UPPSALA UNIVERSITET

Information Management Systems

IMS 2020

UPPSALA UNIVERSITET

Teachers

- Aletta Nylén, Head teacher
- Kjell Orsborn, Teacher
- Khalid Mahmood, Assistant

UPPSALA UNIVERSITET

Learning objectives (formal)

1. Evaluate and compare biotechnical applications and, based on technical requirements, assess their applicability in a given context.
2. Design and implement a webbased biotechnical application, including database management system, web server and user interface.
3. Handle technical and domain specific aspects in the development process and the trade-off between requirements and needs in the design to select a suitable technical solution within given technical constraints.
4. Use relevant tools such as database management systems, web servers, client and server based script languages and development tools for web applications.
5. Plan and execute a structured project in collaboration with other students within given constraints, contribute constructively to the work, reflect on and develop collaboration within the group during the process.
6. Present and discuss the contents of the course orally and in writing with a proficiency suitable for the course level.

Course activity: Open-ended group project

- Open-ended: not rigourously fixed, as
  a. Adaptable to the developing needs of a situation
  b. Permitting or designed to permit spontaneous and unguided responses (Merriam-Webster)
- You will not be given a project specification by the teaching staff – instead you will propose a project that must be approved by the teaching staff.

UPPSALA UNIVERSITET

Course activity: Open-ended group project

- Develop a LIMS web application
  - Design a technical solution to a self-selected problem (2, 3)
  - Implement your solution (2, 3, 4)
  - Structured project work (5)
  - Discuss, evaluate and reflect on your own and others' work (technical and project) orally and in writing (1, 6)

