

NM5: game development

6700050 / project-based course, semester 4, 6 ects

Æliens

course description – nm5: game development

The course description(s) are taken from the accreditation report Creative Technology (version 2.0).

content(s) The course gives an introduction in the design development of (digital) games. Attention will also be given to the analysis and critical comparison of games, using game interaction patterns, as well as popular technologies for games, both online such as flex / as3, and PC and console based games, including DirectX, XNA, and the Half Life 2 SDK.

Recommended literature: Bjork, S., Holopainen, J. (2005) Patterns in Game Design. Charles River Media, Online reference(s):

- www.gamedesignpatterns.org

prerequisite(s); NM3, NM4

goal(s) & attainment target(s)

The course aims at providing

- awareness of the application of games in education and learning
- familiarity the concepts and techniques of the design of (serious) games
- fluency in analyzing games using game patterns
- full literacy with developing casual games

Students are expected to have a sufficient degree of analytical insight, and will be stimulated to be creative in the design and development of a game.

place in curriculum: NM5 is an iadvanced course for NM students. It is relevant to NM4 (virtual environments), but is more analytical in its approach, with respect to the critcal comparison of game mechanics, that is the conceptual structure of games, and the chalenges offered to the player.. It is explicitly meant to be of interest also for students specializing in ST.

application area & motivating examples Games increasingly become important in for example digital learning and corporate training. Games are appealing for both conceptual reasons as well as their sensorial impact, due to the use of powerful multimedia technology. There seems to be an increasing demand from the creative industry for young creative people with experience in game development.

teaching method(s) The course will be organised around lectures, which will cover the theoretical topics and which will provide an introduction to the various technologies used in game development. The assignments will consist of a series of basic exercises in game design and a final assignment in which an actual game will be developed by a group of students. In which the students are required to develop a moderately complex dynamic web application.

Regular feedback will be given in classroom sessions, and workshops, where students present their work as well as via online comments or email. Grading will be based on basic assignments, the final assignment project with documentation, as well as an essay in which a topic of choice, either technical or in relation the design or deployment of serious games, is discussed in more depth.

special facilities: computer lab & presentation facilities

course outline(s) – nm5: game development

In this part a more detailed discussion will be provided of **topics**, **learning goals**, **materials** used, and the actual **structure of the course**, as well as a sketch of the **assignments** given. Also **references** to relevant literature is provided, including **online resources**. At the end, **advice for students** following the course will be given, as well as **hints for the instructor(s)**.

course topic(s)

Following an **example-based approach**, an important part of the course should consist of **case studies** and small examples demonstrating **idea(s) & concept(s)** in **game design** and (novel) approaches in **game development**.

- trend(s) – current development(s) in gaming
- workflow(s) – steps in game development
- game engine(s) – comparative evaluation(s)
- classification(s) – casual, serious, adventure, urban ...
- game pattern(s) – mode(s) of interaction
- case studies – applying game pattern(s)
- design issue(s) – narrative(s) vs game play

Although the course should focus on **ideas and concepts**, the actual **game development** should start as soon as possible, possibly continuing on the game developed for the **honors track** as suggested in the outline(s) of CA1.

learning target(s)

Basic skills involve the use of authoring languages and tools. Detailed knowledge of the **platform of choice** is required to produce **effective game(s)**.

- skill(s) – design, coding
- knowledge – game engine(s), game (play) mechanics
- theory – game development workflow(s)
- experience(s) – construction of moderately complex game
- attitude - creativity, aesthetics, explorative

However, not only technical issues are important, but also the use of fantasy and **creativity** and **aesthetics** needed to **explore** (novel) forms of **game play**.

lesson material(s)

Part of the lesson material will consist of literature treating the **game development process**, **game interaction patterns**, and issues concerning **(cinematic) narrative(s)** and **game mechanics**.

