Remote Sensing and GIS Integration

GRS-60312

Academic year 2016-2017: period 6
Remote Sensing and GIS Integration (GRS-60312)

Language of instruction: English

Study load / Credit points: 12 ects

Components:
- Classroom lectures: 8 contact hours (1 ects)
- Practical: 80 (2.5 ects)
- Fieldwork: 40 (1.5 ects)
- Excursion: 24 (1 ects)
- Project: 144 (6 ects)

Period/time:
- 6 (May, June)
- Whole day (8.30 – 17.15 h)

Examination:
- Fieldwork and validation plan (10%)
- Portfolio and presentation prototype Integrated Monitoring System (20%)
- Project proposal (10%), Project report (35%), Written self assessment (Go-adjust)
- Reflection paper and process (25%)
  (Note – minimum requirement for different parts is ≥ 5.5)

Contact person: dr. L. Kooistra
  (tel. 0317-481604; lammert.kooistra@wur.nl)


Examiners: dr. L. Kooistra, prof. dr. A. Bregt

Assumed knowledge:
- Introduction Geo-Information Science (GRS-10306)
- Remote Sensing (GRS-20306)
- Geo-Information Tools (GRS-20806).

Continuation courses: MSc Thesis, Msc Internship

Course website: http://www.geo-informatie.nl/courses/grs60312/
Profile of the course:

This course focuses on the proper use of GIS- and Remote Sensing concepts, methods and data when contributing to a geo-spatial project within a group having a multidisciplinary background. In the first part of the course, the students will work on a group assignment to explore the integrating aspect of the field of geo-information science in relation to the different components of the geo-information cycle and bordering scientific and application fields. More specifically, a design and a prototype for an integrated monitoring system will be developed, associated data quality aspects will be evaluated through field validation and finally the prototype will be presented focusing on the key-users of the monitoring system.

The second part of the course involves the execution of a real-world project in the geo-spatial domain. Teams of 5 students with a multidisciplinary and preferably a multicultural background are assigned a project and carry out a design type study for an external client. Each team has an assigned process coach and a content expert relevant to the project. The project includes fieldwork, excursions, analysis and reporting and requires synthesizing knowledge from different disciplines. The project is evaluated in terms of process and applied research methods with specific focus on the formulated interdisciplinary synthesis of the compiled information and the resulting advice to the client.

Learning outcomes:

At the end of the course, the student is expected to be able to:

- design and evaluate a fieldwork plan for a specified integrated monitoring system according to the concepts of integration in the geo-information cycle.
- Formulate a project plan (define results, suitable phasing of activities and distribution of tasks among team members) and contribute interactively to the determination of the goals of the project with a client (third party).
- Design and test a processing protocol for calibration or validation of a geo-spatial model according to the formulated project goals.
- Select and integrate information gathered in their disciplinary field and produce a project deliverable as appropriate to the interdisciplinary design and in conformity to disciplinary quality standards.
- Demonstrate the understanding of the proper use of GIS- and remote sensing concepts, methods and data when carrying out a project from A to Z.
- Analyze and reflect on communication and co-operation with group members, client, process coach, content expert and other parties involved during the various stages of the project.
- Organize and accomplish tasks within given constraints on time and other resources.
- Assess the contribution of themselves, team members and other stakeholders on team functioning and execution of project tasks and appropriately reflect on these and give feedback in writing and verbally.
Activities:

*Skills and knowledge training*
- Lectures and practicals on concepts for integrated monitoring systems and communication and visualization of dynamic monitoring data.
- Fieldwork and excursions.
- Using GIS, geo-visualization and image processing software.

*Team meetings*
- Each student will assume a role with a clear task description: e.g. team manager, secretary, member.
- During the course, teams have formal meetings, which the process coach attends regularly. With the assistance of the coach students regularly reflect on the functioning of the team and of individual members.
- Students compile a (self) assessment dossier.
- Students organize and prepare meetings with the external client. During at least one the coach will be present as observer.

