# CHEN 4460 – LECTURE PLAN

Dr. Mario Richard Eden  
(Updated August 18, 2012)


<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Homework Due</th>
</tr>
</thead>
</table>
| 8/21 | #1: Course Introduction and Overview  
- Introducing Simulation Multimedia Package  
- Introducing Design and Synthesis Process | SSLW Chapter 1  
Pages 1-31 | |
| 8/28 | #2: Process Creation  
- Preliminary Database Creation  
- Preliminary Process Synthesis  
- Development of Base-Case Design | SSLW Chapter 4  
Pages 77-94, 101-109 | |
| 9/4 | #3: Heuristics for Process Synthesis  
- Chemical Reaction  
- Mixing and Recycle  
- Separation  
- Temperature, Pressure and Phase Change  
- Task Integration | SSLW Chapter 6  
Pages 152-180 | |
| 9/11 | #4: Algorithmic Methods for Process Synthesis – Part I  
- Reactor Design and Reactor Network Synthesis  
- Synthesis of Separation Trains | SSLW Chapter 7+8  
Pages 181-216 | |
| 9/18 | #5: Algorithmic Methods for Process Synthesis – Part II  
- Sequencing of Ordinary Distillation Columns | SSLW Chapter 8  
Pages 216-223 | |
| 9/25 | #6: Review of Thermodynamics of Non-Ideal Mixtures  
- Azeotropy  
- Residue Curves  
- Distillation Boundaries | SSLW Chapter 8  
Pages 223-230 | #1: 8.1, 8.2, 8.3 |
| 10/2 | #7: Algorithmic Methods for Process Synthesis – Part III  
- Separation of Non-Ideal Mixtures  
Review for Midterm Exam | SSLW Chapter 8  
Pages 230-251 | #2: 8.14b-d, 8.15 |
| 10/9 | Midterm Exam | | |
| 10/16 | #8: Mathematical Optimization  
- Solution of LP, NLP, MILP, MINLP  
- Introducing LINGO Solver Software | SSLW Chapter 24  
Pages 642-661 | |
| 10/23 | #9: Heat and Power Integration - Targeting  
- Temperature Interval Method  
- Composite Curve Method  
- Thermal Pinch Analysis | SSLW Chapter 9  
Pages 252-261 | #3: 24.1 + Handout |
| 10/30 | AIChe Annual Meeting, Pittsburgh, PA | | |
| 11/6 | #10: Heat and Power Integration – Network Design  
- Maximum Energy Recovery Networks | SSLW Chapter 9  
Pages 261-280 | #4: 9.1, 9.2 |
| 11/13 | Class Review | | |
| 11/20 | Thanksgiving Holiday | | |
| 11/27 | Class Review | | |
| 12/3 | Final Exam (8:00 – 10:30 AM) | | |

**NOTE:**

If normal class and/or lab activities are disrupted due to a high number of students experiencing illness or an emergency or crisis situation (such as a widespread H1N1 flu outbreak), the syllabus and other course plans and assignments may be modified to allow completion of the course. If this occurs, an addendum to your syllabus and/or course assignments will replace the original materials.