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<p>Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.</p>	<p>Required: Computer classroom with Excel and Internet access.</p> <p>Desired: None</p>										
<p>Textbook(s)</p>	<ul style="list-style-type: none"> • GUIDE TO ENERGY MANAGEMENT, 8th Edition, Capehart, Turner and Kennedy, published by The Fairmont Press, Inc., 2016. www.fairmontpress.com • Handbook of Formulae, Equations, & Conversion Factors for the Energy Professional, aka Little Red Book 										