

# MEC310 – Introduction to Machine Design

The State University of New York, Korea

Fall 2017

**Instructor:** Prof. Achilles Vairis, B625 Academic Building  
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**Lectures:** Tuesday and Thursday @ 17:00-18:26 (B 205)

**Textbook** (suggested): Design of Machinery: An introduction to the synthesis and analysis of mechanisms and machines, Robert Norton, McGraw-Hill

**Prerequisites :** MEC 262, MEC 102;

**Co-requisite :** MEC 203

**Office Hours:** Tuesday and Thursday 1530 -1700 (or by appointment)

## Grading:

Homework	20%
Midterm exam 1 (September 26)	15%
Midterm exam 2 (October 24)	15%
Final exam	40%
Attendance	5%
Project (October 26)	3%
Quiz	2%

Late homework will not be accepted, unless you have made prior arrangements.

All midterm exams will be scheduled in class.

No makeup exam unless arranged prior to the exam

## Policies:

- Homework assignments and their solutions will be posted on the Blackboard.
- The Blackboard can be accessed at <https://blackboard.stonybrook.edu/>.
- The time and details about exams will be announced in the class (and also posted on the Blackboard).
- It is the responsibility of students to make sure that they can access the Blackboard and they have a working email registered with it. The Blackboard should be checked frequently for new materials.
- Exams will be closed book and note. Each person should have a calculator for the required computations.

## Course Overview:

Major topics of this course include the analysis of mechanisms in order to determine their kinematic and dynamic behavior, and the synthesis of mechanisms in order to accomplish desired motions or tasks. These topics are fundamental to the broader subject of machine design.

The prerequisites for the present course are MEC 102 (Engineering Computing and Problem Solving II) and Engineering Dynamics (MEC 262). MEC 203 (Engineering Graphics and CAD) is a co-requisite. The kinematic and dynamic analyses (velocity, acceleration, and force analyses) of machinery are essentially applications of the fundamentals presented in MEC 262. The results of these analysis, i.e., forces acting on each machine component, are important for a following course, Mechanical Design (MEC 410), in which the students will learn how to size or design machine components to prevent mechanical failure.

**Topics:**

- Introduction and Kinematics Fundamentals
- Graphical Linkage Synthesis
- Linkage Analysis
- Analytical Linkage Synthesis
- Cam Design
- Gears and Gear Trains
- Static and Dynamic Force Analysis of Mechanisms
- Balance of Machinery

**Disability Support Services (DSS):**

If you have a physical, psychological, medical or learning disability that may impact your course work, please contact One-Stop Service Center, Academic Building A201, (82) 32-626-1117. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

**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 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: [http://www.stonybrook.edu/commcms/academic\\_integrity/index.html](http://www.stonybrook.edu/commcms/academic_integrity/index.html)

**Critical Incident Management Statement:**

The State University of New York, Korea 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.

**Attendance Policy of SUNY Korea:**

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'.
4. Students should report the reason of absence to the instructor in advance, or immediately after the absence.

5. When a student excuses his/her absence, the student must provide documentation of the reason for the absence to the instructor.
6. The instructor of the course reserves the right to excuse absences.
7. 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)
8. At the end of semester, the course instructor should submit a copy of the attendance sheet to the Academic Affairs Office.