MEC 101
ENGINEERING COMPUTING AND PROBLEM SOLVING I
Fall 2012

Instructor:  Prof. Anurag Purwar
Office:  169 Light Engineering
Phone:  631-632-8542
Email:  anurag.purwar@stonybrook.edu
Office Hours:  Monday, Wednesday 2:30 - 3:30 pm

Teaching Assistant:  Tao Zhang
Email:  zhangtao917@gmail.com
Phone number:  631-682-1519
Office Hours and location:  2-3 pm Tuesday and Thursday, Light Engineering 232

Grader (for some Homeworks):  Ping Zhao
Email:  pzhao@ic.sunysb.edu

Enrollment Requirements

Pre- or co-requisites:  AMS 151 or MAT 125 or MAT 131 or MAT 141 and PHY 125 or PHY 131 or PHY 141

Lectures

Mon and Wed 5:30-6:50pm (Javits 102)

Rules for the lectures:

1. You are required to attend all the classes. If you do miss a class for a legitimate reason, you are still responsible for finding out what was covered in that class and get lecture notes from your class-mates. Historically, students missing lectures consistently have done poorly in this class. On the other hand, I have requested with TLT that all lectures be video recorded. However, please be aware that as with all technology, there is the possibility of a hardware/software failure. You should not rely on these recordings as the sole source of instruction. You are expected to attend class and failure for a recording to occur does not count as a legitimate excuse for lack of your performance.

2. As a courtesy to other students, please don’t walk out of a lecture once you are in the class or talk to your class-mates.

3. Turn your cell phones/pagers off before a class begins.

4. No computer, cell phone, ipod, iphone, or any other device that can potentially distract your class-mates should be used during lectures. If you have an urgent need to use these devices, please leave the lecture hall before doing so.

Required Texts:

- An Introduction to Mechanical Engineering, 3rd edition by Jonathan Wickert, Publisher: CENGAGE

These books should be available for purchase or rent at the campus bookstore, however, you may also be able to find it cheaper online by using a price comparison search engine, such as addall.com or bestwebbuys.com

Website:  http://blackboard.stonybrook.edu
Grading: Homework 25% (the lowest HW grade will be dropped), Project 10%, 1 Midterm 25%, and Final 40%

Homework: Homework will be either assigned in the class or posted at blackboard. You can access Blackboard at: http://blackboard.sunysb.edu. If you have never used Stony Brook's Blackboard system, your initial password is your SOLAR ID# and your username is the same as your Stony Brook (sparky) username, which is generally your first initial and the first 7 letters of your last name. For help or more information see: https://tlt.stonybrook.edu/StudentServices/BbStudents/Pages/default.aspx. For problems logging in, go to the helpdesk in the Main Library SINC Site or the Union SINC Site, you can also call: 631-632-9602 or e-mail: helpme@ic.sunysb.edu

Homework must be turned in at the beginning of the class on the specified due date. No late homework will be accepted in any case. I will drop the lowest HW grade. Please adhere to the following guidelines for submission (Not following these guidelines will result in deduction of points by the grader)

1. Homework will be accepted only on regular A4/letter sized white or ruled paper. This rules out papers torn apart from your notebook or diary.
2. Staple neatly in top left corner. I don’t bring a stapler to the class, so please don’t ask for it.
3. Write your name and ID in the top right corner of the first page.
4. Homework will be accepted only in the beginning of the lecture.
5. HW solutions need not be typed, but they have to be done neatly.
6. To save time, the actual submission process will follow a divide and conquer approach for the collection of HWs. In each row, you should pass your HW to the student on your right, and then the last student in each row should pass it to the student ahead of him/her. The last student should put it on the professor’s table.

If you come in a few minutes late and I have already started the lecture, wait until the lecture is over to submit the HW. This should be done as an exception only, not as a rule. If I see students abusing my leniency, I reserve the right to not accept a HW submitted later than the beginning of the class.

As a rule, all HWs are due IN THE BEGINNING OF THE CLASS.

Expectations

1. Communication
   I use email and blackboard exclusively to communicate with you, and therefore, it is your responsibility to make sure that your email id is a current one on the blackboard system. I send a test email to everyone before the first class. If you do not receive it, check your settings in blackboard or your junk/spam box. I suggest that you use a university email id for this class; it is free and official. I am not responsible for the emails not delivered to your free/paid commercial email accounts. You can change your email address in blackboard yourself. Please do not ask me to do it for you. See the following link for details on how to change your email address at blackboard:
   https://tlt.stonybrook.edu/StudentServices/BbStudents/Pages/NavigatingBb.aspx#email
   If you have an administrative or grading of HW related question, please email the T.A. and grader first and copy me on the email. If the T.A. is not able to provide a satisfactory answer, then let me know.

2. Fundamentals
   From your high school level classes, you should have acquired a working knowledge of basic Trigonometry (sines, cosines, basic trigonometry formula, etc.), Geometry, and basic Physics.

Exams

Midterm: Monday, Oct 29, 2012 5:30-6:50 PM in class
Final Exam: Thursday, December 13, 2012, 8:30-11:00 PM

• All exams will be scheduled in class, unless otherwise stated

• If you miss an exam due to unforeseen events, you will have to provide me a proof of the reason, such as doctor’s certificate for a medical emergency or death certificate for death in family before I will give you a makeup exam. There will be no make-up exams for reasons that I deem are or were within your control. Thus, this rules out reasons such as pre-arranged vacation, travel, conflict with other exams or engagements.

Topics (not in order):

• Overview of the engineering profession, engineering disciplines and functions, ethical conduct and societal impact.
• Units and conversions, engineering equations, dimensional consistency, graphs. Integrated with spreadsheet usage.
• Graphical, algebraic, and numerical solutions to scalar equations. Spreadsheet usage and introduction to MatLab. Examples taken from engineering systems.
• Optimization in engineering design. Cost and safety considerations. Extrema, derivative as “black box” gradient operator (MatLab).
• Role of experiments in engineering, dimensional analysis and experimental design, curve fitting (MatLab).
• Solving systems of linear equations, matrices and vectors as mathematical elements (MatLab).
• Vectors as physical elements, introduction to engineering statics (2D), balance of forces and moments, solving large statically determinant systems with Matlab
• Material behavior and failure under uniaxial loads, stress and strain, material selection, tensile and compressive failure in structural members
• Fluid Flow around structures, Drag and Lift forces

Calculator Policy

Effective Spring, 2009 only the following calculators will be permitted to be used on all midterm and final exams in the Department of Mechanical Engineering. 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.

NCEES Allowed calculators as of Spring 2009:
- Casio: All fx-115 models. Any Casio calculator must contain fx-115 in its model name.
- Hewlett Packard: The HP 33s and HP 35s models, but no others.
- Texas Instruments: All TI-30X and TI-36X models. Any Texas Instruments calculator must contain either TI-30X or TI-36X in its model name.

The NCEES policy on calculators can be found here: http://www.ncees.org/exams/calculators/

I cannot grant an exception for the above calculator policy. You have to use one of the above permitted calculators in the exams or you may not use a calculator.

Academic Conduct and Integrity

The campus policies on academic honesty are available on the Web (http://naples.cc.sunysb.edu/CAS/ajc.nsf/pages/info). 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, computer programs, graphics, 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.

Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

**Special Note on ADA**

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.

**Critical Incident Management**

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.