DM815
Computer Game Programming III: Physics

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Spring 2013, 4th Quarter

Computer Game Courses at Imada

Fall 2012, 1st quarter:

DM809 Computer Game Programming I: Graphics

Fall 2012, 2nd quarter:

DM810 Computer Game Programming II: AI

Spring 2013, 4th quarter:

DM815 Computer Game Programming III: Physics

Individual study activity:

DM816 Computer Game Programming IV: Project

Subjects covered (all three courses)

- The graphics pipeline
- 3D geometry (transformation, projection)
- Shading (color, textures, lights, shading models)
- Image based techniques (skyboxes, billboards,. . .)
- Game AI (path finding, chasing and evading, fighting, flocking, board game strategies,. . .)
- Collision detection $\leftarrow$ DM815
- Physics modeling $\leftarrow$ DM815

Not covered in course sequence

- Graphics APIs (self-study)
- Software engineering, testing (known)
- Game engines (a bit in AI course)
- Level editors, scripting (a bit in AI course)
- Modeling
- Animation
- Sound, music
- Gameplay, narrative, study of genres

Course III Teaching Material

Book:

Collision Detection in Interactive 3D Environments
By Gino van den Bergen
Published by Morgan Kaufmann/Elsevier, 2004
ISBN 1-55860-801-X

Notes:

Physically Based Modeling
Noteset by David Baraff and Andrew Witkin
SIGGRAPH Course Notes, 2001

Course Plan

Subject	Lectures
Physics simulation	5
Collision detection	9

Formal Course Description

Prerequisites:	Programming (DM502+DM503), algorithms and data structures (DM507), and some math (MM501) is a necessity. Knowledge of Linear algebra (MM505), numerical analysis (MM518) and basic 3D programming (DM809) helps.
Literature:	Textbook and notes
Evaluation:	Implementation project (pass/fail), oral exam (7-scale)
Credits:	5 ECTS
Course language:	Danish or English

Project

Small project (in groups of 2–3) must be passed to attend the oral exam:

> Try out one collision detection technique and moderate physics simulation.

Example programs, or a continuation of previous project from DM809.