Computer Aided Chemical Engineering

CHEN 3600 Summer 2017 Course Syllabus

**Instructor:** Dr. W. Robert Ashurst, 244 Ross Hall, 844-2559, ashurst@auburn.edu

Office Hours: T, H: 11:00 AM - Noon in Ross 244 and by appointment as needed by arrangement.

**GTA:** Zuo Zeng, zzz0057@auburn.edu, Office Hours: TBD.

**Combined Lecture/Laboratory:** M, W: 8:00 – 9:15 AM, Ross Hall, Room 306 (Uthlaut Computer Lab) T, H: 9:45 – 11:00 AM, Ross Hall, Room 306 (Uthlaut Computer Lab)

**Prerequisites:** COMP 1200, MATH 2650. Completion of CHEN 2610 with a grade of C or higher.

**Bulletin:** Systematic approach to solving chemical engineering problems using analytical and synthetic approaches. Effective communication of problem solution and recommendations using established formats for writing elements. General and structured programming concepts, introductory probability and statistics concepts. Application to chemical engineering problems involving material and energy balances and transport process, data validation and analysis.

**Objectives:** The overall goals of the course are to provide a solid introduction to systematic problem solving methods as well as effective technical writing skills. Students will receive instruction in the use of the software product MATLAB®. Students will master general programming concepts as well as gain an appreciation of formal problem solving methodology. Structured programming is stressed with emphasis placed on problem formulation. Example problems and laboratory projects draw from the chemical engineering field whereby the student learns to apply appropriate software techniques and/or numerical methods. Problems will be taken from the areas of material and energy balances, fluid mechanics, thermodynamics, transport, kinetics, data fitting and analysis of experimental data and steady state and dynamic modeling. The course instruction stresses the characteristics and standards employed in effectively communicating engineering data and problem results.

**Required Resources:**


**Recommended/Reference Texts:**

**Webpage:** Necessary course information will be posted on the web. You are expected to check the web site before classes for new information.

http:\\www.eng.auburn.edu\~ashurwr\classes.html

**Grades:** The overall course grade will be determined by performance in both the lecture and laboratory. There is no distinction between laboratory homework or quizzes and lecture homework or quizzes.

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage of Final Grade</th>
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<tbody>
<tr>
<td>Quizzes/Homework/Lab Assignments</td>
<td>11%</td>
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<tr>
<td>Course Project</td>
<td>11%</td>
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<tr>
<td>Midterm Exam I</td>
<td>11%</td>
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<td>Midterm Exam II</td>
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<tr>
<td>Midterm Exam III</td>
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<tr>
<td>Final Exam</td>
<td>45%</td>
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Additional detail on grades and exams is provided in a separate document “CHEN 3600 Summer 2017 Course Grading Policy” and is incorporated herein by reference.

**Homework:** Unless explicitly stated to the contrary, homework and lab assignments are to be turned in at the beginning of class (or lab) on the day they are due. No late homework will be accepted unless arrangements have been made with Dr. Ashurst in advance of (i.e., at least 24 hours before) the due date. Handwritten homework is required to follow the standard departmental format. MATLAB printouts must be made with “Cell Mode” and “Published” and be easily readable.

**Quizzes:** Quizzes (announced or unannounced) may be given at any time during a lecture or lab session. The duration of quizzes may vary from 1 to 30 minutes based on the complexity of the material. Quizzes are closed book and may contain multiple choice, true/false, short answer questions, or problems similar to the homework and examples. Partial credit will be given if appropriate for the problem.

**Lab Assignments:** Laboratory assignments may consist of a central problem (potentially with sub-parts) at a level generally more involved than problems from a standard homework set. Students are expected to spend about one week per lab assignment and turn in the requested information (answers, plots, etc.) in standard homework format (or standard MATLAB format as applicable). Hand drawn plots are not acceptable under any circumstance.

