Course introduction

GEO1004:
3D modelling of the built environment

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

3D geoinformation

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Student assistant

And you?

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

- 2019-2020: Entirely new contents

- 2020-2021: Improved materials

- 2021-2022: 3D book!

- Further improving some materials as we go -> we'll make lessons available a short time before the schedule

- 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)

Blended learning

In your own time:

1. Watch videos

2. Read materials

3. **Most important**: work on assignments

Contact hours?

Per week: 2x2h during Monday & Wednesday labs (15:45)

From week 2: 2h of help on Thursdays with Özge (Geolab @ 10:30)

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, general programming questions, feedback on assignments/exams, etc.

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

Covid: hybrid labs

- Will try to live-stream in-lab group explanations (not 1-to-1 help)

- If not attending in person: ask questions through Discord

- Backup plan: recordings or posting all important information in website/Discord

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 (at the end of book chapters)

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

6. Spend more time on assignments than on lessons

Lessons

- 1.1: Intro / DS and DM [K]

- 1.2: B-rep [K]

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

- 2.2: Voxels / voxelisation [K]

- 3.1: 3D DT / Voronoi [H]

- 3.2: ISO 19107 [H]

- 4.1: 3D city models [H]

- 4.2: Curves [K]

- 5.1: MAT [R]

- 5.2: LoD2 reconstruction [R]

- 6.1: CSG / Nef polyhedra [K]

- 6.2: BIM [K]

- 7.1: Conversions [H]

- 7.2: Applications [K]

Assignments

- Programming tasks using C++ and open source libraries

- 20% each

- 0: C++ preparation (no deadline / not marked)

- 1: G-map triangulation (Mar 4) -> available from next Monday

- 2: Enriching the 3D BAG (Mar 18) -> available in week 4

- 3: BIM processing with CSG (Apr 4) -> available in week 6

Two exams

- Mid-term

  - Lessons 1.1 - 4.1

  - Mar 2

  - 5% of final mark

- Final

  - All lessons

  - Apr 14 @ 9:00

  - 35% of final mark

- Weighted average of 50% to pass the course

- Logistics t.b.d. based on covid situation

Resits

- One resit for both exams together (40%)

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

- June 17 @ 9:00

Course website

- No Brightspace!

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

- On Monday: check announcements/timetable to see if any information will be presented live

Questions?

- In person during contact hours or Discord anytime:
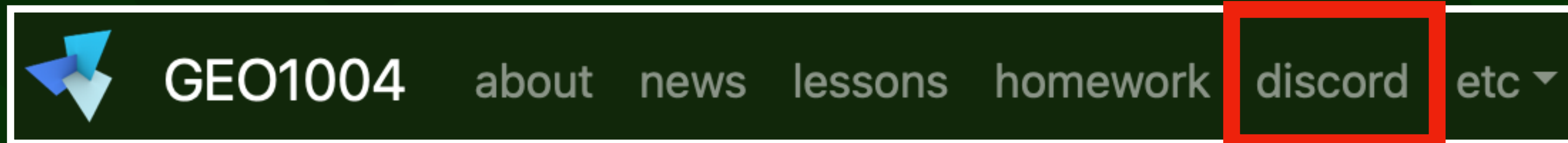
- Don't hesitate to ask! General software/programming questions are fine too

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

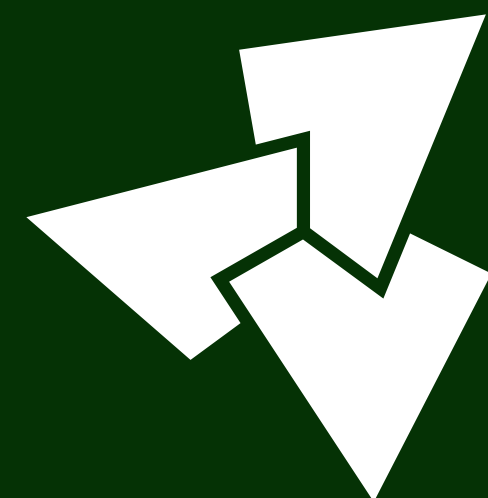- E-mail or Discord DM for personal matters

What to do next?

1. Today:

    • Go to geo1004 website and study today's lesson (video + 3D book chapter)

    • Homework 0 (install required software for C++ assignments)

    • If you have extra time, maybe start with Wednesday's lesson

2. Wednesday: no lecture, but I'll be here if you have any questions about lessons or C++ installation

3. Next Monday: guest lecture + intro to homework 1 in BK room B

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