

The Hong Kong University of Science and Technology

Mechanisms of Machinery

MECH3030

3 credits

Pre/Co-Requisites: MECH2020

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Course Description

This course will mainly cover topics on kinematic analysis of mechanisms (position, velocity, and acceleration analysis of solid bodies and mechanisms) and design/synthesis of mechanisms (how to determine the geometry of a mechanism to achieve kinematic goals). The lectures will emphasize mathematical rigor and be presented with a bent for planar mechanisms. The course will also expose students to relevant hands-on experiences using, for example, software tools such as MATLAB and SolidWorks.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)
Homework	10%
Tutorial assignments and MATLAB labs	10%
Mid-term exam	35%
Final exam	45%

Required Texts and Materials

(1) Lecture PPT notes; (2) Kinematics, Dynamics, and Design of Machinery, 3rd Edition, K. Waldron et al., Wiley.

Additional Resources

The main textbook is K. Waldron, G. Kinzel, and S. Agrawal, "Kinematics, Dynamics, and Design of Machinery," Wiley (available in the library for Reserve 1-day; e-version is also available (up to 3 users at the same time)). Also, the second reference textbook is R. Norton, "Kinematics and Dynamics of Machinery," McGraw-Hill.