Course introduction

GEO1004:
3D modelling of the built environment

https://3d.bk.tudelft.nl/courses/geo1004

3D geoinformation

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Course contents

- How is the built environment modelled in 3D?

  - Fundamentals / concepts

  - Data models and data structures

  - Reconstructing a city in LoD2

  - Conversions and applications

New-ish course

- Entirely new contents last year -> improving everything this year

- Working on improving materials as we go -> we'll make lessons available shortly before each lesson

- Still some rough edges -> feedback is appreciated!

Prerequisites

- GEO1000 or knowledge of scripting/programming (in any language)

- GEO1002 or basic knowledge of GIS

- Optional: GEO1015 covers complementary topics (2.5D vs 3D)

Self-study of materials

In your own time:

1. Watch videos

2. Read materials

3. Most important: work on assignments

Contact hours?

You can do everything in your own time, but during contact hours we will be there to help:

introduce course/assignments, answer questions, discuss common issues, help with assignments, feedback on assignments/exams, etc.

At other times, you can still ask questions. We might just take longer to answer.

How to make the most of it

1. Keep up with the course schedule

2. Study lessons in advance

3. If you have any doubts, ask questions

4. Make sure you can answer questions (in handout)

5. Optional: read one or two external sources (in notes in handout)

6. Spend more time on assignments than on lessons!

Lessons

- 1.1: Intro / DS and DM [K]

- 1.2: B-rep [K]

- 2.1: Voxels / voxelisation [K]

- 2.2: LoD2 reconstruction [R]

- 3.1: 3D DT / Voronoi [H]

- 3.2: ISO 19107 [H]

- 4.1: 3D city models [H]

- 4.2: CSG / Nef polyhedra [K]

- 5.1: MAT [R]

- 5.2: G-maps / c-maps [K]

- 6.1: Curves [K]

- 6.2: BIM [K]

- 7.1: Conversions [H]

- 7.2: Applications [K]

Assignments

- Programming tasks using C++ and open source libraries

- 20% each

- 1: Voxelisation (Mar 4) -> available from next Monday

- 2: Unordered mesh to CityJSON model (Mar 18)

- 3: Application of a 3D city model (Apr 5)

Two exams

- Mid-term

  - Lessons 1.1 - 4.2

  - Mar 8

  - 10% of final mark

- Final

  - All lessons

  - Apr 16

  - 30% of final mark

- Weighted average of 50% to pass the course

Resits

- One resit for both exams together (40%)

- One resit per assignment (mostly likely redo of assignment with modified tasks)

- June 18

Course website

- No Brightspace!

- Everything is here: https://3d.bk.tudelft.nl/courses/geo1004/

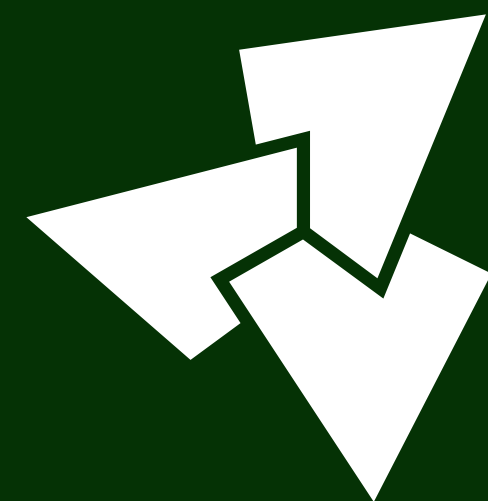- Check announcements/timetable to see if any information will be presented live

Questions?

- Everything on Discord:
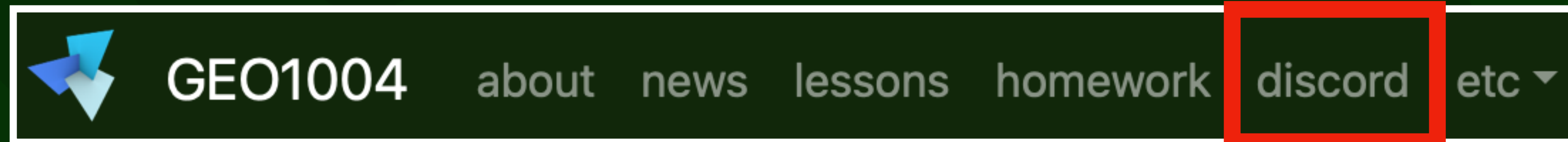
- Don't hesitate to ask! General software/programming questions are fine too

- If possible, use geo1004 channel -> everyone can benefit from answers

- E-mail or Discord DM for personal matters

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