



Part 1: Course Information

Course Title: MECHANICS OF SOLIDS

Course Catalog # & Section: MEC363

Credit Hours: 3

Prerequisite: A grade of "C" or better in MEC 260 or BME 260

Lectures: Tue/Thu 4:45 PM to 6:05 PM (FREY HALL 100)

Recitation for MEC363-R01: Jason Loprete
Mon 10:30 AM to 11:25 AM (LIGHT ENG ROOM 102)

Recitation for MEC363-R02: TA: Wanru Miao
Mon 4:25 PM to 5:20 PM (LIGHT ENG ROOM 102)

General Education Designation(s):

Instructor Name: Kedar Kirane

Instructor Contact Information:

Email: kedar.kirane@stonybrook.edu | Phone: NA

Office Hours: Tue, Thu 2:00 – 4:00PM, Location: 133 Light Engineering + Zoom

(Office hours will be held in a hybrid format i.e. in person + zoom. The zoom meeting links will be accessible from blackboard)

Teaching Assistants:

	TA1	TA2
Name	Jason Loprete	Wanru Miao
Office Hours	Mon 11:30 to 1:30 PM Fri 11:30 to 1:30 PM	Wed 2 to 4 pm Fri 2 to 4 pm
Location	LE 139	LE 158
Email	jason.loprete@stonybrook.edu	wanru.miao@stonybrook.edu

Course Description:

This course will cover stress and deformation of engineering structures and the influence of the mechanical behavior of materials. Concepts covered include stress and strain, constitutive relations, analysis of statically indeterminate systems, study of simple bars and beams, and stability conditions. Emphasis will be on force equilibrium, elastic response of materials, geometric compatibility, Mohr’s circle, stresses and deflections in beams, and torsion and buckling of rods. Design for bending, shear, and combined states of stress will also be covered

Required Course Textbook and Materials:

F.P. Beer, E.R. Johnston Jr., J.T. DeWolf, and D.F. Mazurek, Mechanics of Materials, Eighth Edition (8e), McGraw Hill (**with McGraw Hill Connect**).

Topics covered:

- Introduction and Concept of Stress (3 hours)
- Stress and Strain, Axially Loaded Members (6 hours)
- Torsion (6 hours)
- Pure Bending (6 hours)
- Shear Forces and Stresses in Beams (5 hours)
- Transformation of Stress and Strain (4 hours)
- Deflection of Beams (2 class hours)
- Statically Indeterminate Beams (2 hours)
- Columns, Buckling (2 hours)
- Exams and Reviews (6 hours)

Course Delivery Mode and Structure:

This is an in-person course, managed in the Blackboard learning management system (LMS). Students must be mindful of all course expectations, deliverables, and due dates. All assignments and course interactions will utilize internet technologies. See "Technical Requirements" section for more information. Regular in class lectures will be recorded and will be available to view afterwards via an echo mashup, accessible through blackboard. That said, attendance is not optional

How We Will Communicate:

For all course-related questions and other issues, my preferred method of contact is via email listed at the top of this syllabus. Preferably, your Stony Brook University email must be used for all University related communications (to avoid being marked as spam).

You must have an active Stony Brook University e-mail account and access to the Internet. *All instructor correspondence will be sent to your SBU e-mail account.* Please plan on checking your SBU email account regularly for course related messages.

Technical Requirements:

This course uses Blackboard for the facilitation of communications between faculty and students, submission of assignments, and posting of grades. The Blackboard course site can be accessed at <https://blackboard.stonybrook.edu>

The following list details a minimum recommended computer set-up and the software packages you will need to have access to, and be able to use:

- PC with Windows 10 or Macintosh with OS 10.13 or higher
- Latest version of Chrome, Firefox or Explorer;
- Internet connection

Technical Assistance:

If you need technical assistance at any time during the course or to report a problem with Blackboard you can:

- submit a help ticket on the web at <http://it.stonybrook.edu/services/itsm>)
- call (631) 632-9800 (technical support, log-in issues, computer support, wifi, software & hardware)
- call (631) 2-CELT [631-632-2358]

Part 2: Course Learning Objectives and Assessments

Learning Objectives and Activities:

Upon completion of the course, students will be able to:

1. Understand the fundamental definitions of stress, strain, constitutive relations, and equilibrium
2. Know how to analyze the mechanical behavior of real-world structures made up of bars, columns, shells, and beams subjected to axial loading, torsion, hydrostatic pressure, and bending
3. Know how to systematically approach statically indeterminate systems
4. Know how to compute principal stresses and strains
5. Understand and know how to utilize Mohr's circle
6. Have the ability to design structures for given applications in a simple and logical manner by employing the concepts of stress, strain, constitutive relations, equilibrium, and stability

Assessment tool for all above CLOs will be homework and exams

Assignments and Expectations:

- Homework is to be completed in McGraw-Hill Connect, which is accessible through Blackboard under Assignments. The course will consist of approximately 10-11 total homework assignments throughout the semester. You will need a subscription to Connect, which is available through the bookstore.
- For each problem, you will have 10 opportunities to check your work. If exhaust your 10 opportunities, you can start an additional attempt, before the due date. Thus, theoretically you have unlimited attempts. Your highest score will be recorded on Black Board. Do not settle for a score less than 100%
- Homework will be automatically submitted in connect at the time and date due. Solutions can be accessed through Connect 1 hour after the homework is due.
- Please contact McGraw-Hill or see a TA if you have problems with Connect.

