IME 604 FACILITIES PLANNING & DESIGN

Spring 2000  T, Th 6:00 – 8:50 p.m.

Catalog Description: An analytical approach to the planning and design of manufacturing facilities and material handling systems. Prerequisite: IME 404, 414, or permission of instructor.


IT IS ILLEGAL TO COPY ALL OR A PART OF A TEXT BOOK IN ORDER TO AVOID THE PURCHASE OF ONE. AS SUCH, NO COPIES OF TEXTBOOKS WILL BE ALLOWED IN THE CLASSROOM.

References:

Periodicals: (Housed in Waldo Library)
1. Modern Materials Handling
2. Material Handling Engineering
3. Production Engineering (formerly Automation)
4. IIE SOLUTIONS

Coordinator: Dr. Azim Houshyar, Professor, Industrial & Manufacturing Engineering.

Instructor: Name: Dr. Kailash M. Bafna, Professor
Office: 2015 Kohrman Hall
Phone: (616) 387-3732/email: kailash.bafna@wmich.edu

Course Schedule:

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<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER</th>
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<tbody>
<tr>
<td>5-2 (T)</td>
<td>Introduction to Course</td>
<td>1</td>
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<tr>
<td>5-4 (R)</td>
<td>Strategic Facilities Planning</td>
<td>2</td>
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<td>5-9 (T)</td>
<td>Product, Process, and Schedule Design</td>
<td>3</td>
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<td>5-11 (R)</td>
<td>Flow, Space, and Activity Relationships</td>
<td>4</td>
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<td>5-16 (T)</td>
<td>Personnel Requirements</td>
<td>5</td>
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<tr>
<td>5-18 (R)</td>
<td>Material Handling</td>
<td>6</td>
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Paper Presentations:
Each student is required to write a detailed research paper and present it in class on a topic related to facilities planning and design. A list of suggested topics is attached at the end of this syllabus. Each student must have their final topic for the research paper approved by the instructor and then write a detailed paper (10 to 15 pages in double space are recommended). Each student will then present his/her paper to the class (10-12 minutes for presentation and 3-5 minutes for Q and A—total of 15 minutes). Four papers will be presented at the beginning of each class period starting with June 1. In addition to the Instructor’s evaluation and assessment, peer evaluation and assessment will also be used as instructed in the class. Specific dates must be followed:
Final topic approved by Tuesday, 5-9.
Outline of paper with list of references turned in by Tuesday, 5-16.
Completed paper submitted on Thursday, 6-1.
The Instructor will schedule the specific date for presentation of each research paper by 5-25.

Evaluation Distributions:
<table>
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<tr>
<th>Item</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Examination # 1</td>
<td>25%</td>
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<tr>
<td>Examination # 2</td>
<td>30%</td>
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<tr>
<td>Research Paper</td>
<td>30%</td>
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<tr>
<td>Paper Presentation</td>
<td>10%</td>
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<tr>
<td>Participation in Class activities</td>
<td>5%</td>
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Grading Scale:
The following grading scale will be used in my class:
A (91 – 100 ), BA (88 – 90 ), B (81 – 87), CB (78 – 80), C (71 – 77), DC (68 – 70), D (60 – 67), E (below 60).
All examinations will be graded on or converted to a numerical scale. At the end of the semester, the grades will be added up for all the items (with the appropriate weights) and then converted to a letter scale to determine the final course grade.
Facilities Design:
2. Application of Simulation in Designing Facilities.
3. Recent Approaches to Designing Manufacturing Cells.
4. Implementation of ADA in Manufacturing Facilities.
5. Security Considerations in Facilities Planning & Design.

Office Design:
6. Designing a Virtual Office.
7. Designing an Office in the Home to Incorporate Safety and Efficiency.
8. Office Design for Improved Productivity.

Warehouse Design:
10. Layout Techniques to Improve Warehouse Efficiency.
14. Use of Carousals to Improve Picking.
15. Applications of Automated and Robotic Palletizers.
18. Techniques to Improve Warehouse Efficiency.
19. Small Parts Storage and Retrieval.

Materials Handling:
23. Applications of Robots in the Automotive Industry.

Specific Applications:
25. Use of Bar Coding for Baggage in Air Travel.
27. Designing of Work Cells Using the Kaizen Approach.
28. Facilities Design in Lean Manufacturing.
29. Design of Library Facilities.
30. Factors to be Considered when Locating a Hotel.
Obtaining Notes for the Class

Prof. Houshyar has developed very extensive notes on the material which basically follows the same outline as the required textbook. These notes can be downloaded (124 pages) from his web page as follows:

http://tigger.cc.wmich.edu/~houshyar/

Teaching Material
IME 604
Notes on Facility Layout

NOTE: THE WEB PAGE NOTES ARE NOT A SUBSTITUTE FOR THE TEXTBOOK WHICH MUST BE PURCHASED.

Specifications on the Research Paper

1. You must use at least five current sources (since January 1996) for your paper. Additional sources are also preferred. Books are not included in the current sources.

2. You must reference all your sources appropriately in the body of the paper. Taking several sentences (even if put in your own words) from a source and not referencing them will be considered as plagiarizing.

3. Use margins of 1 inch on all four sides, Times New Roman or equivalent font in 12 point size, and double spaced text. Number the pages.

4. Assemble the paper as follows: Title page, abstract of no more than ½ page in length, table of contents (with page numbers), your written research paper, and a list of references. Attach your approved paper outline at the back. Bind the complete paper in a binder (do not use 3-ring binders). If the title page is not visible through the binder cover, attach a label to the front cover with the title of the paper and your name on it.