Module title			Abbreviation
Non-Linear Dynamics			10-M-NLD-072-m01

Module coordinator	Module offered by
Dean of Studies Mathematik (Mathematics)	Institute of Mathematics

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	undergraduate	Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.

Contents

Basic notions in stability theory, Lyapunov theory; stable manifolds, periodic solutions including Poincare-Bendixson, chaotic dynamics; applications in physics and biology (e. g. Hamiltonian systems, Volterra-Lotka).

Intended learning outcomes

The student is acquainted with the fundamental concepts and results in non-linear dynamics and their proof methods. He/She is able to apply these methods to simple situations, e.g. in physics or biology.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
Language of assessment: German, English if agreed upon with the examiner

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

§ 73 (1) 1. Mathematik Analysis

Module appears in

Bachelor's degree (1 major) Mathematics (2008)
Bachelor's degree (1 major) Mathematics (2007)
Bachelor's degree (1 major) Economathematics (2009)
Bachelor's degree (1 major) Economathematics (2008)
Bachelor's degree (1 major) Mathematical Physics (2009)

Bachelor's degree (1 major) Computational Mathematics (2009)
Bachelor's degree (1 major) Aerospace Computer Science (2009)
Bachelor's degree (1 major) Aerospace Computer Science (2011)
Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008)
First state examination for the teaching degree Gymnasium Mathematics (2009)