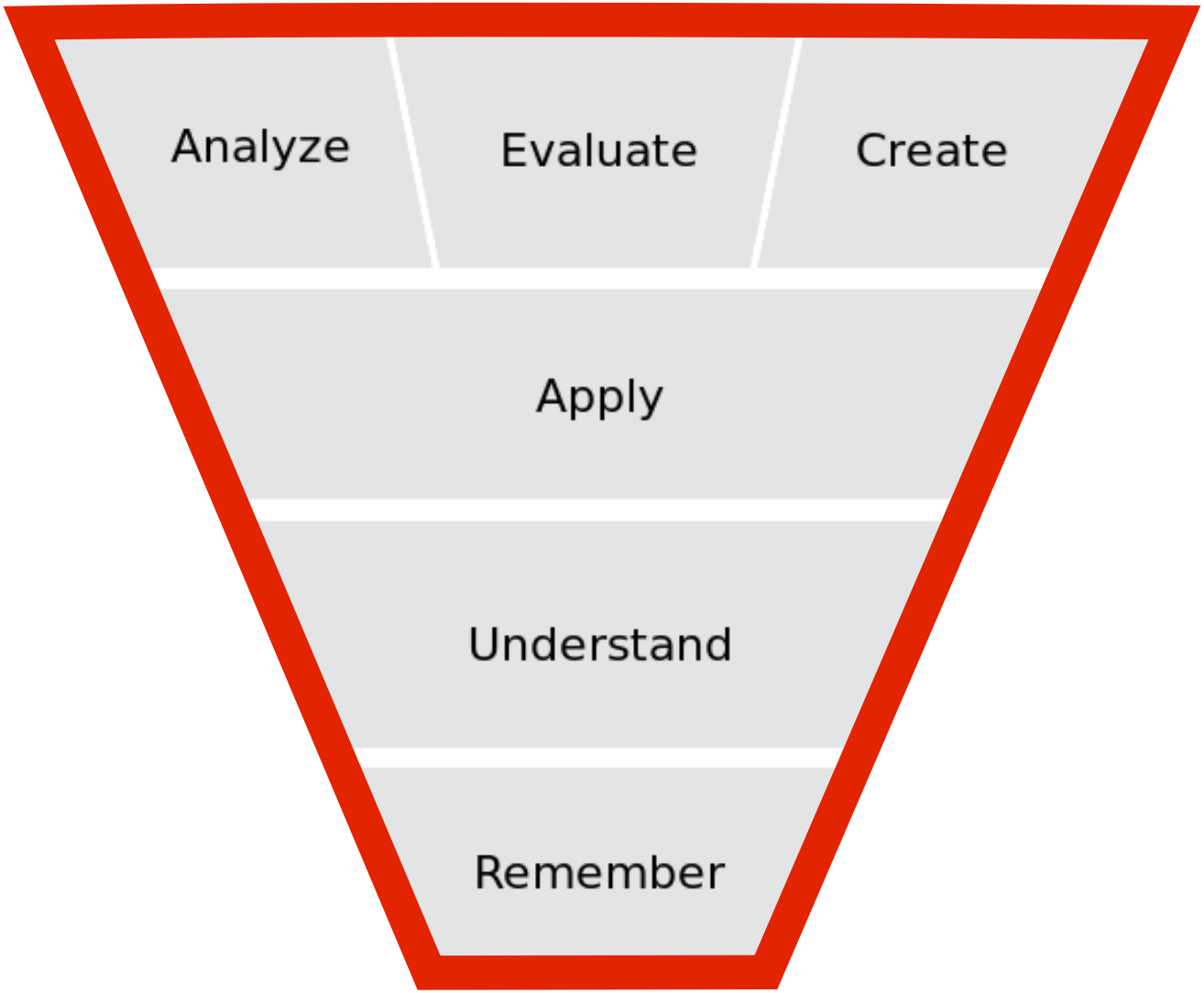
Developing skills

In an open-ended group project you will practice and develop several professional skills including:

- **Collaboration**: within your project team
- **Critical thinking**: asking the right questions to find a solution
- **Creative thinking**: finding (unique) solutions to critical questions
- **Planning** and **time management**: finishing solutions when they are due
- **Communication**: within your project team, presentation skills, writing skills
- **Self-directed learning**: find and learn what you need

Categories in the cognitive domain of Bloom's Taxonomy

A consequence of the open ended group project is that you are forced to explore many of the categories of the cognitive domain.



UPPSALA UNIVERSITET

Brief Course Outline

Week	Project work	Presentations	Writing	Other activities
4	Startup	Project Plan		Lectures, Lab
5	Tutoring		Project Plan	Lectures, Lab
6	Tutoring		Workshop	Guest lecture
7	SE-workshop, Tutoring			Guest lecture
8	Tutoring	Half time		
9	Tutoring			Guest lecture
10	Tutoring		Workshop	
11		Rehersal + Final	Peer feedback	
12			Final report	Final seminar

UPPSALA UNIVERSITET

Important Dates

- Jan 24: Project plan presentation
- Jan 28: Written project plan
- Feb 3: Report – draft 1
- Feb 10: Software Engineering assignment
- Feb 18: Half time presentation
- Mar 2: Report – draft 2
- Mar 10: Final presentation rehersal, Report – draft 3
- Mar 13: Final presentation, Peer feedback
- Mar 18: Final report, Individual reflection, Learning Journal
- Mar 20: Final seminar

Working Hours

Per student		
10 hp	67 %	27 hours/week
Per 6-student team		
		162 hours/week

Approximately 6 weeks

UPPSALA UNIVERSITET

Assessment

- Grades U, 3-5
- Grade = 0,25 * project grade + 0,75 * individual grade
- Note that e.g., collaboration and communication skills are among the learning outcomes!

