Instructor
- Name: Dr. Mohsen Hosseini
- Office Address: 107 A, Science Building, Long Beach, MS
- E-mail: USM email will be provided next week since I don’t have it yet. If you have any question regarding syllabus you may contact me through my email address, s.m.hosseini48@gmail.com

Office Hours
- Monday, Tuesday & Wednesday 12:00pm – 5:00pm; Or by e-mail appointment

Drop Date
- Last day to withdraw the course without a grade of W is Aug 31st, 2016.

Prerequisites
- Statistical Method I/CSS-211

Credit Hours
- 3 hours

Course Description
- The IET 480 - Industrial Simulation and Modeling course is intended to cover analysis of manufacturing and service operations encountered in industry using computer simulation techniques. As simulation is a vital tool for studying the impact of proposed system designs, this course uses a specific software package, Arena, to demonstrate the fundamental concepts, theory, and practice in the use of simulation for designing and analyzing various systems.

Course Overview
- Industrial engineers typically take a broader "systems" outlook when involved in engineering design because they are usually involved in manufacturing systems design or service systems design. Simulation is a vital tool for studying the impact of proposed system designs. This course will use a specific software package, Arena, for performing simulations. Upon finishing this course, the student should be able to build a computer model of any typical manufacturing
or service facility and determine the impact of proposed design changes to that system.

Course Outcome

- At the end of the course, students are able to conduct, analyze and interpret experiments and apply experimental results to compare system designs. Apply creativity in the design of systems and identify, analyze and solve system bottlenecks. Show a commitment to quality, timeliness, and continuous improvement. Develop, implement and improve integrated systems that include people, materials, information, equipment and energy. Finally, integrate systems using simulation and statistical procedures.

Student Learning Outcome(s)

- Students learn how to use Arena (software) and MS Excel for performing simulations. Upon finishing this course, the student should be able to:
  - Build a computer model of any typical manufacturing or service facility and determine the impact of proposed design changes to that system.
  - Involve in the identification, formulation while performing simulation assignments, and accomplish the ability to solve engineering problems, evaluation methods.
  - Use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Communication

- All class lecture notes and videos to the corresponding lectures will be uploaded in the course webpage via Blackboard. Course communication will be via USM e-mail, Blackboard e-mail, and discussion board. Students can meet the instructor during office hour or by making appointment as needed.

Text(s) and Readings (optional)

- Reference texts (optional):
  - Law M. and Kelton W D. *Simulation Modeling and Analysis of the fish each*
  - Rossetti, M: *Simulation Modeling and ARENA*

Technology Requirements

- Students will require Computer, internet connection, and headphones/speaker. Students also require software 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), text chapters, and listen to recorded audio lectures post in the course website to accomplish the best performance. There will be assignments related to the class
lectures in order to test the understanding the subject matters. Assignment will be post in the Assignment box. Assignment should be submitted as a MS Word or Spreadsheet document or a pdf format. If an assignment is hand-written, it should be scanned to one pdf file prior to upload. Scanned document must not be any picture file not as jpg or bmp. All submission should be via Assignment Drop Box within the assignment due date.

- Homework can be discussed with other students, but must be compiled by each student individually. The case study, assignment, exams or report should reflect student’s individual style, approach and appeal to solve the problem and report writing. It is recommended that each homework /assignments should contain a title page with student name on it.
- A student may (only) re-submit the assignments (in the same week); if he believes he achieved better understanding or better results, after the first submission, within the same week.

Class Participation Policy
- This is an online course, there is no in-class participation needed.

Evaluation Criteria

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<tbody>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>4 Assignments</td>
<td>40%</td>
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<tr>
<td>Course Project</td>
<td>10%</td>
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<td><strong>Total</strong></td>
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Grading Scale
- Total 100-point scale below:

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<tbody>
<tr>
<td>90-100</td>
<td>A</td>
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<td>80-89</td>
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<td>70-79</td>
<td>C</td>
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<tr>
<td>60-69</td>
<td>D</td>
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<tr>
<td>0-60</td>
<td>F</td>
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Late Assignments or Projects
- There are penalties for late submissions. A 2-5 days late submission will reduce 20% points from earned grade of an assignment. Solution will be post by the next week. Therefore, assignment will not be graded at all, if it is submitted after one week from due date. Or, a completely different assignment may assign for make-up (if there is a viable reason for being late).

Academic Honesty
The following is from the USM Undergraduate Bulletin:

“When cheating is discovered, the faculty member may give the student an F on the work involved or in the course. If further disciplinary action is deemed appropriate, the student should be reported to the Dean of Students. In addition to being a violation of academic honesty, cheating violates the Code of Student Conduct and may be grounds for probation, suspension, and/or expulsion. Students on disciplinary suspension may not enroll in any courses offered by The University of Southern Mississippi.”

This is optional: Students must send the instructor an e-mail using the course web site e-mail stating that they understand USM’s academic honesty policy and also understand that if they do not uphold the standards of academic honesty, the instructor will enforce all applicable punishment.

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
Class Schedule*

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<thead>
<tr>
<th>Module</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to system simulation</td>
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<tr>
<td>2</td>
<td>Queuing Systems</td>
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<tr>
<td>3</td>
<td>Monte Carlo simulation in Excel</td>
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<tr>
<td>4</td>
<td>Building a simple processing model from scratch - Arena Model</td>
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<tr>
<td>5</td>
<td>Resource States, Schedules, and Failures; Saving Data: Exercise Arena Model</td>
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<td>6</td>
<td>Probability Review</td>
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<td>7</td>
<td>Random Number Generation</td>
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<tr>
<td>8</td>
<td>Midterm</td>
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<tr>
<td>9</td>
<td>Warehouse Case study using Arena</td>
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<tr>
<td>10</td>
<td>Modeling Operation-I: Arena Model</td>
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<tr>
<td>11</td>
<td>Modeling Operation-II: Arena Model</td>
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<tr>
<td>12</td>
<td>Input Analyzer</td>
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<tr>
<td>13</td>
<td>Obtaining Confidence Intervals for Output</td>
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<tr>
<td>14</td>
<td>Output from Terminating Systems</td>
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*Schedule is tentative and may subject to change. Students will be notified should there be any changes.