

**MEC 301 THERMODYNAMICS**  
FALL 2016

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**Instructor:** Prof. Jon Longtin, 135 Light Engineering Building, 632-9436, Jon.Longtin@stonybrook.edu

**Time and Location:** Mon, Wed, Fri 11:00–11:53am, 102 Frey Hall

**Office Hours:** 3:00 – 4:30 pm Monday; 4:00 – 5:30pm Wednesday

*Please note:* I can only provide very limited email support to the course. There are ~150 people registered for this class. I am likely not going to be able to answer convenience questions such as what we covered in class, what will be on the exam, or how to do a particular homework problem. You will probably get a much faster and more focused answer to your question by asking questions in class, stopping by after class, and/or coming to either my or the TA's office hours.

**Teaching Assistant: Mr. Sean Hardick**

Office hours: 2:30p – 3:30p (Wed); 12:30 – 2:30 (Thur)

Location: 2<sup>nd</sup> floor break area in Heavy Engr (enter through yellow doors, walk down hall, and go up one floor)

**Student Assistant: Mr. Brian Gaaney**

Office hours: 12:30p – 2:00p (Tues and Thurs)

Location: 2<sup>nd</sup> floor break area in Heavy Engr (enter through yellow doors, walk down hall, and go up one floor)

Note: please respect the TA and student assistant's office hours; like you they are students with a demanding schedule. Also, please do not email them for help; rather see him in person. Thank you.

**Text:** *Thermodynamics: An Engineering Approach (8th ed.)*, Y. A. Çengel and M. A. Boles (2014). The textbook is required. We will also use McGraw-Hill *Connect*<sup>™</sup> for all homework assignments. The *Connect*<sup>™</sup> subscription includes electronic access to the textbook for one year, and is available online or at the bookstore or on Amazon for \$90 (ISBN: 9781260064940). Optional loose leaf hardcopy of text available (\$60), as well as bound textbook (\$275).

**Assignments:** Homework problems will be assigned every week or two. We will be using the McGraw-Hill *Connect*<sup>™</sup> online homework system. NO LATE HOMEWORK WILL BE ACCEPTED, except under documented emergencies (medical, death in the family).

**Exams:** *Two midterm exams and a final exam.*

**Grading:** *First midterm: 20%, Second midterm: 25%, Homework: 20%, Final: 35%.*

**Course Objectives:** The emphasis in this course will be on learning the fundamentals of thermodynamics and in applying them to solve real-world engineering problems. Key topical areas include the first and second laws of thermodynamics, the concept of entropy, theoretical and practical maximum efficiencies for heat engines, and refrigeration, and the basics of gas power and refrigeration cycles.

**Tips for success:** Practice makes perfect and if you read the text, study the example problems, do the assigned problems (and others if you have time), and ask questions if you are not sure about any of the above you should do well in this course. This material is cumulative; if you fall behind you will find it hard to understand what is being discussed in class. Thermodynamics is a very deceptive topic to study: the math is not difficult and the concepts, when isolated, can seem trivial, however when combined together things can get very confusing.

**Prerequisites by Topics:** Concept of mechanical energy and work, Chemistry, Multivariable calculus

**Topics:** Chapters 1–7, portions of 8, 10, and 11 (time permitting)

**The Golden Rule:** I have only one rule for this course: I will not tolerate in any way one person infringing on another's opportunity to learn in the classroom. Among other things, this means (i) absolutely no talking during class, and (ii) the use of laptop computers is strongly discouraged (they are a visual and aural distraction). Please turn your cell phones off before class. Thank you.

### **Americans with Disabilities Act**

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room 128, (631) 632-6748. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students requiring emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information, go to the following web site <http://www.ehs.sunysb.edu/fire/disabilities/asp>.

### **Statement on Academic Dishonesty**

Academic dishonesty is an extremely serious offense and will not be tolerated in any form. Academic dishonesty in general is the presentation of intellectual work that is not originally yours. Examples include, *but are not limited to*, copying or plagiarizing class assignments including homework, reports, designs, and other submitted materials; copying or otherwise communicating answers on exams with other students; bringing unapproved aids, either in physical (written) or electronic form to an exam; obtaining copies of an exam prior to its administration, etc. Academic dishonesty violates both the ethical and moral standards of the Engineering profession and all infractions related to academic dishonesty will be prosecuted to the fullest via the CEAS CASA committee. For you, the honest student, academic dishonesty results in lower class curves, hence a depression in your GPA and class standing, while cheapening the degree you earn.

### **Allowed Calculators**

Following the Mechanical Engineering Department's mandatory calculator policy, **only** the following calculators will be allowed to be used on the midterm and final exams. There will be no exceptions. This list of calculators is identical to that allowed for the *National Council for Examiners for Engineering and Surveying* (NCEES) Fundamentals of Engineering (FE) exam that many of you will take in your senior year, as well as the Professional Engineering (PE) exam that you may take several years from now. The sooner you become comfortable on one of these calculators, the better. If you have any questions on this policy please feel free to contact me. The NCEES policy on calculators can be found here: <http://ncees.org/exams/calculator-policy/>.

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| <b>Casio:</b>             | All <b>fx-115</b> models. Any Casio calculator must contain <b>fx-115</b> in its model name.   |
| <b>Hewlett Packard:</b>   | The <b>HP 33s</b> and <b>HP 35s</b> models, but no others.   |
| <b>Texas Instruments:</b> | All <b>TI-30X</b> and <b>TI-36X</b> models. Any Texas Instruments calculator must contain either <b>TI-30X</b> or <b>TI-36X</b> in its model name. |