UPPSALA UNIVERSITET

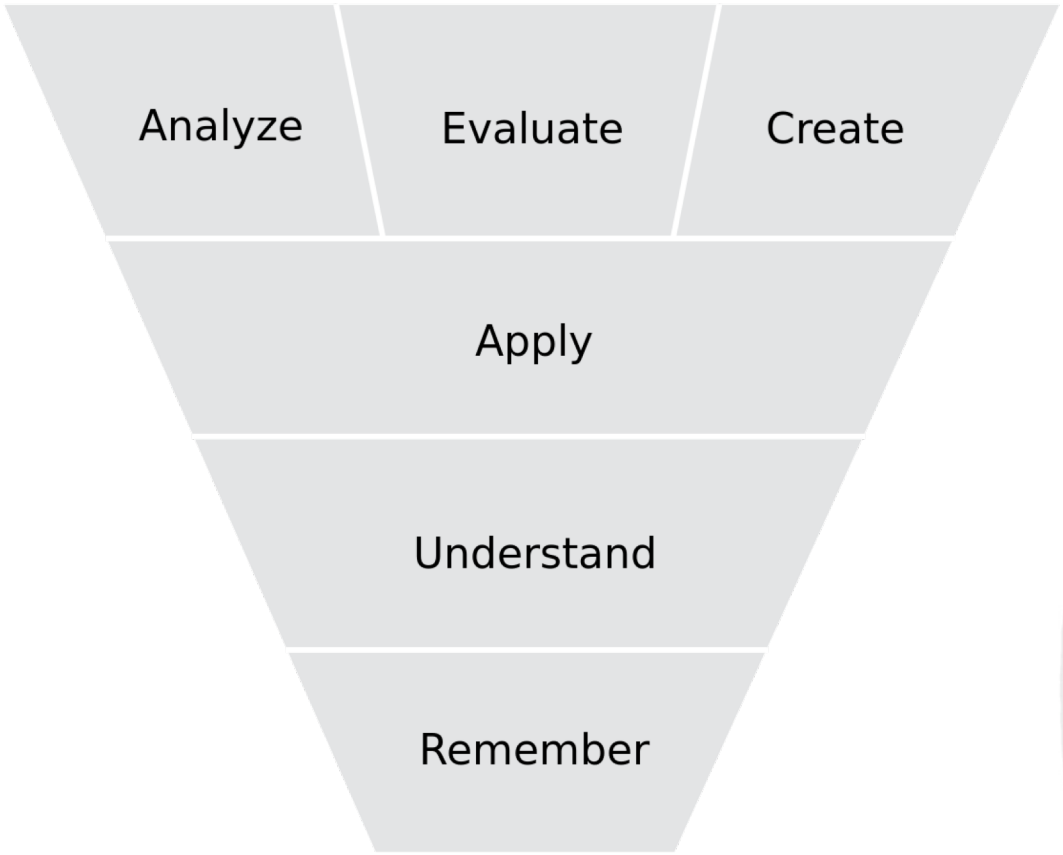
Assessment – project (team) grade

- The project is assessed mainly by how it relates to the **learning outcomes of the course**.
- **Not** by how well the resulting system correlates to the original project plan.
- It is assessed **continuously** over the course of the project.

Assessment – individual grade

- Individual students are assessed by how they show understanding of the course learning outcomes and how they relate to the project. In particular:
  - how the student can describe, discuss and reflect on their own contribution and its role in the project
  - how the student can describe, discuss and reflect on the project as a whole
  - how the student can discuss other teams projects

