Wayne State University
Department of Industrial and Systems Engineering
Course Syllabus and Schedule

Course Title: IE 6220: VALUE ENGINEERING (CREDIT HOURS: 4)

Course Instructor: Dr. Celestine Aguwa
2061 Manufacturing Engineering Building
Email: celestine.aguwa@wayne.edu
Telephone (313) 577-4007
Fax (313) 577-8833

TA: TBD

Class Schedule: W: 5:30 – 9:30 pm  Classroom: Rm. 2060, MANU

COURSE DESCRIPTION:
This course is a study of resource management. It follows a systematic approach to solving problems and making decisions. The approach forces latent capabilities to be applied to challenging assumptions. The result makes possible the application of unbiased logic techniques to produce superior results.

The course concentrates on fundamentals to provide a firm foundation for use of Value Engineering in a wide variety of applications. A lecture and laboratory format offers ample opportunity for students to apply the techniques and scientific disciplines on actual problems. The course will cover fundamentals of cost analysis, function analysis, creative problem solving, data evaluation, and reporting for decisive action. This explores the, impact of technology on economics.

PREREQUISITES:
This course may be taught on the undergraduate or graduate level.

As an undergraduate course, the entry-level skill prerequisites are the ability to comprehend engineering technology, communicate and calculate at a level usually expected of an upper-level college senior.

As a graduate level course, the entry-level prerequisites are raised. Students are required to have mature career, business, or industrial experience.

Course Objectives:
Upon completing this course, a student will be able to:
1. Determine functions to be performed.
2. Analyze the elements of a product, process, service, or system.
3. Identify and isolate the unknown, unnecessary costs.
4. Aid in improving both profit and communications.
5. Present recommendations in a manner that will clearly demonstrate advantages of acceptance.
Course Website: http://blackboard.wayne.edu

Grading: Final grades will be based on the following:
1. Mid-term Exam 25%
2. Final Exam 25%
3. Homework/Paper Review 20%
4. Group Project 25%
5. Class Participation/Attendance 5%

- Late homework assignments will not be accepted unless the instructor is coordinated with in advance.
- Homework assignments can be done in groups. If homework is done in a group, please submit individual results in each student’s writing.
- Projects, exams, and homework might be curved.
- Project reports and special assignment reports have to be typed.

Course text
Value Engineering: Theory and Practice in Industry
Thomas R. King, CVS
Lawrence D. Miles Foundation
Catalog Number: 279798707 Media: Book ISBN: 0-9679217-1-6

Other References:
Value Engineering: Analysis and Methodology
Del Younker, CCC/CVS, Winter Springs, Florida, USA
Cat. #: DK5654
ISBN: 9780824706968
Publication Date: May 14, 2003
Binding: Hardback.

Value Engineering: A Plan for Invention
Richard Park, Consultant, Birmingham, Michigan, USA
Cat. #: SL235X
ISBN: 9781574442359
Publication Date: December 03, 1998
Binding: Hardback

Fundamentals of Value Methodology
Robert B. Stewart
Publisher: Xlibris Corporation
Publication date: 12/28/2007

SAVE Website:
http://www.value-eng.org/

Lawrence D. Miles Foundation
http://www.valuefoundation.org/
Research Guide for IE6220, is available at:  
http://guides.lib.wayne.edu/aecontent.php?pid=332494

Course Outline/Schedule: *(Note that this schedule is subject to change by the instructor)*

