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Fall 2020

## ME 405-005: Mechanical Lab II

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**NEW JERSEY INSTITUTE OF TECHNOLOGY - MECHANICAL & INDUSTRIAL ENGINEERING**

**ME 405-005 - Mechanical Lab II**

**Fall 2020**

This is the course that originally was conducted face-to-face, but due to the coronavirus pandemic was converted to the online course. The course platform is <https://canvas.njit.edu/>. The class meets using videoconferencing software.

**Instructor:** Dr. Alexandre Ermoline

**E-mail:** [alexandre.ermoline@njit.edu](mailto:alexandre.ermoline@njit.edu)

**Virtual Meeting Link:** Posted in Canvas.

**Class Meeting Times:** Thursday from 12:30 PM to 3:20 PM

**Office Hours:** By appointment

**Required Textbook:** Mechanical Laboratory II Manual. Available in Canvas (<https://canvas.njit.edu>)

**Required Equipment:** High-speed internet connection  
Webcam (internal or external)  
Microphone and Audio (internal or external)  
Windows or Apple Operating System

If you do not have a webcam, strong internet connection, or have trouble accessing needed equipment, please contact the Dean of Students office (see <https://www.njit.edu/dos/contact.php>).

**Required Software:** Microsoft Word, Microsoft Excel.

**Course Prerequisite:** ME 343, ME 312

**Course Corequisite:** ME 407

**Course Description:** Laboratory emphasizes the use of fundamental principles, and instrumentation systems, for the analysis, and evaluation of mechanical components within a system.

**Course Policy:**

**Virtual class meetings** will be conducted using videoconferencing tool (the link in Canvas) each Thursday, from 12:30 to 3:20 pm.

**The class meeting link** and the password are posted in Canvas. Any changes will be updated in Canvas. Therefore, the best way to attend meeting is using the link posted in the Canvas.

**Attendance** will be taken. Students are expected to attend remote class meetings.

**The final grade** takes into account the following components:

- **five lab reports** - two reports out of five will be counted towards the final grade; nevertheless, all the reports must be submitted; if any report is missing, it will be selected to be counted in a final grade as zero.
- **five preliminary reports** - before submitting the final report, the preliminary report must be handed in. Preliminary reports include all the calculations and some graphs. While students should get ready to the preliminary report at home, it will be completed in class with the help of instructor and/or TA.
- **two tests** aimed to test theoretical material covered in class and learned during data processing and report writing.

The **requirements for the lab** reports will be discussed in class. The detailed **rubric** for each report is available in Canvas.

Due to the coronavirus situation, **the laboratory module** will be held **online**. In an effort to most effectively replicate laboratory experience, the instructional team has prepared documents that overview the experimental equipment including videos with demonstration of experiments by technicians.

**Groups** will be formed during the first class. Data will be disseminated to each group via Canvas on the date the laboratory would have normally occurred.

Both preliminary and complete **lab report** is the result of individual work. Data will be distributed to groups, but everybody submits his/her own individual report.

**No late submissions and resubmissions** of the lab reports (preliminary and final) after a due day will be accepted.

The reports must be submitted **in time**, otherwise the zero grade will be assigned for the lab. The detailed course schedule with the deadlines for the preliminary and final reports are uploaded to Canvas.

**Plagiarism** checks are in place for lab reports, when an excessive amount of plagiarism is found, a grade of zero will be given for that lab report. A scan or other image saved as a PDF is not readable for a plagiarism check. Accordingly, such files are also deemed unacceptable and given a grade of zero since they cannot be evaluated consistently with the rest. The exception is the original data sheet that may be scanned as part of the overall lab report.

The optional **hands-on lab experience** can be provided for those students who wish to attend the laboratory in-person. The sign up form will be available in Canvas during first week of the semester. The separate safety instruction session will be held with those who sign up for the in-lab experience.

All **tests** are **closed book, closed notes** unless specified otherwise.

The tests will be proctored with the help of **Respondus LockDown Browser** and **WebCam**. Respondus LockDown Browser is a locked browser for taking tests in Canvas. It prevents you from printing, copying, going to another URL, or accessing other applications during a quiz. You will not be able to take the test with a standard web browser. You WILL be required to use LockDown Browser with a webcam (Respondus Monitor), which will record you during an online exam. Please, take your time to learn more at <https://ist.njit.edu/respondus/>.

**No makeup tests** will be conducted.

**Failure to show up for an exam or for the lab** will result in a grade of zero for that exam or a lab. In extreme cases (i.e., unforeseen sickness, etc.) the

student must notify the professor and dean of students office within 48 hours after the originally scheduled exam. In the email sent to the dean of students office, students should at a minimum include the following: (i) name; (ii) ID number; (iii) course and section; (iv) professor's name and email; (v) regularly scheduled exam time; (vi) valid evidence for the unforeseen extraordinary circumstance that caused absence.

**Mobile phones, smart watches, headphones and similar electronic devices** are expected to remain out of sight during the test - the sight of any resource that was not approved by the instructor in advance will be considered a violation of academic integrity code with the corresponding consequences (see below).

**A letter grade** is based on the weighted average score, a table of average score-letter grade categories (see above). The scale converting numerical to letter grades may be changed.

If a student has **questions about the grade** he/she has received on an exam, homework, or quiz, he/she must talk to the instructor (or the teaching assistant where appropriate) as soon as possible, no later than a week after the graded activity has been returned to students. No grade change will be made after the one week period.

**All the necessary course material** will be uploaded to Canvas including but not limited to: lab manuals, experimental data, rubrics, course schedule, recorded lectures, etc.

In addition to the virtual meetings, important ways of communication are **Canvas announcements and e-mail**. All essential information will be announced in Canvas and distributed by e-mail. Check your e-mail and Canvas site often. It is student's responsibility to be aware of all possible events and changes. E-mail use is encouraged. Please, feel free to e-mail me with any questions, concerns, and suggestions.

**Office hours** are by appointment. Do not hesitate to send me an e-mail requesting an additional meeting at the time that suits you well. These meetings, as any other meetings, will be conducted remotely.

**The NJIT Integrity Conduct Code** will be strictly enforced. Any violations will be reported to the Dean of Students.

<b>Grading:</b>	Lab Reports	50 %
	Exam 1	20 %
	Exam 2	20 %
	Preliminary reports	10 %

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Total= 100 %

Letter Grades (Tentative - Subject to Change): **A:** 90 - 100% ; **B+:** 84 - 89%; **B:** 78 -83% **C+:** 72 - 77%; **C:** 66 - 71%; **D:** 60 - 65%; **F:** 0 - 59%.

**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](mailto:dos@njit.edu).*

**Class Topics**

1. Introduction to ME laboratory II.
2. Performance test of a centrifugal pump.
3. Performance test of a gear pump.
4. Performance test of an impulse turbine.
5. Wind tunnel experiment of pressure distribution around a cylinder.
6. Transient heat conduction in bodies of finite length.
7. Presentation/discussion of lab reports.
8. Review.