

Fall 2020

CHE 495-003: Chemical Engineering Lab I

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SYLLABUS FOR CHE 495

Pre-requisite Courses:

ChE 370 (Heat & Mass Transfer), Eng 352 (Technical Writing),
Math 225A (Survey of Probability & Statistics for ChEs)

Class Meetings:

Section 003: Tuesdays 2:30-4:35 PM
 Thursdays 2:30-4:35 PM

Attendance is Mandatory! If you need to miss class, let me know in advance if you can. Make sure your group knows in advance of your absence, if you can. As the class will be held in converged learning, it means that on the days you are not physically in the lab, you will be on WebEx. During WebEx, your camera must be on at all times. Attendance may be taken. Professional behavior is expected!

Instructor Information:

Office Hour: Thursdays 11:05-12:30 PM
WebEx: <https://njit.webex.com/meet/sbasuray>
Office Phone: (973) 596-5706
Fax: (973) 596-8436
Email (preferred contact mode): sbasuray@njit.edu

Teaching Assistants:

Shawn Yetman (shawn.yetman@njit.edu)
Lixin Feng (lf72@njit.edu)
Elif Irem Senyurt (es439@njit.edu)

Note that the instructor grades all student work. The TA only assists during lab classes.

Course Requirements and Grading: (For Converged Mode)

Four experiments will be assigned to each group. All reports and presentations are to be group efforts and submissions. Submitted reports should be hardcopy. Electronic submissions are allowed only with permission of the instructor.

- Industrial Memo 25 %
- Oral presentation (PPT - peers) 25 %
- Scholarly paper 25 %
- Oral presentation (PPT - management) 25 %

NOTE: Draft written reports (Industrial Memo, Scholarly Paper - due after experiment is completed (see schedule). These will be returned with comments and a draft grade. Final drafts are due 1 week after return. This policy will be enforced. There are no graded “first drafts” of PPT slides for the Oral presentations, but you’re encouraged to show drafts to the instructor for helpful comments.

Course Requirements and Grading: (For Online Only)

Four experiments will be assigned to each group. All reports and presentations are to be group efforts and submissions. Submitted reports should be hardcopy. Electronic submissions are allowed only with permission of the instructor.

- Industrial Memo 20 %
- Oral presentation (PPT - peers) 20 %

- Scholarly paper 20 %
- Oral presentation (PPT - management) 20 %
- Project 20 %

NOTE: Draft written reports (Industrial Memo, Scholarly Paper - due after experiment is completed (see schedule). These will be returned with comments and a draft grade. Final drafts are due 1 week after return. This policy will be enforced. There are no graded “first drafts” of PPT slides for the Oral presentations, but you’re encouraged to show drafts to the instructor for helpful comments.

Groups:

Determined 1st class by the instructor; Rotating group leader - Self-policing (PROFESSIONAL CONDUCT EXPECTED!) Peer & Self Evaluations done after Experiments 1 and 2, and again after Experiments 3 and 4. Results will impact individual final course grades! So take your group responsibilities seriously.

Canvas Site: <http://canvas.njit.edu> --- Please check this site and your email often (at least once a day). Project details, in-class work, and useful memos will be posted here.

Math Solver: You must have access to and know how to use one math solver software package. Examples include *Polymath*, *Maple*, *Matlab*, *Mathcad*, and *Mathematica*. All of the software are available for download. Please reach out to Shawn Yetman if you need help. Separate instructions are provided for the software required for the project section. Three podcasts (Algebraic Equations, ODE’s, Regressions) are available in the Media Gallery of the course *Canvas* site to help you learn *Polymath*, if you choose to use it.

Lab Manual:

Laboratory Manual for ChE 495 – Fall 2019 --- available on *Canvas* site in 2 parts:

→ Introduction → Experiments

Safety Lecture:

A mandatory lab safety lecture by Mr. Yetman will be provided immediately after the course introduction on the first class meeting. Attendance will be taken.

Information Literacy Lecture:

A mandatory Information Literacy lecture provided by Sagnik Basuray on behalf of the NJIT Library staff. Attendance taken. See Master Schedule.

Policy on Integrity:

Professional behavior is expected at all times in this course.

- Every student expected to his/her fair share of the work load within the group
- Safety-conscious behavior in the labs is required at all times
- Use of data and/or reports not your own, unless instructor-authorized, is prohibited
- Submission/completion of work in a timely manner is expected
- If you use *Polymath*, you will follow the license guidelines – no commercial use.

Specific goals (Learning Attributes) for the course:

a. Students will be able to:

1. Operate fluid flow applications (pipe flow, packed tower), and collect quality data, including pressure drops

2. Operate heat exchangers (transient, steady state), and collect quality data, including fluid stream temperatures
 3. Analyze data, and apply appropriate theoretical models in fluid flow and heat transfer
 4. Plan an experiment and take enough data to get meaningful results
 5. Handle their data ethically and correctly, and appreciate the dynamic between data and models
 6. Present their results critically, and draw useful conclusions
 7. Present their results using quality plots and tables that reveal key relationships
 8. Analyze audiences and tailor their reporting for optimal communication
 9. Report their data and analyses consistent with the assigned reporting structure
- b.** This course explicitly addresses the following ABET student outcomes: 1, 2, 3, 4, 6
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
 2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
 3. An ability to communicate effectively with a range of audiences
 4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
 6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Student Disability Services:

NJIT is committed to providing students with documented disabilities equal access to programs and activities. If you have, or believe that you may have, a physical, medical, psychological, or learning disability that may require accommodations, please contact Student Disability Services. Information on the self-identification, documentation and accommodation process can be found on the webpage at: <http://www.njit.edu/counseling/services/disabilities.php>.

Statement of Academic Integrity

“Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: <http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu”