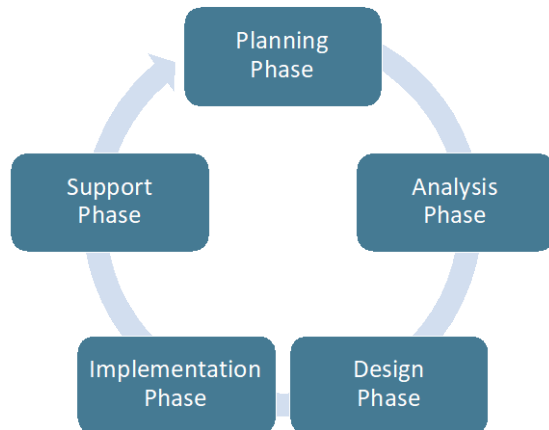# Information Systems Development

Syllabus – Last Update: 31 January 2024
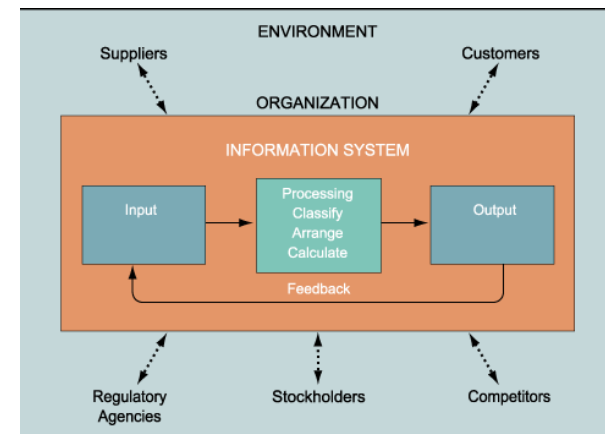
What is this course about?

- Development of…
  - the set of activities that results in products. Development may include research, purchase, design, new development, modification, reuse, (re-) engineering, maintenance, or any other activities that result in products.
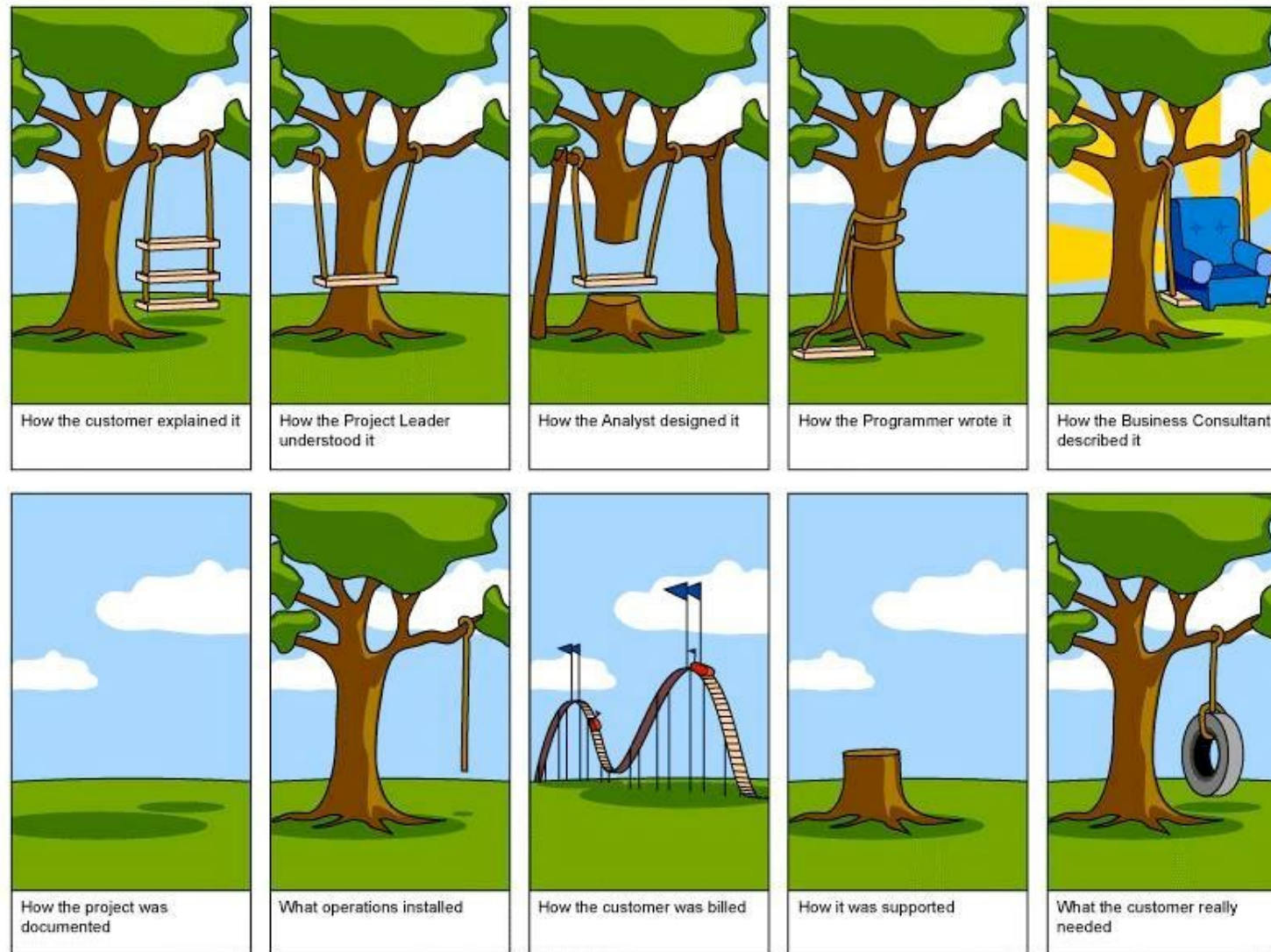

- Information Systems
  - An arrangement of people, data, processes, information presentation and information technology to support and improve certain operations in a business.

What is this course about?

Main Contents of the Course

- Processes and important challenges in the development of IS

- Alternative forms of realization ("Make or Buy", Outsourcing, Software-as-a-Service, etc.)

- Process models for the development of IS (waterfall model, evolutionary development, agile software development)

- Concepts and forms of project management for IS development

- Project control and evaluation methods

- Time, team and project management

- Ethics in the context of IS development

Learning Goals

- **Students…**
  - … recognize the challenges of the development of information systems (IS).
  - ... evaluate, select and apply different process models for the development of IS according to their advantages and disadvantages.
  - … understand traditional and new, agile, information systems development (ISD) process models.
  - … assess, select and apply the different organizational forms of project management for the development of IS based on their respective strengths and weaknesses.
  - … are aware of the dangers of time pressure in IS development projects and are in a position to take appropriate countermeasures.
  - … develop solutions in small groups and present them in the plenum.
  - … develop a project solution to a specific ISD problem in small groups.

Teaching Team

Lecturer

- **Dr. Janek Richter**
- Email: janek.richter@wiso.uni-koeln.de
- Visiting hours: by appointment via email request

Tutor / Main Unit Contact

- **M.Sc. Christian Hovestadt**
- Email: hovestadt@wiso.uni-koeln.de
- Visiting hours: by appointment via email request

How this Unit Fits

- ### Bachelor Wirtschaftsinformatik (PO 2015)
    - Modul Name: *Ergänzungsmodul Wirtschaftsinformatik II* (1277BEWIF2)
    - Unit Name: *Information Systems Development*
    - 6 ECTS Credit Points

Recommended Sequence for the Information Systems Bachelor Courses

1st Semester (Winter)	Information Systems Management [Basismodul Wirtschaftsinformatik I]	AND	Database Systems [Basismodul Wirtschaftsinformatik II]
2nd Semester (Summer)	Integrated Information Systems [Aufbaumodul Wirtschaftsinformatik]		
3rd Semester (Winter)	Systems Analysis & Design [Ergänzungsmodul Wirtschaftsinformatik I]	OR	Informationssicherheit & IT-Forensik [Ergänzungsmodul Wirtschaftsinformatik I]
4th Semester (Summer)	Information Systems Development [Ergänzungsmodul Wirtschaftsinformatik II]	OR	Introduction to Data Science and ML [Ergänzungsmodul Wirtschaftsinformatik II]
5th Semester (Winter)	Capstone Project Information Systems [Schwerpunktmodul Wirtschaftsinformatik]	AND	Bachelor Seminar
6th Semester (Summer)	Bachelor Thesis		

*We strongly recommend completing the courses from the 1st-4th semester **before** proceeding with the Capstone Project and the Bachelor Thesis.*

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Our Chair's Teaching Offerings