- canonical example(s) – *wack'em* / code(s)
- (online) reference material(s) – game development / resource(s) / help(s)
- challenging target(s) – rhetoric(s) of chabge / resource(s) / inspire(s)

For the **case studies**, students will be invited to bring in material, including **actual games** as well as related information, such as **game community** sites.

course structure

The course does require active participation of the student(s), not only in exploring the technology by making the assignments, but also by presenting **solutions and problems** in class.

session(s)

1. introduction – game design & development
2. brain storm(s) – **what is the name of the game?**
3. case study I – applying game design patterns
4. concept presentation(s) – ideas & plan(s)

5. game engine(s) – comparative evaluation(s)
6. case study II – applying game design patterns
7. urban game(s) – interactive (smart) space(s)
8. presentation of final assignment(s)

The *game development* course may be considered to be a follow-up on the *virtual environments* course, shifting focus from **representational aspect(s)** to issues of **(narrative-drive) game mechanics** and **game play**. Nevertheless, at some point a choice for one or more technologies will be made. The choice of a **game engine** and **game platform** will be dependent on, among others, available **resources** and students' **(programming) skills**.

assignment(s)

There will be a small number of assignments, to be made by the students individually. The goal of these assignments is to provide a structure that assists the students in exploring the technology. As a basic assignment, students must develop a simple **casual game** on any of the following topics:

basic(s) – game development

1. mathematics – testing skill level
2. physics – exploring a physical model
3. animation(s) – re-make(s) of a classic, e.g. tetris

For the final assignment(s) of the course, students are allowed to work individually, or in groups of two or three (maximally) students. Work done in groups must be proportionally more challenging and complex. Students are encouraged to continue their explorations started in the *virtual environments* course, which listed the following options:

final(s) – game development

- simulation(s) – of natural or artificial system
- scenario-driven narrative(s) – to promote collaboration
- augmented reality game – using augmented/mixed reality technology

In effect, students will be encouraged to follow their own ideas, in for example implementing a game. For the final assignments, similar as in the *virtual environments* course, an effort will be made to develop interesting challenges in cooperation with the TXChange facility.

reference(s)

Apart from the book on **game design patterns**, a reference to a paper comparing game development to **software engineering** has been included, showing the analogy as well as **difference(s)** in **project management** and **workflow(s)**.

1. Teaching Software Engineering through Game Design
2. Bjork, S., Holopainen, J. (2005) Patterns in Game Design. Charles River Media
3. A. Eliëns, topical media & game development – media.eliens.net

A wealth of material and references can be found at my **topical media & game development** site, including tutorials and examples.

online resource(s)

The online resources provide a random collection of links to **items of interest**, from one perspective or another.

- brand(s) – www.newzoo.com
- case(s) – www.nederlandsmedianetwerk.nl/profiles/blogs/mediacase-newzoo-rabobank
- fun & game(s) – springerlink.com/content/k882kqk6686v
- unity – unity3d.com/unity
- creative virtuality – www.virtueelplatform.nl/page/279/en
- museum – casualgameplay.com/?PAGE=GameDetail&AID=1113
- serious – www.seriousgames.dk

- magic pen – description / magic.pen.fizzlebot.com
- getty – www.getty.edu/gettygames
- vrouw(en) – www.teamgx.nl
- spot(s) – www.gamespot.com/gamespot/features/video/hov
- history – www.thedoteaters.com
- censuur – www.groene.nl/2008/6/GAME-CENSUUR
- process – www.mine-control.com/zack/patterns/gameprocess.html

Additional information will also be gathered during the course, by letting students take an active part in exploring game technologies.

advice for the student(s)

Taking place at the end of your second year, the *game development* course should be taken as an opportunity to demonstrate your **skill(s)**, and, as a **team effort**, to produce something worthwhile, continuing on your earlier effort(s) in the *virtual environments* course, possibly in combination with **hybrid world(s)**, the *creative application* taking place in the same period.

hint(s) for the instructor(s)

Very likely, the student(s) will have more knowledge about **actual game(s)** and **game play** than the instructor(s). That is not necessarily a bad thing, on the contrary, it allows the instructor(s) to actively involve the student(s) in the **selection of case studies** and the **design of a game**, giving the instructor(s) ample opportunity to exercise their skill(s) in **supervision** and **monitoring progress**, as well as (possibly) realizing their **creative idea(s)** in game design.

afterthought(s)