**Course Project:** The course project will be announced during the first few weeks of the course. This semester long project is to be individual work. The final project report as well as graded interim reports are to be provided in standard departmental reporting formats. Neither late nor handwritten reports will be accepted. All reports will be graded for technical accuracy as well as writing quality. All reports must adhere to the standard department format for technical reports/memos.

**Exams:** Exams will be conducted during laboratory times. Exams will be closed book, and additional calculator/portable electronics policies may be enforced. The calculator
policy for CHEN 3600 is simply that no calculators are allowed. All exams are designed to be solved using commands that are available in the following licensed products: MATLAB®, the MATLAB® Optimization Toolbox, the MATLAB® Statistics Toolbox and the MATLAB® Symbolic Math Toolbox. The three specifically aforementioned toolboxes comprise the “Standard Set” of toolboxes. Each of these are included in the Student Version of MATLAB®. While other toolboxes are sometimes available, there is no guarantee of their availability during an exam. Therefore the use of toolboxes not in the standard set is not allowed in CHEN 3600.

Any MATLAB® functions developed during in-class activities are available resources for use during an exam. Students are strongly encouraged to make use of this allowance. Furthermore all MATLAB® documentation that is accessed through the doc or help commands is also available for use on exams.

**Policies:** If you have a conflict with Dr. Ashurst’s office hours, an alternate time can be arranged. To set up this meeting, please contact Dr. Ashurst by e-mail. Assigned seating may be employed for any quiz or exam.

Late assignments of any kind will not be accepted without prior arrangement. Quizzes, homework, reports and all other graded material except exams will be available for pick-up from your GTA after grades have been assigned and recorded. You are advised to keep all graded materials in case there is a question about your course grade.

Graded assignments and quizzes can be made-up only for university excused absences. University excused absences must be resolved within one week after the student returns to class. It is the student’s responsibility to arrange for any make-up assignments due to an excused absence. The student must initiate the process of make-up work within two class periods after the student returns to class. Dr. Ashurst only accepts official excuses issued by Engineering Student Services. Students should take their excuse to 1210 Shelby Center and obtain an official memorandum from Engineering Student Services.

Policies regarding class attendance and academic honesty are specified in the Auburn University Student Policy eHandbook and the Department of Chemical Engineering policies. Academic dishonesty will be reported to the Academic Dishonesty Committee.

Students who need special accommodations are asked to arrange a meeting the first week of classes, or as soon as possible if accommodations are needed immediately. Bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have an Accommodation Memo but need accommodations, make an appointment with the Program for Students with Disabilities, 1244 Haley Center, 844-2096.

**Reference Materials:** Certain reference material may be placed on reserve in the RBD library. Check the course website for additional details.

**Make-up Classes:** In the event of a University-wide cancellation of classes (due to weather, for example), make-up classes as appropriate may be scheduled at irregular times or locations.
**Attendance Policy:** College work requires regular class attendance as well as careful preparation. It is the expectation of Auburn University and Department of Chemical Engineering that students attend all their scheduled classes. Specific policies regarding class attendance are the prerogative of individual faculty members. This policy shall be presented to the class, in writing, at the beginning of the term and will govern the actions of the instructor in the course.

The attendance policy for CHEN 3600 is as follows: Students who have more than four (4) unexcused absences will automatically be assigned the grade of FA (failing due to excessive absences). An unexcused absence is defined as any absence not consistent with the definition of an excused absence as interpreted by Engineering Student Services. Documentation for excused absences must be provided to the instructor within a week of the “return to classes” date. The only acceptable form of documentation is a memorandum of excuse from the Engineering Student Services office. This attendance policy will be enforced regardless of the performance of the student in coursework.

Please note: Attendance will be determined by various means including taking roll, taking quizzes, GTA observation, etc. Quizzes are frequently given at the beginning of class, therefore, you will be considered absent if you arrive after the quiz is collected. You will also be considered absent if the quiz is submitted in an unacceptable fashion (see Submission of Electronic Materials).