Higher grades



Higher order thinking

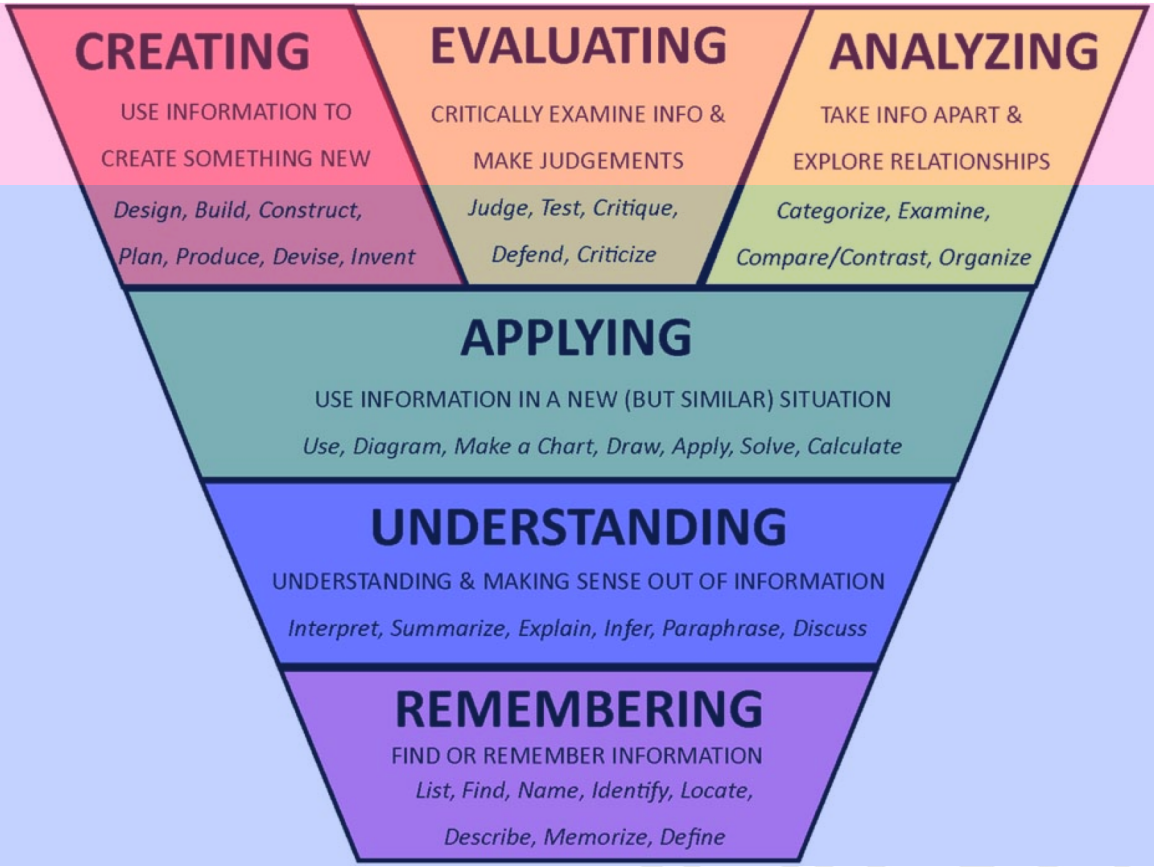
Lower order thinking

UPPSALA UNIVERSITET

Grades – graphical view

Grade 4-5

Grade 3



UPPSALA UNIVERSITET

How to get higher grades

- Examples of opportunities to show that you are worth a higher grade:
  - Design choices (good motivations)
  - Evaluation of results
  - Analysis of problems you encounter during the project
  - Clever and/or creative solutions
  - …

UPPSALA UNIVERSITET

Grading example

- **Scenario:** You have decided to use a specific method/algorithm. You describe the method and motivate your choice by
- **Grade 3:**
  - It solves our problem.
  - It is easy to implement.
  - We already knew this method.
- **Grade 3/4:** (describing why the method is suitable)
  - We need a method with functionality X which method A provides.

UPPSALA UNIVERSITET

Grading example - continued

- **Grade 4/5:** (compare with other options)
  - Method B also provides the required functionality but is not as efficient under premise P.
- **Grade 5:** (describe consequences of your choice and compare with consequeces of other choices)
  - By using method M1 we get to situation S1 where we need to solve problem P1. If we instead had used method M2, we would have ended up in situation S2 where we had to solve problem P2. Problem P2 is easier to solve than P1, but we consider the efficiency provided by M1 to be more important.

UPPSALA UNIVERSITET

What is assessed? When?

- Everything that a teacher sees is assessed…
- However – the course is a learning opportunity, not a test…
- In practice: Teacher takes notes of everything positive (and nothing negative) throughout the course. Grading is done after the final submission – all teachers participate.

- **Please** – ask questions about grading whenever you feel unsure!

UPPSALA UNIVERSITET

What is mandatory?

- All submissions (some are team submissions, some are individual)
- Presentations
- Tutoring (team)
- Writing workshops (two members per team)
- Software engineering workshop
- Final seminar

Project Teams and other practicalities

- 5 teams of 6-7 students – already published in SP
- Project room: MIC 4407
  - access by card
  - Khalid will visit now and then