	Winter Term	Summer Term
PhD		**PhD Course** (not offered in every year)
Master	**Master Thesis** (spanning both terms)	
	Sustainable Digital Innovation Lab [SM Information Systems I]	**Advanced Seminar IS & Digital Technology** [SM Seminar Information Systems I/II]
	IS and Environmental Sustainability [BM Information Systems I]	**IT Entrepreneurship** [SM Information Systems ll]
Bachelor	**Bachelor Thesis** (spanning both terms)	
	Bachelor Seminar Information Systems & Digital Technology [Bachelorseminar Wirtschaftsinformatik] (spanning both terms)	
	Systems Analysis and Design [EM Wirtschaftsinformatik I]	**Information Systems Development** [EM Wirtschaftsinformatik ll]
	Fundamentals of Information Systems [BM Grundlagen der Wirtschaftsinformatik] (spanning both terms)	

Lecture Format

Interactive Lecture Sessions:

- We aim to keep lecture sessions **interactive** by involving you in discussions
- We discuss case examples

Guest Lecture Sessions:

- In one or two special lectures, we invite **practitioners as lectures** to give you additional perspectives on the course's topics

Self-study Lecture Materials:

- Slides are available in ILIAS
- There are also additional materials, such as readings or external videos
- The textbook will help you gain additional understanding of the course's topics
- All materials are available in ILIAS

Tutorial Format

Recap Sessions:

- **Testing your understanding** of the lecture's contents
- We created an **ILIAS exercise set** for each content unit
  - No need to prepare them in advance, but feel free to do so
  - We discuss a selection of those exercises in the session, you can use the rest to prepare for the exam
  - You can ask questions about the exercises we did not discuss
- We will do an **interactive Kahoot Quiz** so you can check your learning progress
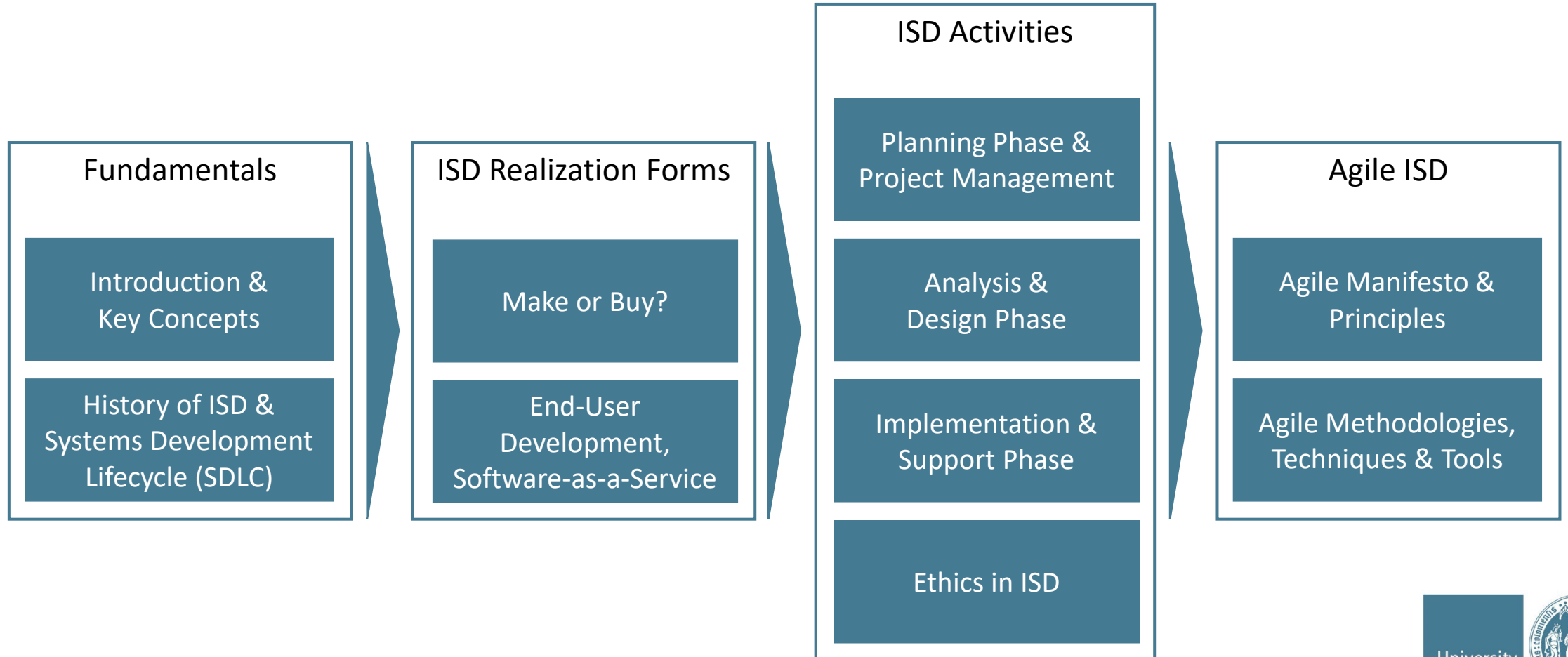 - We will also post a link to the Kahoot quizzes in ILIAS after each recap session

Workshop Sessions:

- We use these sessions to **deepen your understanding** of the contents by transferring it to other contexts
- We will discuss case studies or larger scale exercises

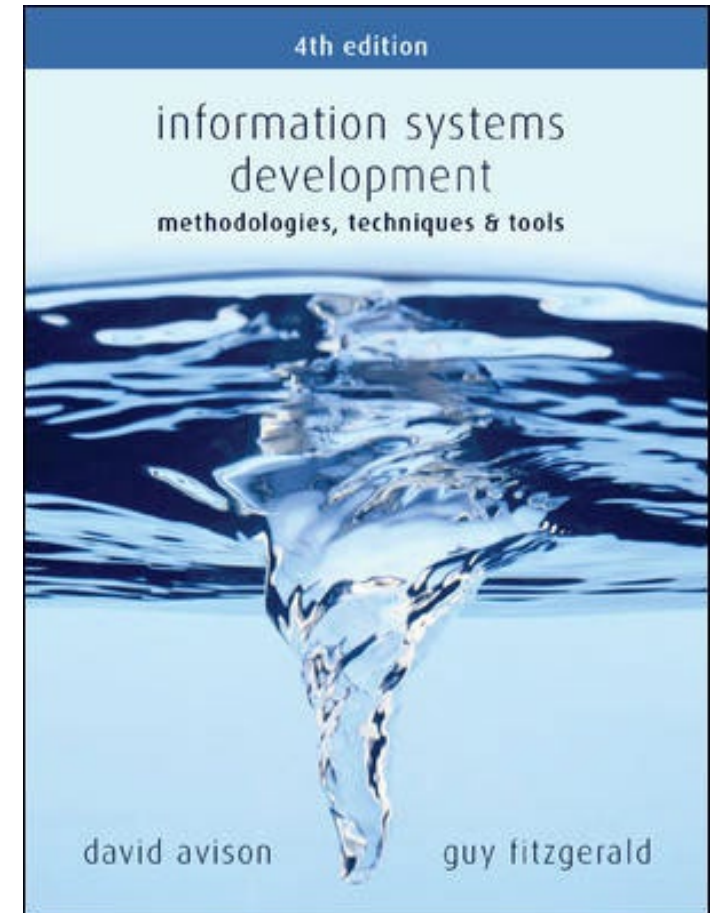# Course Structure

- The course is structured into **four content blocks**:
    - Fundamentals
    - ISD Realization Forms
    - ISD Activities
    - Agile ISD

- Each content block contains **multiple small units**
    - 3-4 small units represent one traditional lecture in terms of volume
    - This smaller size has the advantage that the lecture videos will be much shorter and easier to digest.

Course Structure

Fundamentals
- Introduction & Key Concepts
- History of ISD & Systems Development Lifecycle (SDLC)

ISD Realization Forms
- Make or Buy?
- End-User Development, Software-as-a-Service

ISD Activities
- Planning Phase & Project Management
- Analysis & Design Phase
- Implementation & Support Phase
- Ethics in ISD

Agile ISD
- Agile Manifesto & Principles
- Agile Methodologies, Techniques & Tools

Course Reading

- **Information Systems Development**
  - 4th edition
  - by David Avison and Guy Fitzgerald
  - Published: 2006, McGraw-Hill
  - ISBN: 9780077114176

  - **Relevant reading parts available in ILIAS**

  - 15 copies available for rental at the Main University Library & reference copy at "Winfo Bib"
  - Link for rental:
    https://katalog.ub.uni-koeln.de/portal/databases/id/uni/titles/id/991053920379706476.html

Session Times & Locations

Thursday Sessions:

- 2:00pm – 3:30pm
- Room S01, building 106 (*Seminargebäude*)

Friday Sessions:

- 10:00am - 11:30am and 12:00pm - 1:30pm
- Room S01, building 106 (*Seminargebäude*)

There will be 2 weekly sessions on average. These will be distributed across three weekly timeslots (see next slides for detailed schedule). This way, we can give you the Fridays in the long weekends ("Brückentage") off and we can give you extra working time for the team project towards the end of the semester.

