

COURSE DETAIL

MATHEMATICAL MODELLING

Country

Singapore

Host Institution

National University of Singapore

Program(s)

National University of Singapore

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Mathematics

UCEAP Course Number

111

UCEAP Course Suffix**UCEAP Official Title**

MATHEMATICAL MODELLING

UCEAP Transcript Title

MATH MODELLING

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

This course introduces the use of mathematics as an effective tool in solving real-world problems through mathematical modeling and analytical and/or numerical computations. By using examples in physical, engineering, biological, and social sciences, real-world problems are converted into mathematical equations through proper assumptions and physical laws. The course provides qualitative analysis and analytical solutions for some models to interpret and explain qualitative and quantitative phenomena of the real-world problems. Major topics: introduction of modeling; dynamic (or ODE) models: population models, pendulum motion; electrical networks, chemical reaction; optimization and discrete models: profit of company and annuity; probability models: president election poll and random walk; model analysis: dimensional analysis, equilibrium and stability, bifurcation; and some typical applications. The course requires students to take prerequisites.

Language(s) of Instruction

English

Host Institution Course Number

MA3264

Host Institution Course Title

MATHEMATICAL MODELLING

Host Institution Campus

Host Institution Faculty

Host Institution Degree

Host Institution Department

Mathematics

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