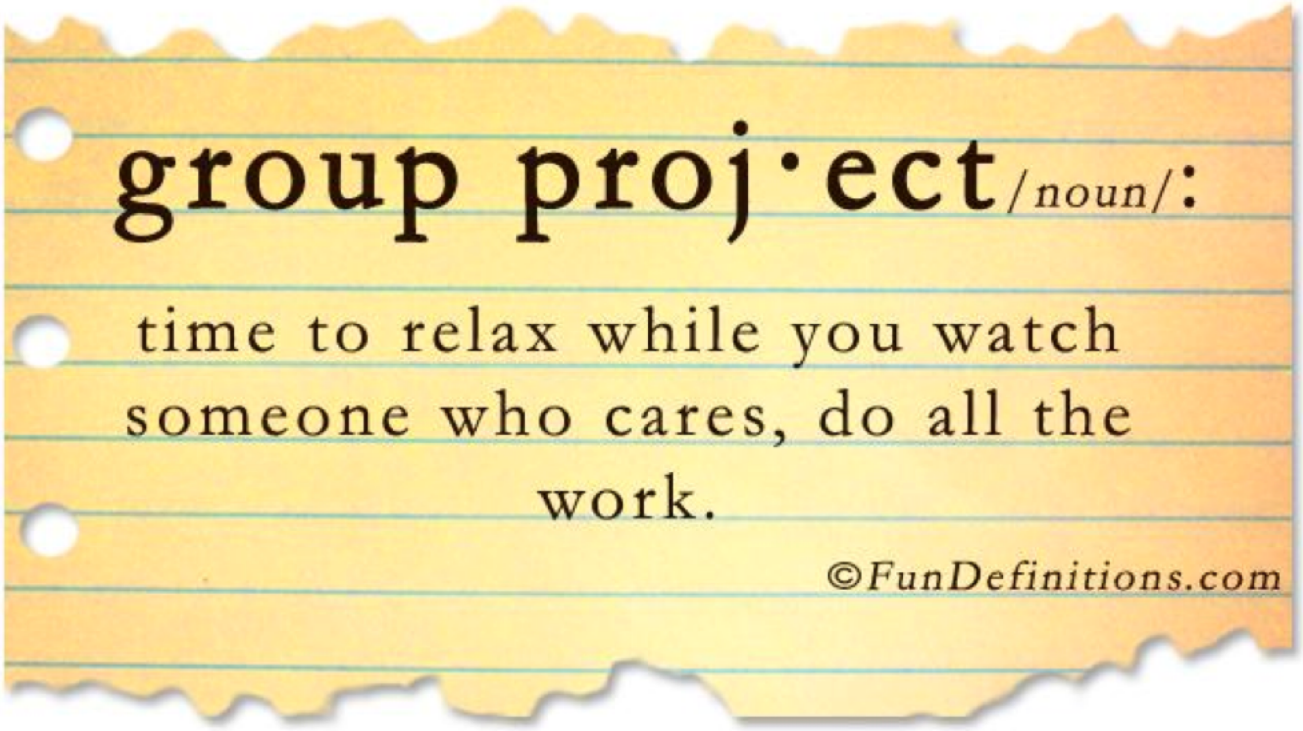
PROJECT ASSIGNMENT

UPPSALA UNIVERSITET

Project Assignment

- Develop a LIMS web application that handles
  - A database server - persistent storage
  - A web server - web content delivery
  - Some form of reliable transactions
  - User interface: Login and user registration and verification, Administration web-interface (simple but functional), Possible customer/user communication
- A functional application should be demonstrated at the final presentation
- All team members should make significant contributions to the application

UPPSALA UNIVERSITET



UPPSALA UNIVERSITET

Project proposal/plan

- Describe what you want to do and why it is a useful application (for whom?)
- Are there other similar systems? Compare your system to those!
- Present a rough system design
- Describe what technologies you plan to use (programming languages, etc)
- Describe how your proposal relates to the course learning outcomes (and what you hope to learn)
- Expected challenges? Limitations?
- Present a rough plan for your work (internal deadlines/milestones)
- Appendix: write a team contract where you describe how you want your team to work.

UPPSALA UNIVERSITET

LEARNING JOURNAL

Why write a learning journal?

Increase awareness

During an activity

Incident = Learning

Reflect on learning behaviour

Reflect on competence development

Reflect on content

Learning journals are part of the assessment

- Learning journals show that
  - you have been active during the project
  - you have taken the opportunity to challenge yourself and learned something new (*what* you have learned is of less importance here)

UPPSALA UNIVERSITET

Individual spreadsheet filled out throughout the project

- **Date**
- **What activity you were engaged in**
  - reading, sleeping, preparing a presentation, coding, discussing with group members, …
- **What was learned (understood, clarified)**
  - new algorithm, understood some aspect of the design of our project better, realised that slack is a useful tool in projects…
- **Reflection on what triggered learning**
  - when I heard Kalle say barf I realised that 1+1=2
  - when I try to describe our design in one slide I understood how A was connected to B, …

UPPSALA UNIVERSITET

Now…

- Write down two ideas of what you would like to do as a project!

UPPSALA UNIVERSITET

That's all folks...

Questions?