International Degree Program on Energy Engineering
Department of Aeronautics and Astronautics
National Cheng Kung University

Mechanism Kinematics and Dynamics (Fall 2024)

Instructor: S. M. Yang Office Hour: T34 or call 63683 for appointment
Teaching Assistant: TBD
Reference:
    1. *Computer Aided Analysis of Multibody Dynamics* class notes.
    2. YouTube clip 1: https://www.youtube.com/watch?v=DfznnKUwywQ
    YouTube clip 2: https://www.youtube.com/watch?v=iEb6uRs3OdU
    https://mechanism101tw.wixsite.com/home
    Lecture 1: Degree of Freedom
    Lecture 2: Vector Analysis - Displacement
    Lecture 3: Vector Analysis - Velocity
    Lecture 4: Vector Analysis - Acceleration
    Lecture 5: Introduction to CAD
    Lecture 6: Coordinate Transformation
    Lecture 7: Revolute Joint
    Lecture 8: Translational Joint
    Lecture 9: Kinematic Analysis - Displacement
    Lecture 10: Kinematic Analysis - Velocity
    Lecture 11: Kinematic Analysis - Acceleration
    Lecture 12: Introduction to Dynamic Analysis
    Lecture 13: Dynamics of a Slider-Crank Mechanism
Class: T2 and F12, Rm.5828
Course Description: The course covers both rigid body kinematics and dynamics.   Course materials come from both *references.* PowerPoint files in pdf are available from the NCKU Moodle. Please have the pdf ready for the class.

Class Schedule: **(subject to change, any change will be announced in class)**
W1   9/10 Introduction, Displacement Vector Analysis
    9/13 No class, pdf download and view video Lecture 1 and 2.
W2   **9/17 No class,** National holiday.
    9/20 Displacement Vector Analysis and Velocity Vector Analysis**,** view video Lecture 3 and 4.
W3   9/24 Velocity Vector Analysis
    9/27 No class. NCKU Golf Tournament
W4   **10/1 Quiz 1 on displacement and velocity analysis**
    10/4 Acceleration Analysis.
W5   10/8 and 10/11 Acceleration Analysis and Cam and Follower, view clip 1 and 2.
W6   **10/15 Quiz 2**
    10/18 Static/Dynamic Analysis, view Lecture 5.
W7   **10/22 no class, 10/25 Midterm 1**
W8   10/29 and 11/1 Introduction to Computer Aided Analysis of Kinematics, view Lecture 6.
W9   11/5 and 11/8 Revolute Joint Model, view Lecture 7
W10   **11/12 Quiz 3**
    11/15 Computer Aided Analysis of Revolute Joint Model, view Lecture 8.
W11   11/19 Final project announcement, 11/22 Translation Joint Model. view Lecture.
W12   11/26 and 11/29 Computer Aided Analysis of Planar Kinematics, view Lecture 10 and 11
W13   **12/3 Quiz 4**
    12/6 Computer Aided Analysis of Planar Kinetics, view Lecture 12 and 13
W14   **12/10 no class, 12/13 Midterm 2.**
W15   12/17 and 12/20 Final project presentation in the order of class roster
W16   12/24 and 12/27 ditto
W17   12/31 final project file due, email to TA and email/hardcopy to instructor; **1/3 no class.**

All quiz and Midterm grades are expected be posted on Moodle by12/31, and any discrepancy be notified/corrected by TAs by 1/3/2025. Course grade (with final project) will be posted on Moodle by 1/10.

Grading policy: Quiz 20%, midterm1/2 25% + 25%, Final Projection presentation and final report 30%