OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

FACULTY OF COMPUTER SCIENCE

SwarmLab

Introduction to Software Engineering for Engineers
L-01: Introduction and Organization
Part 1: Objectives and Organization

Dr.-Ing. Christoph Steup

Content

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  - Course Objectives
- Organization
  - General Course Information
- Course Project
  - Objectives
  - General Information
- Group and Individual Deliverables
  - Group Deliverables
  - Individual Deliverables
- Soft Skills
  - Presentation

Introduction

Course Objectives

- Aim of the course
  - to give students a basic knowledge of software engineering and to provide them with first experience in project work
- You will learn
  - the principles of software engineering and requirements engineering
  - about common design principles and testing strategies for a software system
  - how to develop as a team a mobile applications to solve a real-world problem

Course Objectives (II)

- This course is **NOT** about:
  - to learn the concepts, implementations, and applications of fundamental data structures and algorithms
  - to provide first experience in programming
- To this end, there is a lecture in the winter term, Introduction to Computer Science for Engineers (ICSE)

Organization

Course Website

- Schedule & Overview:
  - Webpage: http://ci.ovgu.de/Teaching/SS+20/ISEE.html
  - Material, assignments, and announcements via Moodle
  - Moodle: https://elearning.ovgu.de/course/view.php?id=7289
  - Please register!
  - Gitlab: http://code.ovgu.de
- Gitlab: your project will live here (as soon as you have formed a team)

Schedule

- Tight Schedule
- Be ready for updates
- Visit the Schedule webpage regularly

Schedule

ISEE - Schedule 2020

Preliminary Semester Plan for the summer term 2020.

This schedule may be subject to change (e.g., in case of unforeseen issues).
However, you will be informed about any changes via the Moodle.

Schedule (tentative):

Week	Date	Lectures	Exercise	Project
00 (KW16)		Individual Preparation	Individual Preparation	Introduction to Android App development (on your own, examples below) ‣ tutorial on Android Development in Moodle ‣ tutorial on Java Development in Moodle
01 (KW17)	21.04.	L-01: Introduction & Project Organization		Weekly Project Meeting: ‣ team formation done ‣ Q&A especially Android Developmetn
	22.04.		L-02: Software Process Models & SCRUM	
02 (KW18)	28.04.	P-01: Team Presentation		Weekly Project Meeting: ‣ requirements elicitation
	29.04.		P-01: Team Presentation	
03 (KW19)	05.05.	L-03: Requirements Analysis		Weekly Project Meeting ‣ reviewig user stories and next steps
	06.05.		L-04: Class Diagrams	
04 (KW20)	12.05.	L-05: Behavioral Diagrams		
	13.05.		L-06: Software Architecture	
05 (KW21)	19.05.	L-07: Software Design & Patterns		
	20.05.		Project Work	
06 (KW22)	26.05.	Project Work		
	27.05.		Project Work	
07 (KW23)	02.06.	P-02: Basic Prototype		
	03.06.		P-02: Basic Prototype	
08 (KW24)	09.06.	L-08: Implementation		
	10.06.		L-09: Quality Assurance & Software Testing	
09 (KW25)	16.06.	Project Work		
	17.06.		Project Work	
10 (KW26)	23.06.	P-03: Advanced Prototype		
	24.06.		P-03: Advanced Prototype	
11 (KW27)	30.06.	Project Work		
	01.07		Project Work	
12 (KW28)	07.07.	P-04: Beta Prototype		
	08.07.		P-04: Beta Prototype	
13 (KW29)	14.07.	Final Report & Product Presentation		
	15.07.		Final Report & Product Presentation	
Legend:		Lecture (i.e., information is provided by instructor)		
		Presentation of milestones (information provided by students)		
		Project Work (time to spent freely on project work; not in classroom)		

