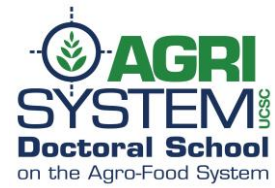




UNIVERSITÀ
CATTOLICA
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INTRODUCTION TO APPLICATION OF SYSTEM DYNAMICS MODELING APPROACH IN BIOLOGICAL SCIENCE

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Course Aims

The aim of course will be to prepare students in applying methods for estimation of dynamic models in Biological Science as well as other research fields.

Methodology

The basic and advances concepts of modelling and System Dynamic technique will be presented for the students, both theoretically and practically, by using the Vensim simulation software for improving the performance of real systems.

Course Description

Method for creation of dynamic models, optimization process and control of these systems (e.g. approximate dynamic programming), formalizing the links between model structure and behavior (e.g. casual loop diagrams) or stock&flow structure will be studied and applied to more complex SD models. Practical examples will be complementary to theory lessons to facilitate students in the understanding of fundamental principles of system thinking and model building.

Recommended Texts

Business Dynamics: Systems Thinking and Modeling for a Complex World by John D. Sterman (Irwin McGraw Hill, Boston: 2000).
System Dynamics Modeling with R (Jim Duggan, Springer, 2016)