Valid from 2024.HS

Module description: Physics Engines

Module Code	t.BA.ITP.PE.19HS
ECTS Credits	2
Language of Instruction/Examination	German
Organizational Unit	IAMP
Module Coordinator	Mathias Weyland
Legal Framework	The module description is part of the legal basis in addition to the general academic regulations. It is binding. During the first week of the semester a written and communicated supplement can specify the module description in more detail.
Module Characteristic	Type 1a 2 lecture lessons per semester week and class
Module Description	The course teaches students the fundamental physical concepts of classical mechanics, enabling them to use physics engines.
Module Content	**Newtonian mechanics of point masses.** **Numerical solution of differential equations** **Rotation of rigid bodies** **Rotations in the language of linear algebra** **Physics in game engines, translations of physical quantities into the world of Unity.** **Kinetic Energy, momentum, power.** **Boundary conditions for mechanics.**
Prerequisite Knowledge	Programming skills

Learning Objectives (Competences)

Students...	Competencies	Taxonomies
Students may explain the relationship between physical quantities and their counterparts in a game engine.	F, M	K2, K3
Students are familiar with the fundamental concepts of classical mechanics.	F, M	K2, K3
Students can simulate the movement of point masses in general situations.	M, F	K2, K3
Students are capable of using physics engines in the context of a game engine.	F, M	K2, K3
Students are capable of simulating the movement of rigid bodies in general settings.	F, M	K2, K3

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Performance Assessment

End-of-module exam	Assessment	Length (min.)	Weighting	Form
written + oral	Grade	15	70	acc. to module agreement

Performance assessment during the semester	Assessment	Length (min.)	Weighting	Form
report	Grade		20	acc. to module agreement
written exam	Grade		10	acc. to module agreement

Classroom Attendance Requirement

None

Learning material

- Lecture notes (ZHAW Wiki)
- Lecture slides
- (2014). Tipler, P. & Mosca, G. (2014). Physik: für Wissenschaftler und Ingenieure. 7. Edition. Heidelberg, Deutschland: Springer Spektrum. ISBN 978-3827419453. eBook is available in the ZHAW library..

Comments