MEC 260 - ENGINEERING STATICS
The State University of New York, Korea
Fall 2020

Instructor: Jong Jin Park, Academic Building B622 (jongjin.park@sunykorea.ac.kr)

Lectures: Tuesday and Thursday 2:00-3:20 PM (Odd week in-person; B104, Even week on-line; Skype jjpark930@gmail.com) Due to the two-week self-quarantine, lectures of the first week will be online)

Office Hours: Tuesday and Thursday 3:30-4:50 PM (Odd week in-person; B622, Even week on-line; email or Katalk) Due to the two-week self-quarantine, the office hours of the first week will be online)

TA: TBA
Office Hours:

Recitation: Tuesday 1:00~1:53 PM (Odd week in-person; B104, Even week on-line)

Textbook: Vector Mechanics for Engineers: Statics 12th Edition in SI units, by Beer, Johnston, Mazurek, and Sanghi, McGraw-Hill, ISBN: 978-981-3157-85-9 or MHID 981-3157-85-2

Grading: The letter grade is based upon the grading scale below for your aggregate scores, which will be converted with the weight percentage and normalized to 100.

$95 \le A \le 100$ $90 \le A- < 95$ $85 \le B+ < 90$ $80 \le B < 85$ $75 \le B- < 80$ $70 \le C+ < 75$
$65 \le C < 70$ $60 \le C- < 65$ $55 \le D+ < 60$ $50 \le D < 55$ $0 \le F < 50$

Homework and quizzes (25%), two midterm exams (25% each) and final exam (25%).
All exams and quizzes will be open book. There will be no makeup exam and no acceptance of late homework unless extenuating circumstances.

Course Objective: Provide the necessary background for further study of MEC 262 Dynamics, MEC 363 Mechanics of Solids, and MEC 364 Fluid Mechanics.

Catalog Data: A review of vector algebra. Concept of force. Equilibrium of particles. Moments about points and lines, couples and equivalent force systems. Equilibrium of rigid bodies. Analysis of simple structures such as trusses, frames, and beams. Centroids, centers of gravity, and moments of inertia. Dry friction with applications to wedges, screws, and belts. Method of virtual work, potential energy, and stability. Prerequisites: PHY 131/133 or 141 or 125, Co-requisite: MAT 203 or AMS 261

Topics:

- Chapter 2: Statics of Particles -vectors, resultant forces, equilibrium, Newton's Law, 2d and 3d problems
- Chapter 3: Rigid Bodies: Equivalent Systems of Forces - vector products, moments, couples, equivalent force/moment systems
- Chapter 4: Equilibrium of Rigid Bodies - free body diagrams, 2d and 3d problems
- Chapter 5: Distributed Forces: Centroids and Centers of Gravity - center of gravity, centroids, first moments of areas and lines
- Chapter 6: Analysis of Structures - trusses, methods of joints and sections, frames and machines
- Chapter 7: Forces in Beams and Cables - internal forces, shear and bending moments
- Chapter 8: Friction - dry friction, coefficient of friction, wedges and screws
- Chapter 9: Distributed Forces: Moments of Inertia - second moments of areas, parallel axis theorem
- Chapter 10: Method of Virtual Work - virtual work, equilibrium, potential energy, stability

Course Learning Objectives:

- Represent force and moment as vectors in a Cartesian coordinate system.
- Algebraically analyze the effect of systems of forces on rigid bodies.
- Draw free body diagrams of rigid bodies and systems.
- Apply vector-based systematic procedures for determining forces in statically determinate systems.
- Calculate centroids, second moments of area, and moments of inertia.

AttendancePolicyofSUNYKorea

1. All students of SUNY Korea are required to attend every class.
2. Unexcused absences will affect seriously the student's final grade in the course.
3. If a student has over 20% unexcused absence, the student's final course grade will be an 'F'.
   (Example)
   - If the class is a 150 minute class, and is held once a week, the 4th unexcused absence of a student will lead to an F grade of the course.
   - If the class is a 150 minute class, and is held once a week, the 4th unexcused absence of a student will lead to an F grade of the course.
   - If the class is a 75 minute class, and is held twice a week, the 7th unexcused absence of a student will lead to an F grade of the course.
   - If the class is a 50 minute class, and is held three times a week, the 10th unexcused absence of a student will lead to an F grade of the course.
   - In Intensive English Course (IEC), if a student misses the class more than 40 hours in a semester, the student will receive an F grade on the course.
   - Students should report the reason of absence to the instructor in advance, or immediately after the absence.
   - When a student excuses his/her absence, the student must provide documentation of the reason for the absence to the instructor.
   - The instructor of the course reserves the right to excuse absences.
   - The course instructor may excuse the absence if the submitted documentation fulfills the conditions below.
     - Extreme emergencies (e.g. death in the family)
     - Severe medical reasons with doctor's note (Not a slight illness)
     - Very important events (e.g. national conference, official school event)
   - At the end of semester, the course instructor should submit a copy of the attendance sheet to the Academic Affairs Office.

DISABILITY SUPPORT SERVICES (DSS) STATEMENT: 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, room128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: http://www.stonybrook.edu/ehs/fire/disabilities

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

Course Schedule: This is tentative and subject to change. Dates in italics stand for in-person lectures.

Class No.	Date	HW & Exam	Contents
1	Aug 25		Ch.1 Introduction
2	Aug 27	HW.1	Ch.2 Statics of Particles
3	Sep 1	(HW.1)	"
4	Sep 3	HW.2	Ch.3 Rigid Bodies: Equivalent Systems of Forces
5	*Sep 8*		"
6	*Sep 10*	(HW.2)	"
7	Sep 15	HW.3	Ch.4 Equilibrium of Rigid Bodies
8	Sep 17		"
9	*Sep 22*	(HW.3)	"
10	*Sep 24*	Midterm I	Chapters 1~4
11	*Oct 6*	HW.4	Ch.5 Distributed Forces: Centroids and Center of Gravity
12	*Oct 8*		"
13	Oct 13	(HW.4)	"
14	Oct 15	HW.5	Ch.6 Analysis of Structures
15	*Oct 20*		"
16	*Oct 22*	(HW.5)	"
17	Oct 27	HW.6	Ch.7 Internal Forces and Moments
18	Oct 29		"
19	*Nov 3*	(HW.6)	"
20	*Nov 5*	Midterm II	Chapters 5~7
21	Nov 10	HW.7	Ch.8 Friction
22	Nov 12	(HW.7)	"
23	*Nov 17*	HW.8	Ch.9 Distributed Forces: Moments of Inertia
24	*Nov 19*		"
25	Nov 24	(HW.8)	"
26	Nov 26	HW.9	Ch.10 Methods of Virtual Work
27	*Dec 1*	(HW.9)	"
28	*Dec 3*	Final Exam	Chapters 8~10