**Academic Honesty Policy:** In order to articulate fully its commitment to academic honesty and to protect members of its community from the results of dishonest conduct, Auburn University has adopted policies to deal with cases of academic dishonesty. These policies are intended not only to emphasize the imperative of integrity, but also to protect the rights of all members of the university community. The complete academic regulations concerning cheating are located in the Student Policy eHandbook (section A.1), Code of Laws, Title XII, Student Academic Honesty Code, Chapters 1200-1203.

The Departmental Honesty Statement is: By affixing my signature below, I acknowledge I am aware of the Auburn University policy concerning academic honesty, plagiarism, and cheating. This policy is defined in the current Student Policy eHandbook (A.1), Code of Laws, Title XII, Student Academic Honesty Code, Chapters 1200-1203. I further attest that the work I am submitting with this exam is solely my own and was developed during the exam. I have used no notes, materials, or other aids except those permitted by the instructor.

The following information is the implementation and delineation of those policies by the above faculty member.

When a student is suspected of violating academic honesty standards, the faculty member will, as soon as reasonably possible, notify the student of the suspected infraction, seek the student’s explanation, undertake any further investigation the faculty member considers appropriate, and initially determine whether a violation of the academic honesty policy has likely occurred.

If an act of academic dishonesty is determined to have likely occurred the matter will be reported to the Auburn University Academic Honesty Committee.
Forms of Academic Dishonesty

*Plagiarism* is the inclusion of someone else’s words, ideas, or data as one’s own work. When a student submits work for credit that includes the words, ideas, or data of others, the source of that information must be acknowledged through complete, accurate, and specific references, and, if verbatim statements are included, through quotation marks as well. By placing his/her name on work submitted for credit, the student certifies the originality of all work not otherwise identified by appropriate acknowledgments. Plagiarism covers unpublished as well as published sources.

Examples of plagiarism include, but are not limited to: 1. Quoting another person’s actual words, complete sentences or paragraphs, or an entire piece of written work without acknowledgment of the source; 2. Using another person’s ideas, opinions, or theory, even if it is completely paraphrased in one’s own words without acknowledgment of the source; 3. Borrowing facts, statistics, or other illustrative materials that are not clearly common knowledge without acknowledgment of the source; 4. Copying another student’s essay test answers; 5. Copying, or allowing another student to copy, a computer file that contains another student’s assignment, and submitting it, in part or in its entirety, as one’s own; or 6. Working together on an assignment, sharing the computer files and programs involved, and then submitting individual copies of the assignment as one’s own individual work. Students are urged to consult with individual faculty members, academic departments, or recognized handbooks in their field if in doubt regarding issues of plagiarism.

*Fabrication* is the use of invented information or the falsification of research or other findings. Examples include, but are not limited to: 1. Citation of information not taken from the source indicated. This may include the incorrect documentation of secondary source materials; 2. Listing sources in a bibliography not used in the academic exercise; 3. Submission in a paper, thesis, lab report, or other academic exercise of falsified, invented, or fictitious data or evidence, or deliberate and knowing concealment or distortion of the true nature, origin, or function of such data or evidence; or 4. Submitting as your own any academic exercises (e.g., written work, printing, sculpture, etc.) prepared totally or in part by another.

*Cheating* is an act or an attempted act of deception by which a student seeks to misrepresent that he or she has mastered information on an academic exercise that he or she has not mastered. Examples include, but are not limited to: 1. Copying from another student’s test paper; 2. Allowing another student to copy from a test paper; 3. Unauthorized use of course textbook or other materials such as a notebook to complete a test or other assignment from the faculty member; 4. Collaborating on a test, quiz, or other project with any other person(s) without authorization. 5. Using or processing specifically prepared materials during a test (e.g., notes, formula lists, notes written on the students clothing, etc.) that are not authorized; or 6. Taking a test for someone else or permitting someone else to take a test for you.

