

The Hong Kong University of Science and Technology

UG Course Syllabus

[Course Title] Statics

[Course Code] CIVL 2110

[No. of Credits] 3

[Pre-requisites] PHYS 1112 OR PHYS 1312 [Co-requisites] MATH 1014 OR MATH 1020 OR MATH 1024

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Course Description

Topics to be covered: Introduction to mechanics and vectors; Application of Newton's laws to engineering problems; statics of particles; rigid bodies; equivalent systems of forces; equilibrium of rigid bodies; distributed forces; centroids; moments of inertia; parallel-axis theorem and rotation; analysis of truss & frame structures; axial, shear and bending moment diagrams.

Objectives: By successfully completing this course, a student would be able to (1) Reduce a loaded structure to a model, i.e. creating proper free-body diagrams (FBD) of the structure or the parts in it. (2) Examine the stability of this structure, and classify a stable structure as the statically determinate or indeterminate. (3) Perform static analysis to a statically indeterminate structure, e.g., truss or certain frames. (4) Calculate and sketch the internal force in a structural member, e.g., axial force, shear force, bending moment. (5) Identify the structural analysis that is NOT covered in this course, and what future courses (e.g., mechanics of materials, structural analysis), will cover the relevant topics.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)
Assignments+ Quizzes	20%
Midterm Exam	30%
Final Exam	50%

Required Texts and Materials

Beer, Johnston, Mazurek & Eisenberg "Vector Mechanics for Engineers: Statics, 10th edition in SI Units", McGraw-Hill, 2013.

[Optional] Additional Resources

[List any additional resources, such as online platforms, library resources, etc.]

Coursera course: "Mastering Statics" Instructed by Prof. Lambros Katafygiotis