Course Information	
Course title	Dynamics
Semester	114-2
Designated for	COLLEGE OF ENGINEERING GRADUATE INSTITUTE OF APPLIED MECHANICS
Instructor	CHIH-HUNG CHEN
Curriculum Number	AM7021
Curriculum Identity Number	543EM4010
Class	
Credits	3.0
Full/Half Yr.	Half
Required/ Elective	Required
Time	Tuesday 3,4(10:20~12:10) Thursday 2(9:10~10:00)
Remarks	The upper limit of the number of students: 54.
Course introduction video	
Table of Core Capabilities and Curriculum Planning	Table of Core Capabilities and Curriculum Planning
Course Syllabus	
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Course Description	This graduate-level course introduces the fundamental principles of dynamics, including Newtonian, Lagrangian, and Hamiltonian mechanics. Topics cover kinematics, equilibrium and stability, Newton's laws of motion, particle dynamics, rigid body dynamics, and principles of mechanics. The course offers students a comprehensive understanding of these frameworks and their practical applications in physics and engineering. Grading System: - Midterm Exam 1 (25%) - Midterm Exam 2 (25%)

	- Final Exam (50%)
Course Objective	Upon completion of this course, students are expected to: - Apply Newton’s laws to solve fundamental dynamics problems. - Understand variational principles and their applications in analytical mechanics. - Use Lagrangian and Hamiltonian mechanics to formulate and analyze dynamical systems. - Solve advanced dynamical problems including multi-particle systems, rigid-body dynamics, and gyroscopic motion.
Course Requirement	Differential equations, Linear algebra, Statics
Student Workload (Expected weekly study hours before and/or after class)	Students are expected to spend 2 hours on pre-class preparation and 4 hours on post-class problem-solving per week
Office Hours	Appointment required. Note: During class breaks and by appointment via email.
Designated reading	
References	- Yih-Hsing Pao and Li-Sheng Wang. Intermediate Classical Mechanics. Springer, 2025. - S. T. Thornton and J. B. Marion, Classical Dynamics (5th Ed.), Thomson Brooks/Cole, 2004 - H. Goldstein, C. Poole and J. Safko, Classical Mechanics (3rd Ed.), Addison Wesley, 2002.
Grading	1. NTU has not set an upper limit on the percentage of A+ grades. 2. NTU uses a letter grade system for assessment. The grade percentage ranges and the single-subject grade conversion table in the NATIONAL TAIWAN UNIVERSITY Regulations Governing Academic Grading are for reference only. Instructors may adjust the percentage ranges according to the grade definitions. For more information, see the Assessment for Learning Section.

Progress

Week	Date	Topic
No data		