http://ci.ovgu.de/Teaching/SS+20/ISEE/Schedule.html

Course Staff

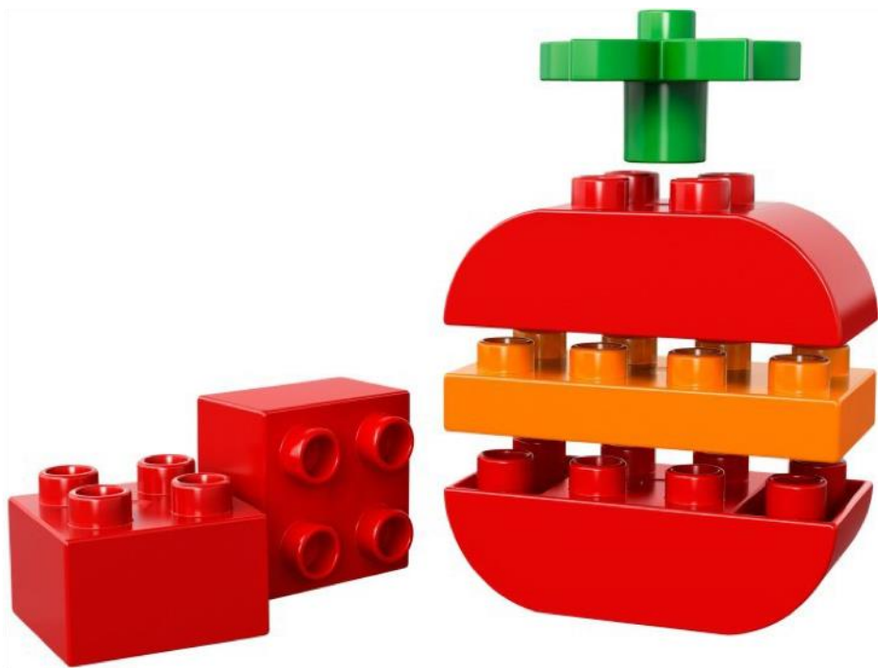
- Instructor
  - Dr.-Ing. Christoph Steup
  - steup@ovgu.de
  - Office: G29-014 (appointments on negotiation via email)
- Teaching assistants
  - Tarun Gupta
  - Ahmad Shazad

Course Structure

- ~15% - Lecture (online)
  - Attendance: **expected**
    - Uploaded till every Tuesday at 11:00
    - Lecture Slot: Tuesday 11:15 – 12:45
    - Exercise Slot: Wednesday, 11:15 – 12:45
    - Lecture and Exercise Slot will be used for live video conferences
- ~10% - Milestone Presentations
  - Attendance: required
  - on selected weeks, time slots of lecture & exercise, see Schedule
- 10 – 15% - Tutorials
  - Attendance: **required**
  - see web page, depends on project task (in LSF, this is referred to as “Seminar/Exercise)”
- 55-60% - Course Project
  - Attendance: **required (will be graded)**

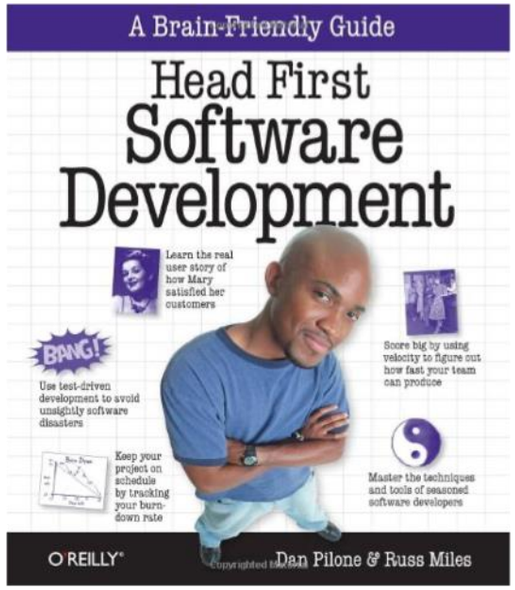
Lecture Contents

- Opportunity
  - to get basic knowledge of principles & methods of software engineering
  - to get the required knowledge for the course project
- Semester plan:
  - Software Processes & SCRUM
  - Requirements Analysis
  - UML (Class & Behavioural Diagrams)
  - Software Architecture
  - Software Design Patterns
  - Implementation/GUI Design
  - Quality Assurance/Testing