*Academic Misconduct* includes other academically dishonest acts such as tampering with grades or taking part in obtaining or distributing any part of an administered or unadministered test. Examples include, but are not limited to: 1. Stealing, buying, or
otherwise obtaining all or part of an administered or unadministered test; 2. Selling or giving away all or part of an administered or unadministered test including questions and/or answers; 3. Bribing any other person to obtain an administered or unadministered test or any information about the test; 4. Entering a building or office for the purpose of changing a grade in a grade book, on a test, or on other work for which a grade is given; 5. Changing, altering, or being an accessory to the changing and/or altering of a grade in a grade book, on a test, a “change of grade” form, or other official academic records of the University that relate to grades; 6. Entering a building or office for the purpose of obtaining an administered or unadministered test; 7. Continuing to work on an examination or project after the specified allotted time has elapsed; 8. Any buying or otherwise acquiring any theme report, term paper, essay, computer software, other written work, and handing it in as your own to fulfill academic requirement; or 9. Any selling, giving, or otherwise supplying to another student for use in fulfilling academic requirements any theme, report, term paper, essay, computer software, or other written work.

**Electronic Device Policy:** Restricted electronic devices (such as cell phones, pagers, pen cams, etc.) may not be used at any time during an exam, class or lab. Please turn off or set to silent mode any “signaling” devices. Restricted electronic devices must not be accessible during exams (please place in backpacks, etc.). Any restricted electronic devices visible during an exam or final will be considered an act of academic dishonesty as defined above. Disruptions of the class by “signaling” devices during examinations will result in loss of 10% of the exam credit.

**Website and E-Mail:** Homework assignments and certain other course material will be accessed through the course website. Students are expected to check the course website and their e-mail regularly. The university recognizes e-mail as an official form of communication. **When sending e-mail to Dr. Ashurst, you must specify CHEN 3600 SU17 in the “subject” field. When sending files to Dr. Ashurst, always prefix them with “username_”.** (For example, my file foo.m would need to be named ashurst_foo.m.) Additional requirements regarding e-mail communication and electronic file submission are provided in a separate document “CHEN 3600 Summer 2017 Policy on Electronic Submission of Course Material” and is incorporated herein by reference.

**Policy Concerning Hardcopy Submission of Materials:** Unless otherwise indicated, all assignments are to be submitted as either a hardcopy or e-mailed as an electronic submission. All typed hardcopy submissions of any form must be initialed as per instructions provided in class. Personal work is initialed to indicate the item being submitted has been carefully proofread and represents the final (and presumably best) work of the individual. Un-initialed work may be little more than a rough draft or something mistakenly turned in. In CHEN 3600, it is assumed all work represents the students best effort and has been carefully proofread.

Assignments submitted in hardcopy form without appropriate initials are unacceptable. If applicable, group (team) assignments submitted in hardcopy without each team members initials is also unacceptable. Forgery of initials will be considered to be an act of academic dishonesty.
Participation in Assessment Efforts: Each Auburn student is expected to participate in the University’s assessment efforts. Academic programs use various means to gather assessment information, including portfolios, performances, achievement tests, comprehensive examinations, surveys, interviews, focus groups, evaluation forms, and other methods. While enrolled, a typical student can expect to take part in one or more of these assessment activities. Participation in these activities may be a completion requirement for some degree programs.

Unapproved Computer Activities: It is a class policy that during class time (both lectures and labs), students are expected to focus on the lectures and other class activities. **Students may not engage in any other computer activities during official class time** not specifically endorsed by the instructor. This policy prohibits emailing, web surfing, working on assignments for other courses, playing games, texting, or using any software not directly related to the current lecture or lab activities. The instructor and/or GTA will note the name of any student determined to be in violation of this policy and a notation will be made in the grade sheet. Each violation will result in a loss of one letter grade for the course. There are **no exceptions** to this policy.

Food or Drink: There is to be no food or drink in the computer laboratory. Any visible food or drink items will be noted and associated with their owner and/or immediately disposed of. Names of students that bring food or drink into the lab will be reported to the Department Chair (and Engineering Network Services), and may result in having their computer accounts disabled.