# *COLLOQUIUM*

## DEPARTAMENTO DE MATEMÁTICAS
## UNIVERSIDAD CARLOS III DE MADRID


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Jueves, 9 de junio de 2011

***Mathematical Models of Microbial Competition in a Chemostat***


***Abstract:*** Phytoplankton species compete for nutrients and light in the lake or ocean. In this talk we shall survey the mathematical models describing the competition of phytoplankton species for nutrient and light. First we introduce a mathematical model of microbial species competing for a single nutrient in a chemostat. Then we present a mathematical model of microbial species competing for a single nutrient with internal storage. These models take the form of systems of nonlinear ordinary differential equations. The competitive exclusion principle holds in the case of single nutrient. Then we consider a mathematical model of two species competing for two complementary resources in the cases of fixed yields and internal storages.

When the effects of spatial environment are considered, we present the mathematical models of two species competing for a single nutrient in an unstirred chemostat. The models take the form of systems of reaction-diffusion equations. We discuss the possibilities of coexistence of species due to the spatial environments.


**Hora: 10:45**

**Lugar:** Seminario del Departamento de Matemáticas
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