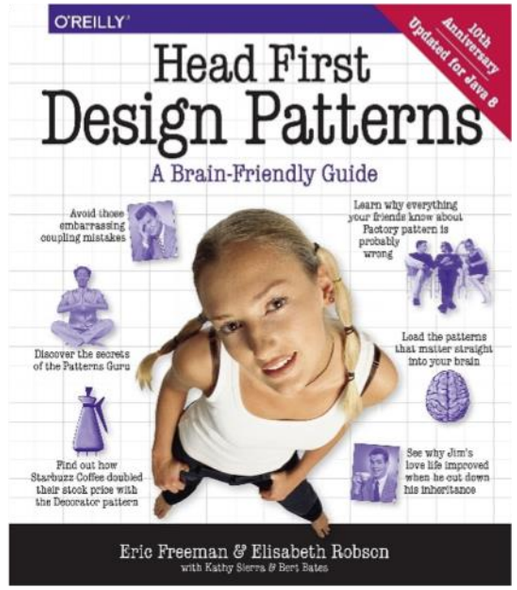


Lecture: Literature

Head First
Software Development



Head First
Design Pattern



More Literature:

- Ian Sommerville, *“Software Engineering”*, 9th edition
- Hunt, “The Pragmatic Programmer”

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Introduction to Software Engineering for Engineers
L-01: Introduction and Organization
Part 2: Course Project

Dr.-Ing. Christoph Steup

Course Project

- Opportunity:
  - to learn “software engineering” by working on a real project
  - to develop mobile applications to solve real-world problems
- Real-Word Problems:
  - Get Home Safe
  - Bird Tracking
  - Money Control
- Teamwork:
  - is an integral part of large-scale software development
  - done in teams of max. 4 students

Course Project

- Is the vehicle to get you in touch with reality ;-)
- Goal: hands-on software engineering experience
- in 12 weeks, you will
  - work hard as a team —> requires communication and coordination
  - work in an agile fashion
  - apply SE principles
  - develop an Android App

Course Project: Real-World Problems

- Bird tracking

  - a mobile application to track bird occurrences, e.g., when and where a particular bird has been observed

  - Customer: Depends on your tutorial (Tarun or Ahmad)

- Get home safe

  - a mobile app to automatically communicate that a peer got home safely (e.g., after a journey or an evening with friends)

  - Customer: Depends on your tutorial (Tarun or Ahmad)

- Money Control

  - a mobile app for continuous monitoring of what you spent you money for, hopefully preventing the user that

  - Customer: Depends on your tutorial (Tarun or Ahmad)

Team Building

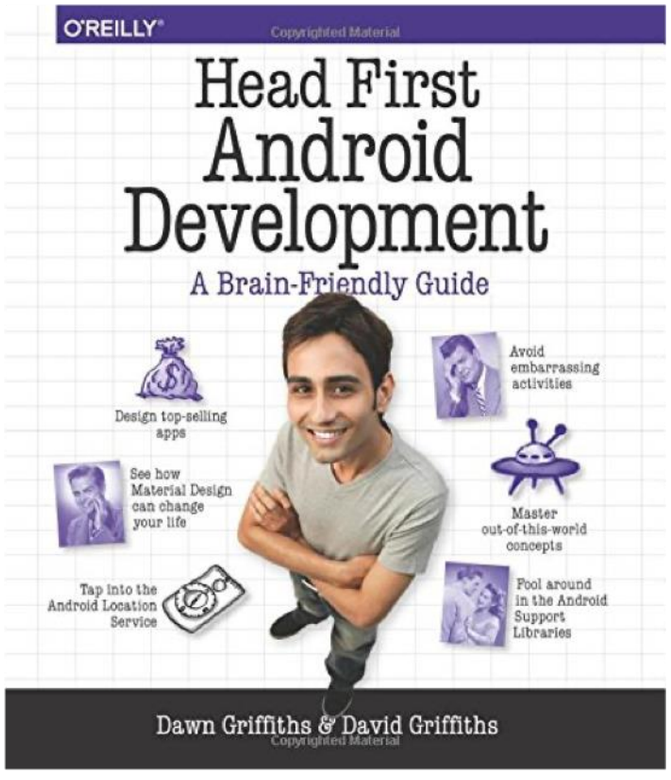
- Enrollment via LSF for each Tutorial that fits to your schedule (starts on April 20). please fill in a priority for every Tutorial!
- I will assign students to a Tutorial
- In week 1 (April 20 to 25), you will form your **team of 4 students** in the Tutorial
- notify me via email about your team
  - team name
  - member name, student account name
  - preferred topic