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5/7/2013</td>
<td>Class Introduction</td>
<td>First class will start with course strategic goals and expectations, Class introduction, group projects. etc.</td>
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<tr>
<td>2</td>
<td>5/14/2013</td>
<td>Ch1- VE: Beginnings and growth and</td>
<td>Projects title and brief summary due</td>
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<tr>
<td>3</td>
<td>5/21/2013</td>
<td>Ch2-Understanding the value concept</td>
<td>Librarian -TBD</td>
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<td>4</td>
<td>5/28/2013</td>
<td>Ch3-VE job plan: A systematic approach and Ch4-Functional analysis</td>
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<tr>
<td>5</td>
<td>6/4/2013</td>
<td>Ch5-Group dynamics and Ch6-Value concepts, tools and techniques</td>
<td>HW 1</td>
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<tr>
<td>6</td>
<td>6/11/2013</td>
<td>Study day and midterm project presentation</td>
<td>HW 2</td>
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<tr>
<td>7</td>
<td>6/18/2013</td>
<td>Midterm Exams</td>
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<td>8</td>
<td>6/25/2013</td>
<td>Ch7-FAST diagramming and Ch8-Conducting the VE study: Project selection and information phase</td>
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<td>9</td>
<td>7/2/2013</td>
<td>Ch9-Conducting the VE study: Middle phase: Function and idea generation, and Ch10-Conducting the VE study: evaluation and implementation phases</td>
<td>HW 3</td>
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<tr>
<td>10</td>
<td>7/9/2013</td>
<td>Drew M. Algase</td>
<td>Industry Presenter –TBD</td>
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<td>11</td>
<td>7/16/2013</td>
<td>Ch11-The value arena: complementary concepts, and Ch12-VE management in an industrial setting, Ch13-Case study, etc.</td>
<td>HW 4</td>
</tr>
<tr>
<td>12</td>
<td>7/23/2013</td>
<td>Class ends, Study day</td>
<td>Final project presentation slides due</td>
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<tr>
<td>13</td>
<td>7/30/2013</td>
<td>Final Exams</td>
<td>Final project report due</td>
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**Project Guidelines:**
For the final project, you are expected to work in teams of three or four. Choose a case study (preferably one that you are familiar with). Carry an analysis of the existing process and then use the tools that were covered in this class to suggest process improvement.

**Written Project Requirements**
The written project reports must be typed or computer printed (laser quality only). The length of the written report is strictly limited to 10 pages, but exhibits up to 5 additional pages may be appended. Each report must include the following information, but not necessarily in this order:

- Abstract
- Introduction and project definition/description
- Literature reviews
- Proposed work with contribution to subject matter
- Validation and evaluation of proposal
- Conclusion
- Bibliography/References

**Oral Presentation Requirement**
Each project team is expected to make a presentation of 30-45 minutes. Reports will be collected after the last presentation is completed. Each group member must be actively involved in the oral presentation. The presentations will be graded for clarity, content, and smoothness.

**Journal Article Review**
The objective of the article review presentations is to allow students to study a wide range of real world applications that rely on value engineering. You will work in teams of three or four. Each team is required to select and analyze two articles from recent SAVE journals that describe a practical application of layout planning and analysis. Each team will make a fifteen-minute presentation at the beginning of class and submit overheads of presentation & names of team members. Every team member is required to have a one-page outline of comments, observations and lessons learned that are to be appended to the presentation material to be turned in.

**Presentation 5-8 Overheads**
1. Problem Context
2-3 Model Structure
   - Decision Variables, Objectives, Constraints, and System Scope
4-5 Model Usage -
   - What issues did it address?
   - What was its impact?
   - Who were the model users?
6. Implementation Issues & Concerns if discussed in paper
7-8. Your lessons learned
   - The analogies could relate to potential use of model or to implementation issues
General Policy:
Student Conduct: It is the responsibility of each student to adhere to the principles of academic integrity. Academic integrity means that a student is honest with him/herself, fellow students, instructors, and the University in matters concerning his or her educational endeavors. Thus, a student should not falsely claim the work of another as his/her own, or misrepresent him/herself so that the measures of his/her academic performance do not reflect his/her own work or personal knowledge. In this regard, cheating will not be tolerated. Cheating includes (but is not limited to) any communication (written or oral) during examinations and sharing of work, such as using the same models or computer programs or copying work. All homework and projects must be an individual effort unless specifically noted. STUDENTS WHO CHEAT ON ANY ASSIGNMENT OR DURING ANY EXAMINATION WILL BE ASSIGNED A FAILING GRADE FOR THE COURSE. Therefore, avoid all appearance of improper behavior! Students who witness cheating should report the incident to the instructor as soon as possible. Students are also welcome to discuss any concerns related to cheating with the Chair of Industrial & Manufacturing Engineering.

Educational Accessibility Services: If you feel that you may need an accommodation based on the impact of a disability, please feel free to contact me privately to discuss your specific needs. Additionally, the Office of Educational Accessibility Services (EAS) coordinates reasonable accommodations for students with documented disabilities. The office is located in the Student Center Building, Room 583, Phone: 313-577-1851 (Voice)/577-3365(TTY).

Policy on Classroom Attendance: All students are expected to attend all lectures, quizzes, and examinations with enthusiasm. Although classroom attendance does not mathematically contribute to the final course grade, active class participation is expected of all students and may help to boost up the course grade in those “borderline” cases” between failing and passing.