*Project execution*
- Teams prepare a project plan. It should at least contain problem definition, objective, proposed approach, activities and division of tasks, a planning chart, and involved risks. The plan is assessed by the client and a content coach/expert before a final plan is made. During project execution the group checks the work-plan and negotiates adjustments when and if needed.
- During project execution a division of tasks is needed, yet all members should actively work on synthesis and participate in the formulation of the final product and recommendations to the client.

*Prepare project deliverables*
- Oral presentation
- Project document
- Poster

*Study material:*
- Background literature for module on design and prototyping of an Integrated Monitoring System will be available via the course website
- Powerpoint presentations of lectures and training, available via course website
- Course guide for Academic Consultancy Training in Remote Sensing and GIS Integration Course

*Scheduling:*

The detailed course schedule will be made available through the course website: [http://www.geo-informatie.nl/courses/grs60312/](http://www.geo-informatie.nl/courses/grs60312/).

*General regulations:*
Appendices

Appendix A  Time schedule
Appendix B  Course guide for Academic Consultancy Training in Remote Sensing and GIS Integration Course
Appendix C  Assessment strategy GRS60312
## Schedule Remote Sensing and GIS Integration Course 2017

### Version April 2017

<table>
<thead>
<tr>
<th>Modules</th>
<th>Nr of full days</th>
<th>Staff acronyms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Data Handling and Visualization</td>
<td>8</td>
<td>LK</td>
</tr>
<tr>
<td>Fieldwork</td>
<td>4</td>
<td>AB</td>
</tr>
<tr>
<td>Consultancy project</td>
<td>23</td>
<td>RL</td>
</tr>
<tr>
<td>Excursion</td>
<td>2</td>
<td>SB</td>
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<td></td>
<td>37</td>
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**Start course Monday May 15 at 8:30 (room C0093)**

During the whole course PC0094, PC0095 and PC0096 will be available. Some lectures will be given in C0093 (Gaia)—see course schedule.

### Week 1

**Monday May 15 (C0093)**  
Wednesday May 17 (C0093)  
Friday May 19

**Morning (8:30-12:15)**  
- Intro course/project (LK)
  - Project proposal

**Afternoon (13:15-17:15)**  
- Kick-off meeting DHV
- Feedback session
- Communication Skills I

### Week 2

**Monday May 22**  
Wednesday May 24  
Friday May 27

**Morning (8:30-12:15)**  
- Meeting commissioner
- Fieldwork plan
- Field spectroscopy

**Afternoon (13:15-17:15)**  
- Feedback fieldwork plan
- Commission

### Week 3

**Monday May 29**  
Wednesday May 31  
Friday June 2

**Morning (8:30-12:15)**  
- Fieldwork Skills for geo-business in Achterhoek near Groenlo (5 overnight stays)
- Feedback DHV analysis

**Afternoon (13:15-17:15)**  
- Draft fieldwork plan
- Deadline fieldwork plan

### Week 4

**Monday June 5**  
Wednesday June 7  
Friday June 9

**Morning (8:30-12:15)**  
- Holiday
- Whit Monday

**Afternoon (13:15-17:15)**  
- DHV analysis
- Communication Skills II

### Week 5

**Monday June 12 (C0093)**  
Wednesday June 14  
Friday June 16

**Morning (8:30-12:15)**  
- DHV presentation day
- Feedback proposal

**Afternoon (13:15-17:15)**  
- Deadline final proposal

### Week 6

**Monday June 19**  
Wednesday June 21  
Friday June 23

**Morning (8:30-12:15)**  
- Analysis phase

**Afternoon (13:15-17:15)**  
- Analysis phase

### Week 7

**Monday June 26**  
Wednesday June 28  
Friday June 30

**Morning (8:30-12:15)**  
- Analysis phase

**Afternoon (13:15-17:15)**  
- Analysis phase

### Week 8

**Monday July 3**  
Wednesday July 5  
Friday July 7

**Morning (8:30-12:15)**  
- Whit Monday

**Afternoon (13:15-17:15)**  
- Deadline project report
- Deadline reflection paper
Appendix B

Course guide for Academic Consultancy Training in Remote Sensing and GIS Integration Course