Course Project

- Milestones:
  - Team presentation
  - Basic Prototype
  - Advanced Prototype
    - Beta Prototype
  - Final presentation
- Software Engineers Blog:
  - will be used to document the course project (also visible for others)

Course Project: Literature

Head First
Android Development



Milestone Presentations

- Opportunity
  - to train your presentation skills
  - to get feedback from other teams on your project
- Attention: 8 minutes only!

Milestone Presentations (II)

- Presentations
  - each team member will give at least one presentation
  - used to present milestones of project
    - Team Presentation
    - Basic Prototype
    - Advanced Prototype
    - Beta Prototype
    - (Final Presentation)

Tutorials

- Opportunity:
  - to get in contact with the customer
  - to ask questions about the course project
  - to receive practical assistance to develop a mobile application
- Customer:
  - Tarun Gupta
  - Ahmad Shazad
- Tutorial Time and Location:
  - default slots of 15 minutes will be allocated for each team
  - weekly/bi-weekly meeting to discuss the course project

Workload

Lectures			Course Project		
Topic	Attendance	Revision	Topic	Attendance	Work
Introduction&Process Models	02	01	Android Fundamentals		20
Requirements Analysis	02	01	Team Presentation	02	02
Class Diagrams	02	01	Requirements and Specification	02	05
Behavioural Diagrams	02	01	System Design	02	10
Software Architecture	02	01	Implementation	02	25
Design & Patterns	02	01	Testing Design	02	05
Implementation	02	01	Testing		20
Quality Assurance	02	01	Final Report	02	05
Software Maintenance	02	01			
(Project Management)	02	01			
Totals	20	10		12	92

Total hours used	149	(workload for exercises not depicted above)
Workload for 5CP	150	
Hours still available	001	(for organizational stuff, etc.)

To be successful

- You need to work step by step.
  - attend lectures and exercises
  - submit blog articles and presentation slides on time
  - discuss ideas and problems with your classmates and TA (a discussion board will be available on Moodle)
- Most Important:
  - work as a team
- This course starts fast…and so should you do

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Part 3: Group and Individual Deliverables

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Group Deliverable: Android App

- Mobile Application:
  - Requirement and Specification
  - System Design
  - User Interfaces
  - System Implementation
  - Testing Design
  - Testing
- Agile development process:
  - you start with prototype (covering all phases from above)
  - you will refine artefacts of all phases in sprints
  - at the end of each sprint, a working app is required!

