

<b>INSTRUCTOR</b>	Dr. Daniel E. Meeroff Class Time: TBA Office Hours: TBA	Telephone: 561-297-3099, E-mail: <a href="mailto:dmeeroff@fau.edu">dmeeroff@fau.edu</a>
<b>COURSE DESCRIPTION</b>	<b>Engineering Chemistry Lab (1 credit)</b> <b>Prerequisites:</b> MAC 1105 College Algebra or equivalent <b>Co-requisites:</b> EGN2095 Engineering Chemistry Experiments and demonstrations in fundamental quantitative concepts and principles of stoichiometry, kinetics, equilibrium, and organic chemistry most relevant to practical engineering disciplines.	
<b>TEXTBOOK &amp; OTHER REQUIREMENTS</b>	<ul style="list-style-type: none"> <li>• Lab Manual Supplement included in special edition of Brown and Holme 2011.</li> <li>• Handouts provided by instructor</li> <li>• Blackboard registration</li> </ul> <b>Other useful references:</b> <ul style="list-style-type: none"> <li>• L.S.Brown and T.A. Holme, <i>Chemistry for Engineering Students</i>. Special Edition. Thompson (Brooks / Cole) Publishers, 2011</li> <li>• L.S.Brown and T.A. Holme, Thompson (Brooks / Cole) Publishers, 2006 (ISBN 0-534-38974-0)</li> <li>• Leonard Fine, Herbert Beall, John Stuehr <i>Chemistry for Scientists and Engineers</i>, 1st Edition, 2000. ISBN-10: 0030312914   ISBN-13: 9780030312915.</li> <li>• Mary Jane Shultz, <i>Chemistry for Engineers: An Applied Approach, 1st Edition</i>, ISBN-10: 0618271945 ISBN-13: 9780618271948</li> <li>• James Glanville, <i>General Chemistry for Engineers, 2/E</i>, Prentice Hall, 2004. ISBN-10: 0131449559, ISBN-13: 9780131449558.</li> <li>• Leonard W. Fine. <i>Chemistry for Scientists and Engineers, Preliminary Edition</i>. Saunders Golden Sunburst Series. 2007.</li> <li>• Sawyer, McCarty, and Parkin, <i>Chemistry for Environmental Engineering and Science</i>, Fifth Edition, McGraw-Hill, Inc., 2003 (ISBN:0-07-248066-1)</li> <li>• Snoeyink, V.L. and Jenkins, D., <i>Water Chemistry</i>. John Wiley &amp; Sons, 1980.</li> <li>• Sawyer and McCarty, <i>Chemistry for Environmental Engineering</i>, Third Edition, McGraw-Hill, Inc., 1978</li> </ul>	
<b>TOPICS</b>	<ol style="list-style-type: none"> <li>1. Lab Safety</li> <li>2. Matter and Measurement</li> <li>3. Properties of Atoms, Elements, Molecules, Ions</li> <li>4. Properties of Compounds, Mixtures, Solutions</li> <li>5. Engineering Applications of Chemical Formulas, Chemical Equations, and Stoichiometry</li> <li>6. Engineering Applications of Gas Laws</li> <li>7. Engineering Applications of Equilibrium Reactions</li> <li>8. Kinetics and Reactor Design</li> <li>9. Basic Organic Chemistry</li> </ol>	
<b>COURSE OBJECTIVE</b>	<ol style="list-style-type: none"> <li>I. Present the fundamental concepts of stoichiometry, equilibrium, kinetics, and organic chemistry as applied to engineering.           </li> </ol>	
<b>COURSE OUTCOMES &amp; RELATIONSHIP TO ABET A –K OUTCOMES</b>	<ol style="list-style-type: none"> <li>A. Ability to understand the fundamental concepts of conservation of mass, stoichiometry, gas laws, kinetics, equilibrium, and organic chemistry necessary to analyze basic engineering problems. (a, b, c, e, f, h, k)</li> <li>B. Ability to understand spectroscopic methods and creating calibration curves and dilutions (b, e, f, h, j)</li> <li>C. Ability to function on multi-disciplinary teams (d, e, f, h, j, k)</li> <li>D. Ability to communicate effectively about issues of chemistry in engineering (d, e, f, g, i)</li> </ol>	