### Appendix C

**Assessment strategy for RS and GIS Integration Course (GRS60321)**

#### Assessment strategy (Toetsplan) GRS-60312 RS & GIS Integration Course

<table>
<thead>
<tr>
<th>Task</th>
<th>Contribution to Final Mark (%)</th>
<th>Examiner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design and evaluate a fieldwork plan for a specified integrated monitoring system</td>
<td>20</td>
<td>Lammert Kooistra</td>
</tr>
<tr>
<td>2. Formulate a project plan (define results, suitable phasing of activities and</td>
<td>10</td>
<td>Arnold Bregt and Lammert Kooistra</td>
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<td>distribution of tasks among team members) and contribute interactively to the</td>
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<tr>
<td>determination of the goals of the project with a client (third party).</td>
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<tr>
<td>3. Design and test a processing protocol for calibration or validation of a geo-</td>
<td>10</td>
<td>process coach, Lammert Kooistra</td>
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<tr>
<td>spatial model according to the formulated project goals.</td>
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<tr>
<td>4. Select and integrate information gathered in their disciplinary field and produce</td>
<td>10</td>
<td>process coach, Lammert Kooistra</td>
</tr>
<tr>
<td>a project deliverable as appropriate to the interdisciplinary design and in</td>
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<tr>
<td>conformity to disciplinary quality standards.</td>
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<tr>
<td>5. Demonstrate the understanding of the proper use of GIS- and remote sensing</td>
<td>35</td>
<td>process coach, expert, commissioner, Lammert Kooistra</td>
</tr>
<tr>
<td>concepts, methods and data when carrying out a project from A to Z.</td>
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<tr>
<td>6. Analyze and reflect on communication and co-operation with group members, client,</td>
<td>12.5</td>
<td>process coach, Lammert Kooistra</td>
</tr>
<tr>
<td>process coach, content expert and other parties involved during the various stages</td>
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<td>of the project.</td>
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<tr>
<td>7. Organize and accomplish tasks within given constraints on time and other resources.</td>
<td>12.5</td>
<td>process coach, Lammert Kooistra</td>
</tr>
<tr>
<td>8. Assess the contribution of themselves, team members and other stakeholders on</td>
<td>100</td>
<td>group students per project team, Lammert Kooistra</td>
</tr>
<tr>
<td>team functioning and execution of project tasks and appropriately reflect on these</td>
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<td>and give feedback in writing and verbally.</td>
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| Validation and fieldwork plan, hand in week 2                                          |                               |                                                                         |
| Portfolio and presentation Prototype Integrated Monitoring System, week 5               |                               |                                                                         |
| Project plan consultancy project, hand in after week 5                                 |                               |                                                                         |
| Final product consultancy project, hand in during week 8, assessment also includes    |                               |                                                                         |
|   presentation for commissioner                                                        |                               |                                                                         |
| Coach assessment process, based on expectation paper (week 2) and final reflection     |                               |                                                                         |
|   paper (week 8)                                                                       |                               |                                                                         |
| Mutual assessment process, students within project team gave grades on specified       |                               |                                                                         |
|   aspects and including written and verbal feedback in evaluation meeting (week 8)     |                               |                                                                         |

### Validation and Fieldwork Plan

- **Week 2**: Examiner: Lammert Kooistra
- **Week 5**: Examiner: Ron van Lammeren and Lammert Kooistra
- **Week 8**: Examiner: Process coach, Lammert Kooistra

### Portfolio and Presentation

- **Integrated Monitoring System, Week 5**: Examiner: process coach, Lammert Kooistra
- **Consultancy Project**: Examiner: Lammert Kooistra

### Final Product Consultancy Project

- **Week 8**: Examiner: Process coach, Lammert Kooistra

### Coach Assessment Process

- Based on expectation paper (week 2) and final reflection paper (week 8)
- Examiner: process coach, Lammert Kooistra

### Mutual Assessment Process

- Students within project team gave grades on specified aspects and including written and verbal feedback in evaluation meeting (week 8)

### Examiners

- Lammert Kooistra
- Arnold Bregt
- Ron van Lammeren
- Process coach
- Content expert