Group Deliverable: Blog Article

- Blog Articles:
  - Team Presentation
  - Basic Prototype
  - Advanced Prototype
  - Beta Prototype
  - Final Report

- Detail Requirements and Specification:
  - will be announced during the lectures
  - Deadline: in the week before corresponding team presentations on Sunday at 11:59 pm

Group Deliverable: Weekly Report

- As in a real project:
  - keep your boss, executives, etc. up-to-date
  - reflect on the progress of last week
- Structure:
  - consists of three sections
    - first section: a copy of third section of last week (what where your actual goals)
    - second section: your actual progress, including
      - what each team member has been done (and which role she had)
      - what have you learned
      - where you have trouble or even got stuck
    - third section: plans and goals for the following week
    - fourth section: Agenda for meeting with TA (only in weeks where project meetings take place
- Deadline: Wednesdays, 5 pm (starts in week 3); submitted via Moodle

Individual Deliverable: Presentation

- Milestones:
  - Team Presentation
  - Basic Prototype
  - Advanced Prototype
  - Beta Prototype

- Notice:
  - each team member will give at least one presentation
  - need to be submitted (in week before) Sunday at 11:59 pm via Moodle

Grading

The grading for the course consists of:

- Individual Part:
  - 20 % - Presentation
    - to give a presentation to reflect the current project status
  - 10 % - Contribution
    - how much you contribute to the deliverables and discussions
- Group Part:
  - 30 % - Blog articles
    - will be graded based upon the content and clarity of exposition
  - 10 % weekly report
    - will be graded based upon the clear structure and goals of your weekly sprints
  - 30 % - Product:
    - will be graded against the defined requirements

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Introduction to Software Engineering for Engineers
L-01: Introduction and Organization
Part 4: Soft Skills - Presentations

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Project Presentation

Possible Outline:

- Title / Author / Affiliation (1 slide)
- Forecast (1 slide)
- Outline (1 slide, optional)
- Background
  - project motivation: Why is it important? (1 slide)
  - earlier project work: What have we done before? (0-1 slides)
  - methods: What is our approach? (1-2 slides)

Project Presentation

Possible Outline:

- Results (2-6 slides)
  - key results and key insights
  - DON’T try to show ALL results
- Summary (1 slide)
- Future Work (0-1 slides)
- Backup Slides (0-3 slides)
  - optionally have a few slides ready to answer expected questions.

Project Presentation

Some pointers for a good presentation

- avoid trying to put too much into one slide
  - don’t be a slave to your slides
- be brief
  - use keywords rather than long sentences
- use a large font
- use **color** to emphasize
- use illustrations to get across key concepts
- make eye contact
- be ready to skip slides if time is short
- practice !!

Team Presentation

Presentation

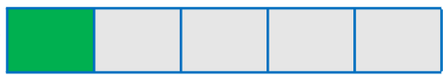
Team Presentation:

- present your team and the selected course project:
  - team name and logo,
  - team members and their personal motivation
  - skills and background of team members
- Intended length:
  - max. 8 minutes
- Submission:
  - slides need to be submitted before 27.04. via Moodle