<b>Laboratory Schedule</b>		
<b><i>This is a tentative schedule of topics to be covered.</i></b>		
<b>Week</b>	<b>Topics</b>	<b>Assignments</b>
<b>1</b>	<b>Introduction</b> <ul style="list-style-type: none"> <li>• Units of Measurement, Accuracy/Precision, Significant Digits</li> <li>• Engineering Experimental Methods</li> <li>• Recording Data &amp; Statistics and Graphing</li> <li>• Practicing Safety in the Chemistry Laboratory</li> <li>• Laboratory Report Writing for Engineers</li> </ul>	<ul style="list-style-type: none"> <li>• Lab Manual</li> </ul>
<b>2</b>	<ul style="list-style-type: none"> <li>• Introduction Review</li> <li>• Pre-Lab #1 Stoichiometry</li> <li>• Pre-Lab #2 Beer's Law</li> </ul>	<ul style="list-style-type: none"> <li>• Lab Safety Quiz</li> <li>• Syllabus Quiz</li> </ul>
<b>3</b>	<ul style="list-style-type: none"> <li>• Lab #1 Stoichiometry lab</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-Lab#1 Due</li> </ul>
<b>4</b>	<ul style="list-style-type: none"> <li>• Lab #2 Beer's Law lab</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-Lab #2 Due</li> </ul>
<b>5</b>	<ul style="list-style-type: none"> <li>• Methodology Review</li> <li>• Pre-Lab #3 Gas Laws</li> <li>• Pre-Lab #4 Kinetics</li> </ul>	<ul style="list-style-type: none"> <li>• Lab#1 Due</li> </ul>
<b>6</b>	<ul style="list-style-type: none"> <li>• Lab #3 Gas Laws lab</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-Lab #3 Due</li> <li>• Lab #2 Due</li> </ul>
<b>7</b>	<ul style="list-style-type: none"> <li>• Lab #4 Kinetics lab</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-lab #4 Due</li> </ul>
<b>8</b>	<ul style="list-style-type: none"> <li>• Results Review</li> <li>• Pre-Lab #5 pH Acid Neutralization</li> <li>• Pre-Lab #6 Photometric Determination of <math>K_{eq}</math></li> </ul>	<ul style="list-style-type: none"> <li>• Pre-Lab #5 Due</li> <li>• Lab #3 Due</li> </ul>
<b>9</b>	<ul style="list-style-type: none"> <li>• Lab #5 pH Acid Neutralization lab</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-Lab #6 Due</li> </ul>
<b>10</b>	<ul style="list-style-type: none"> <li>• Lab #6 Photometric Determination of <math>K_{eq}</math> lab</li> </ul>	<ul style="list-style-type: none"> <li>• Lab #4 Due</li> </ul>
<b>11</b>	<ul style="list-style-type: none"> <li>• Conclusions Review</li> <li>• Pre-Lab #7 <math>K_{sp}</math> precipitation reactions</li> <li>• Pre-Lab #8 Organics Jeopardy</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-Lab #7 Due</li> </ul>
<b>12</b>	<ul style="list-style-type: none"> <li>• Lab #7 <math>K_{sp}</math> precipitation reactions lab</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-Lab #8 Due</li> <li>• Lab#5 Due</li> </ul>
<b>13</b>	<ul style="list-style-type: none"> <li>• Lab #8 Organics Jeopardy</li> </ul>	<ul style="list-style-type: none"> <li>• Lab #6 Due</li> </ul>
<b>14</b>	<ul style="list-style-type: none"> <li>• Review</li> </ul>	<ul style="list-style-type: none"> <li>• Lab #7 Due</li> </ul>
<b>15</b>	<b>Final Exam</b>	<ul style="list-style-type: none"> <li>• Lab #8 Due</li> </ul>