MATH4SDG

Mathematical Approaches for Sustainable Development Goals

Selected Project in the 1st EELISA Joint Call for Inter-Institutional activities

Andrea Tellini, Universidad Politécnica de Madrid (Coordinator)

Giulia Livieri, Scuola Normale Superiore di Pisa (Participant)

Antonella Toma, Universitatea Politehnica din București (Participant)

Participating partners

- Universidad Politécnica de Madrid
  (Andrea Tellini)
- Scuola Normale Superiore (Pisa)
  (Giulia Livieri + Davide Radi - U. Sacro Cuore Milan, Giacomo Bormetti – U. Bologna)
- Universitatea Politehnica din București
  (Antonela Toma, Simona Mihaela Bibic, Octavian Postavaru, Corina Elena Cipu)

What is this activity about?

- Work in group to develop a project on mathematical approaches applied to Sustainable Development Goals (SDGs).
- Groups of students in Mathematics or closely related degrees. Expected 3 or 4 students from each university.
- Mixed groups (students from different universities)
- Professors from each partner university (UPM-SNS-UPB) supervise (online) a project and a group of students
- Final meeting in Madrid (face-to-face, 2nd half of April 2023), where the groups of students present the project they have developped

What do participants get?

- Official certificate of participation (EELISA badge), with number of hours and detailed description of the project
- International and interdisciplinary experience
- Possibility of starting the work for Final Degree Projects
- Travel to Madrid
- Possibility of official ECTS recognition (if the degree program allows, to be checked in each university)

The projects

1. UPM: Study of reaction-diffusion models analyzing the spread of populations affected by climate change (PDEs, numerical simulations, modelling)
2. SNS: Inclusion of climate risk in different financial instruments
3. UPB: Influence of climate change on population behavior and environment and chaos influence using fractional calculus as innovative mathematical tool for solving equations and systems of differential equations

Possible activities:

- Reading groups
- Small lessons (also peer-to-peer between students)
- Modelling and simulation
- …

Reaction-diffusion models for populations affected by climate change

Description (all aspects of course depend on the level and interests of the students)

Mathematical techniques:

- Ordinary and partial differential equations
- Modelling
- Numerical Simulations

Type of activities (supervised by the coordinator):

- Reading of selected scientific articles
- Reading of books to understand the preliminaries
- Discussions
- Simulations
- Possibility of new developments

Tiger mosquito has spread to new latitudes due to climate change

Inclusion of climate risk in different financial instruments

Description (all aspects of course depend on the level and interests of the students)

Mathematical techniques:

- Partial differential equations
- Modelling and Empirical Analyses
- Numerical Simulations

Type of activities (supervised by the coordinators):

- Reading of selected scientific articles
- Reading of books to understand the preliminaries
- Discussions
- Simulations
- Possibility of new developments

Influence of climate change on population behavior and environment and chaos influence using fractional calculus as innovative mathematical tool for solving equations and systems of differential equations

Description (all aspects of course depend on the level and interests of the students)

Mathematical techniques:

- Fractional differential equations and systems
- Modelling and Empirical Analyses
- Numerical Simulations (Mathematica, MatLab, other)

Type of activities (supervised by the coordinators):

- Reading of selected scientific articles
- Reading of books to understand the preliminaries
- Discussions
- Simulations
- Possibility of new developments

Interested in participating? Any questions or doubts?

Contact us!

Please write an e-mail to one of us before November 15th 2022:

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- Antonela Toma (antonela2222@yahoo.com) - UPB