The University of Southern Mississippi
College of Science and Technology - Department of Industrial Engineering
IET 409 – Plant Layout
Spring 2017

COURSE SYLLABUS

Instructor
• Name: Barry J. Wilkie, PhD
• Office number 228-935-3643
• Cell number 228-223-7197 (send text messages to this number)
• Email barry.wilkie@usm.edu

Office Hours
• Instructor will be available by phone, text messages, online or email. Conference calls are available by appointment.

Drop Date
• The last day to drop the class without Academic Penalty and receive 100% financial credit, is Tuesday, January, 24, 2017.
• Last day to drop and receive a grade of W, is Wednesday, April 5, 2017.

Prerequisites
• None required. (Calculus I & II; Statistical Method I (CSS 211) or similar course is recommended).

Credit Hours
• 3 hours.

Course Description
• Plant Layout (IET-409) focuses on industrial facility planning, the concepts and design methodology applicable to different types of facilities and service sectors. The course is designed to provide a comprehensive and a balanced exposure to available methodologies such as factory location, layout planning procedures, material handling, computerized layout procedures, and warehouse layout design. A number of computer software programs are discussed and used in the layout planning models. The applications emphasize practical issues, often difficult to capture in quantitative models but are important to consider.

Course Overview
• This course provides an understanding of the fundamental principles, concepts, theory and procedure for effective plant location, layout, and material handling systems design and used to design facilities.
• It also covers designing the activities of people, machine, vehicles and processes within a physical environment so that the objectives of the system or enterprise (plant, hospital, bank etc.) can be satisfactorily achieved.

**Late Assignments or Projects**
• There are penalties for late submissions. A 2-5 day(s) late submission will reduce 25% of the points from the earned grade of an assignment. Solutions to assignments will be posted online. Therefore, a late assignment will not be graded at all, if it is submitted after one week from the due date. Or, a completely different assignment may be assigned for make-up (if there is a viable reason for being late).

**Course Outcome(s)**
• The course has the following educational objectives for students:
  • Learn formulations, models, and analytical procedures of facilities planning & Design
  • Understand the logic and foundation of the factory project
  • Design layouts incorporating product, process, and personnel requirements using software tools – process chart, flow pattern, relationship matrices etc.
  • Develop computerized layout planning, and quantitative mathematical models
  • Determine how make parts, machine and material requirements and costs
  • Learn fundamental principles of material handling, equipment and system designs
  • Know dynamic flow models for man, material and machine movement within facility
  • Design random storage policies, model capacity and warehousing systems
  • Evaluate site planning principles, multiple-criteria methods to analyze site selection.

**Student Learning Outcomes**
• Students will learn the foundation of plant layout, planning, principles and design in order to synthesize all the concepts, tools and techniques to address effective managerial decisions with a major emphasis on factory project activities.

**Course Communication**
• All class lecture notes and corresponding lectures will be uploaded in the course webpage via Blackboard. Course communication will be via USM e-mail, Blackboard e-mail, text messages and discussion board. Students can communicate with the instructor during the week by phone, text message, or email as needed.
• The main mode of course communication such as obtaining lecture notes, assignments and exams will be through Blackboard. The interaction between
instructor and students, as well as one-to-one communication will be through Blackboard, students USM email, and assignment feedback or comments.

**Required Text (s) and Readings**

**Reference (optional)**
*Facility Planning*, by Tompkins, White, Bozer, & Tanchoco. Wiley.

**Technology Requirements**
- Students require a computer, internet connection, and headphones/speaker. Students also require software including Microsoft Word, Excel, Power Point and scientific calculator to complete the assignments and course exams.

**Class Procedures and Requirements**
- Students should read all the lecture notes, (power point presentations), and text chapters posted in the course website to accomplish the best performance. There will be assignments related to the class lecture notes in order to test the understanding of the subject matter.
- Assignments will be posted in the Assignment box. Assignment should be submitted as a MS Word or Excel Spreadsheet document or a pdf format. If an assignment is hand-written, it must be legible and should be scanned to one pdf file prior to upload. **Scanned document must not be any picture file (cannot be a jpg or bmp file).** All submissions should be via Assignment Drop Box within the assignment due date.
- Homework can be discussed with other students, but must be completed by each student individually. The case study, assignment or report should reflect student’s individual style, and approach to solve the problem and writing the report. It is recommended that each homework /assignment should contain a title page with student’s name on it.
- A student may (only) re-submit the assignments; if he/she believes he/she achieved better understanding or better results, after the first submission, within the same week.

**Class Participation Policy**
- Students are expected to “participate” a minimum of once per week. Participation can take place on the discussion board, a chat session, email, or text message correspondence with the instructor.
- Students are required to be active, professional participants in the teaching and learning process. While the instructor realizes that distance learning allows students to work around their schedule, logging in and completing all the discussions and activities on the final day of the module will not be considered “professional participation”. During the semester,
students should participate at least three times on the weekly discussion board by responding to the initial question and then replying to two other student’s comments with quality responses.