Exams:

- All exams will be closed book and closed notes. An exam absence will be scored as a zero. Please see policy for make-up exam below. You must bring your Stony Brook ID, two or more pencils, and an approved scientific calculator to each exam.
- The dates and times will be announced at the beginning of the semester. An exam absence will be scored as a zero, unless a justifiable excuse with appropriate documentation is presented to the instructor in advance of the exam.

Part 3: Course Schedule

Please note that this schedule is tentative. Our exact schedule during the semester might differ depending on our progress, weather related class cancellations etc. Updates to this schedule will be posted on blackboard

Week	Lecture	Date	Day	Topic
1	1	1/25	Tues	Course overview, 1.1-1.2
1	2	1/27	Thurs	1.1, 1.2,
2	3	2/1	Tues	1.3-1.5
2	4	2/3	Thurs	2.1
3	5	2/8	Tues	2.2
3	6	2/10	Thurs	2.3
4	7	2/15	Tues	2.4-2.7 (2.8*, 2.9*)
4	8	2/17	Thurs	2.10-2.12 (2.13*)
5	9	2/22	Tues	7.1, 7.2
5	10	2/24	Thurs	7.2, 7.5*, exam I review
6	--	3/1	Tues	Exam I (Chapters 1 & 2)
6	11	3/3	Thurs	4.1-4.2
7	12	3/8	Tues	4.3
7	13	3/10	Thurs	4.5, 4.7
8	--	3/15	Tues	Spring break
8	--	3/17	Thurs	Spring break
9	14	3/22	Tues	5.1
9	15	3/24	Thurs	5.2 - 5.3
10	16	3/29	Tues	6.1-6.2
10	17	3/31	Thurs	6.3, 6.4
11	18	4/5	Tues	9.1, 9.2
11	19	4/7	Thurs	Review for exam II
12	--	4/12	Tues	Exam II (Chap 4, 5, 7)
12	20	4/14	Thurs	9.2-9.4
13	21	4/19	Tues	9.4
13	22	4/21	Thurs	10.1
14	23	4/26	Tue	3.1, 3.2
14	24	4/28	Thurs	3.3, 3.4
15	25	5/3	Tues	3.5, (tentatively 11.1)
15	26	5/5	Thurs	Review for final exam
	--	5/16	Mon	Final Exam 5.30 PM to 8:00 PM

Part 4: Grading

Assessment & Grading:

Viewing Grades on Blackboard: Points you've earned for graded activities will be posted to the Grade Center on Blackboard (automatically synced with McGraw Hill connect)

Semester letter grade will be decided based on your aggregate score calculated as below:

- Homework (30%, your total score will be taken);
- Two Midterm Exams (20% each);
- Final Exam (30%)

Letter Grades:

Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

$90 \leq A < 100$	$70 \leq C+ < 74$
$86 \leq A- < 90$	$65 \leq C < 70$
$82 \leq B+ < 86$	$60 \leq C- < 65$
$78 \leq B < 82$	$55 \leq D+ < 60$
$74 \leq B- < 78$	$50 \leq D < 55$

Note:

- **There will be no work assigned for extra credit and no requests for grade bumps will be entertained**

Important: For MEC majors, a grade of 'C' or higher is required to take MEC 316 (next Fall). MEC 363 will be offered in the summer for those who do not earn a 'C' or higher.

Part 5: Course and University Policies

Student Accessibility Support Center Statement

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact the Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

https://www.stonybrook.edu/commcms/provost/faculty/handbook/academic_policies/syllabus_statement.php

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Center. For procedures and information go to the following website: <https://ehs.stonybrook.edu/programs/fire-safety/emergency-evacuation/evacuation-guide-people-physical-disabilities>

- To access mental health services, call Counseling and Psychological Services at 631-632-6720; Counselors are available to speak with 24/7.
- For updated information on the Academic Success and Tutoring Center please check www.stonybrook.edu/tutoring for the most up-to-date information.
- For IT Support: Students can visit the Keep Learning website at <https://sites.google.com/stonybrook.edu/keeplearning> for information on the tools you need for alternative and online learning.

Need help? Report technical issues at <https://it.stonybrook.edu/services/itsm> or call 631-632-2358.

For information on Library services and resources please visit the Continuity of Library Operations guide.

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

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 Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Until/unless the latest COVID guidance is explicitly amended by SBU, during Spring 2022 "disruptive behavior" will include refusal to wear a mask during classes.

Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Understand When You May Drop This Course:

It is the student's responsibility to understand when they need to consider disenrolling from a course. Refer to the Stony Brook Academic Schedule for dates and deadlines for registration: http://www.stonybrook.edu/commcms/registrar/calendars/academic_calendars

Incomplete Policy:

Under emergency/special circumstances, students may petition for an incomplete grade. Circumstances must be documented and significant enough to merit an Incomplete. If you need to request an incomplete for this course, contact me for approval as far in advance as possible.

Course Materials and Copyright Statement:

Course material accessed from Blackboard, Zoom sessions, Homework Assignments, Exams, Lecture videos or a Stony Brook Course website is for the exclusive use of students who are currently enrolled in the course. Content from these systems cannot be reused or distributed without written permission of the instructor and/or the copyright holder. Duplication of materials protected by copyright, without permission of the copyright holder is a violation of the Federal copyright law, as well as a violation of Stony Brook's Academic Integrity.

All federal and state copyright interests are reserved for all original material presented in this course through any medium, including lecture, electronic transmission or print. Individuals may not sell, be paid or receive anything of value for class notes made during this course from any person or entity without the express written permission of (author). In addition to legal sanctions, violation of these copyright prohibitions may result in University disciplinary action.

Allowed Calculators:

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 Professional Engineering (PE exam) that you may take.

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.

For detailed information, follow <https://ncees.org/exams/calculator-policy/>

Attendance policy:

Students are expected to attend every class, report for examinations and submit major graded coursework as scheduled. If a student is unable to attend lecture(s), report for any exams or complete major graded coursework as scheduled due to extenuating circumstances, the student must contact the instructor as soon as possible. Students may be requested to provide documentation to support their absence and/or may be referred to the Student Support Team for assistance. Students will be provided reasonable accommodations for missed exams, assignments or projects due to significant illness, tragedy or other personal emergencies. In the instance of missed lectures or labs, the student is responsible for reviewing posted slides and recorded lectures. Please note, all students must follow Stony Brook, local, state and Centers for Disease Control and Prevention (CDC) guidelines to reduce the risk of transmission of COVID. For questions or more information click [here](#).

Make up exams:

The class policy on make-up exams is consistent with university policy on [Student Participation in University Sponsored Events](#), the policy on [Final Exams](#) and the New York State Education Law regarding [Equivalent Opportunity and Religious Absences](#)

All make-up exams and other such academic accommodations must be arranged via the Office of the Dean of the students

Late Work Policy: I will generally not accept late work, but if I do, it will be with a considerable penalty, which will be decided on a case-to-case basis.

Student Learning Resources:

- **Academic and Transfer Advising Services:** Have questions about choosing the right course? Contact an advisor today. Phone: (631) 632-7082 (option 2); email: advising@stonybrook.edu; website: <http://www.stonybrook.edu/commcms/advising/>
- **Amazon @ Stony Brook:** Order your books before classes begin. Phone: (631) 632-9828; email: Bookstore Liaison@stonybrook.edu; website: <http://www.stonybrook.edu/commcms/bookstore/>
- **Bursar:** For help with billing and payment. Phone: (631) 632-9316; email: bursar@stonybrook.edu; website: <http://www.stonybrook.edu/bursar/>
- **Career Center** The Career Center's mission is to support the academic mission of Stony Brook University by educating students about the career decision-making process, helping them plan and attain their career goals, and assisting with their smooth transition to the workplace or further education. Phone: (631) 632-6810; email: sbucareercenter@stonybrook.edu; Website: <http://www.stonybrook.edu/career-center/>
- **Counseling and Psychological Services:** CAPS staff are available by phone, day or night. <http://studentaffairs.stonybrook.edu/caps/>
- **Disability Support Services:** Students in need of special accommodations should contact DSS. Phone: (631) 632-6748; email: dss@stonybrook.edu; <http://www.stonybrook.edu/commcms/studentaffairs/dss/>
- **Library:** Access to online databases, electronic journals, eBooks, and more!
 - **Library Instruction Website** - <http://library.stonybrook.edu/workshops-this-week-citation-skills-worldcat-and-endnote-the-hsc/>
 - **SBU Library Research Guides and Tutorials** <http://library.stonybrook.edu/research/research-basics/>
- **Registrar:** Having a registration issue? Let them know. Phone: (631) 632-6175; email: registrar_office@stonybrook.edu; <http://www.stonybrook.edu/commcms/registrar/>
- **Writing Center:** Students are able to schedule face-to-face and online appointments. <https://www.stonybrook.edu/writingcenter/>
- **Support for Online Learning** <http://www.stonybrook.edu/commcms/onlineed/student.html>
- **Ombuds Office** The Stony Brook University Ombuds Office provides an alternative channel for confidential, impartial, independent and informal dispute resolution services for the entire University community. We provide a safe place to voice your concerns and explore options for productive conflict management and resolution. The Ombuds Office is a source of confidential advice and information about University policies and procedures and helps individuals and groups address university-related conflicts and concerns. <http://www.stonybrook.edu/ombuds/>