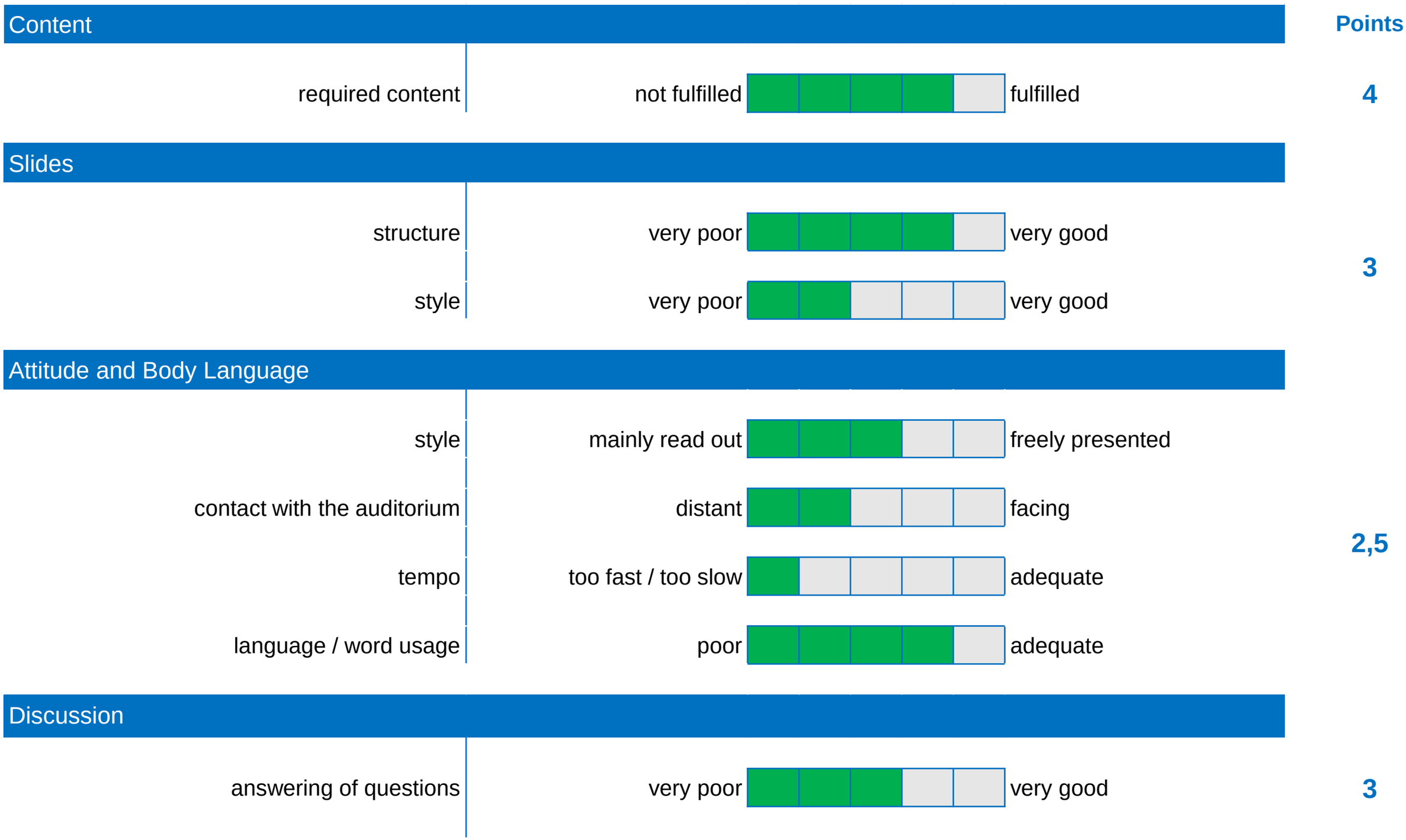
Presentation: Assessment

			Points
Content			
required content	not fulfilled	fulfilled	5
Slides			
structure	very poor	very good	5
style	very poor	very good	
Attitude and Body Language			
style	mainly read out	freely presented	5
contact with the auditorium	distant	facing	
tempo	too fast / too slow	adequate	
language / word usage	poor	adequate	
Discussion			
answering of questions	very poor	very good	5

Presentation: Assessment

		Points
Content		
required content	not fulfilled  fulfilled	4
Slides		
structure	very poor  very good	6 / 2
style	very poor  very good	
Attitude and Body Language		
style	mainly read out  freely presented	10 / 4
contact with the auditorium	distant  facing	
tempo	too fast / too slow  adequate	
language / word usage	poor  adequate	
Discussion		
answering of questions	very poor  very good	3

Presentation: Assessment



Presentation: Assessment

			Points
Content			
required content	not fulfilled	fulfilled	
Slides			
structure	very poor	very good	
style	very poor	very good	
Attitude and Body Language			**12,5**
style	mainly read out	freely presented	**of**
contact with the auditorium	distant	facing	**20,0**
tempo	too fast / too slow	adequate	
language / word usage	poor	adequate	
Discussion			
answering of questions	very poor	very good	

Recommended Watching

Guy Kawasaki “The Art of the Start”

- “The 10 20 30 Rule” (24:00 – 30:00)

https://www.youtube.com/watch?v=jSlwuafyUUo&nohtml5=False