**Evaluation Criteria**

| Assignment 1 | 10% |
| Assignment 2 | 10% |
| Assignment 3 | 15% |
| Assignment 4 | 15% |
| Course Project | 15% |
| Mid-term | 20% |
| Final exam | 15% |
| **Total** | **100%** |

**Grading Scale**

- A 100-point grading scale will be used:

  | 90-100 | A |
  | 80-89 | B |
  | 70-79 | C |
  | 60-69 | D |
  | 0-60 | F |

**Research Paper Guidelines:**

- The objective of the term project is to train students to think independently to develop a project report based on industrial problems and practices. Student should gather knowledge from this course and find a problem related to industrial an application such as industrial production, inventory control, aggregate planning, MRP, lean/JIT and scheduling/planning to develop a project. After defining the problem, a student should collect information about the related problem and the corresponding solution approaches. Student then apply this knowledge about the tools and techniques to solve the problem (originally chosen by the student), and develop a project report by the end of the semester.
- All submissions required for term project or research paper must be in Word format.
- Term project / research paper are submitted by a group of one or two person(s).
- Student’s names shown as the last name, first name, MI should appear in the cover page.
Academic Integrity

All students at the University of Southern Mississippi are expected to demonstrate the highest levels of academic integrity in all that they do. Forms of academic dishonesty include (but are not limited to):

- Cheating (including copying from others’ work)
- Plagiarism (representing another person’s words or ideas as your own; failure to properly cite the source of your information, argument, or concepts)
- Falsification of documents
- Disclosure of test or other assignment content to another student
- Submission of the same paper or other assignment to more than one class without the explicit approval of all faculty members’ involved
- Unauthorized academic collaboration with others
- Conspiracy to engage in academic misconduct

Engaging in any of these behaviors or supporting others who do so will result in academic penalties and/or other sanctions. If a faculty member determines that a student has violated our Academic Integrity Policy, sanctions ranging from resubmission of work to course failure may occur, including the possibility of receiving a grade of “XF” for the course, which will be on the student’s transcript with the notation “Failure due to academic misconduct.” For more details, please see the University’s Academic Integrity Policy: https://www.usm.edu/institutional-policies/policy-acaf-pro-012. Note that repeated acts of academic misconduct will lead to expulsion from the University.

ADA Policy – (Pick one of these).

ADA Syllabus Statement for the Hattiesburg Campus

If a student has a disability that qualifies under the American with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:
The University of Southern Mississippi
Office for Disability Accommodations
118 College Drive # 8586
Hattiesburg, MS 39406-0001
Voice Telephone: (601) 266-5024 or (228) 214-3232 Fax: (601) 266-6035

Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.
ADA Syllabus Statement for the Gulf Coast Campus

If a student has a disability that qualifies under the American with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:
The University of Southern Mississippi on the Gulf Coast
Office for Disability Accommodations
730 East Beach Blvd
Long Beach, MS 39560

Voice Telephone: (601) 266-5024 or (228) 214-3232
Fax: (601) 266-6035

Individuals with hearing impairments can contact ODA using the Mississippi Relay Service at 1-800-582-2233 (TTY) or email Suzy Hebert at Suzanne.Hebert@usm.edu.

Class Schedule*

<table>
<thead>
<tr>
<th>Week</th>
<th>Module#/Lecture Topic</th>
<th>Readings</th>
<th>Study Questions/Assignments</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1- Course overview; Fundamental Principles of Facility Planning</td>
<td>Chapter 1</td>
<td></td>
<td>1/17</td>
</tr>
<tr>
<td>2</td>
<td>2- Factory Layout and Material Handling Project</td>
<td>Chapter 2</td>
<td>Assignment 1</td>
<td>1/24</td>
</tr>
<tr>
<td>3</td>
<td>3- Project Design and Process Planning-I</td>
<td>Chapter 3</td>
<td></td>
<td>1/31</td>
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<tr>
<td>4</td>
<td>4- Project Design and Process Planning-II</td>
<td>Chapter 3</td>
<td>Assignment 2</td>
<td>2/07</td>
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<td>5</td>
<td>5- Layout Planning Procedures</td>
<td>Chapter 4</td>
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<td>2/14</td>
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<tr>
<td>6</td>
<td>6- Layout Planning Procedures and FLAP software</td>
<td>Chapter 4</td>
<td>Assignment 3</td>
<td>2/21</td>
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<tr>
<td>7</td>
<td>6- Course project discussion</td>
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<tr>
<td>8</td>
<td>Midterm Exam</td>
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<tr>
<td>9</td>
<td>7- Computerized Layout Procedure-I; Computerized Layout Procedure-II</td>
<td>Chapter 6</td>
<td>Assignment for Project*</td>
<td>3/28</td>
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<tr>
<td>11</td>
<td>8- Material Handling Principles, Equipment, &amp; Design</td>
<td>Ch. 7</td>
<td>Assignment 4</td>
<td>4/04</td>
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<tr>
<td>12</td>
<td>9- Storage and Warehouse Systems-I; Storage and Warehouse Systems-II</td>
<td>Ch. 8</td>
<td></td>
<td>4/11</td>
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<td>13</td>
<td>Term Project Due</td>
<td></td>
<td>Project</td>
<td>4/18</td>
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<td>14</td>
<td>10- Site Planning Design</td>
<td>Chapter 10</td>
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<td>4/25</td>
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<tr>
<td>15</td>
<td>Final Examination</td>
<td></td>
<td>Final Exam</td>
<td>5/02</td>
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*Schedule may be revised if necessary. Students will be notified if this is the case.