Schedule of Course Sessions (1/2) *

* subject to change

Block	Date	Time	Session Type	Units	Topic
Fundamentals	Apr 11, 2024	14:00	Lecture	1.01	Introduction, Key Concepts, Course Organization
	Apr 12, 2024	10:00	Lecture	1.02-1.04	History of ISD, SDLC
		12:00	Tutorial Recap	1.01-1.04	Key Concepts, History of ISD, SDLC
	Apr 18, 2024	14:00	Tutorial Workshop	1.01	Introductory Case Study
	Apr 19, 2024	10:00	Lecture	2.01-2.03	Make or Buy?
		12:00	*NO CLASS*		
ISD Realization Forms	Apr 25, 2024	14:00	Lecture	2.04-2.06	End-User Development, SaaS
	Apr 26, 2024	10:00	Guest Lecture	2.07	Guest Lecture, tba
		12:00	Tutorial Recap	2.01-2.06	Make or Buy?, End-User Development, SaaS
	May 2, 2024	14:00	Tutorial Workshop	2.06	Selecting a Realization Form (Case Study)
	May 3, 2024	10:00	Lecture	3.01-3.04	Planning Phase
		12:00	Tutorial Recap	3.01-3.04	Planning Phase
ISD Activities	May 9, 2024	14:00	*NO CLASS (Ascension of Christ)*		
	May 10, 2024	10:00	*NO CLASS (Long Weekend)*		
		12:00			
	May 16, 2024	14:00	Lecture	3.05-3.08	Analysis Phase
	May 17, 2024	10:00	Tutorial Recap	3.05-3.08	Analysis Phase
		12:00	Tutorial Workshop	3.03, 3.08	Critical Path Method, Use-Case Diagrams
	May 23, 2024	14:00	*NO CLASS (Pentecost Week)*		
	May 24, 2024	10:00	*NO CLASS (Pentecost Week)*		
		12:00			
	May 30, 2024	14:00	*NO CLASS (Corpus Christi)*		
	May 31, 2023	10:00	*NO CLASS (Long Weekend)*		
		12:00			

Schedule of Course Sessions (2/2) *

* subject to change

Block	Date	Time	Session Type	Units	Topic
ISD Activities	Jun 6, 2024	14:00	Lecture	3.09-3.12	Design, Implementation & Support Phase
	Jun 7, 2024	10:00	Tutorial Recap	3.09-3.12	Design, Implementation & Support Phase
		12:00	Lecture	3.13	Ethics in ISD
	Jun 13, 2024	14:00	*NO CLASS*		
	Jun 14, 2024	10:00	Tutorial Workshop	3.13	Ethics in ISD (Short Case Studies)
		12:00	*NO CLASS*		
	Jun 20, 2024	14:00	Lecture	4.01-4.02	Agile Manifesto & Principles
Agile ISD	Jun 21, 2024	10:00	Tutorial Recap	4.01-4.02	Agile Manifesto & Principles
		12:00	Lecture	4.03-4.07	Agile Methodologies, Techniques & Tools
	Jun 27, 2024	14:00	Tutorial Workshop	4.04	Scrum Simulation
	Jun 28, 2024	10:00	Guest Lecture	4.08	Guest Lecture, tba
		12:00	*NO CLASS*		
	Jul 4, 2024	14:00	Tutorial Workshop	4.08	Implementing Scrum (Case Study)
	Jul 5, 2024	10:00	*NO CLASS (time to work on team project)*		
		12:00			
	Jul 11, 2024	14:00	*NO CLASS (time to work on team project)*		
	Jul 12, 2024	10:00	*NO CLASS (time to work on team project)*		
		12:00			
Examination	Jul 18, 2024	14:00	*NO CLASS (time to work on team project)*		
	Jul 19, 2024	10:00	Final Session	-	Poster Slam, Exam Q&A
		12:00	Final Session	-	Poster Slam, Exam Q&A

ILIAS

- All course materials are **shared through ILIAS**

- **ILIAS keeps you updated** and informed, e.g.:
  - **News** about the course.
  - **Deadlines** for submissions.
  - **Offers from industry** partners (folder opportunities).
  - ➤ Activate message forwarding to your email inbox

- **If you are not yet a member** of the ILIAS course, …
  - **enroll yourself** to the course via KLIPS2 (you will be automatically added to the ILIAS course on the next day)
  - If you encounter problems, please contact hovestadt@wiso.uni-koeln.de

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Assessment

Portfolio exam consisting of two components:

1) IS Development Solution (50 points)
2) eExam (50 points)

➢ *You will be assessed against your total achieved score (max 100 points)*
➢ *You pass the module when achieving at least 50 points in your total score*

1) IS Development Solution (50 points)

In a team of 4-5 students, you develop a small-scale information system solution for a selected purpose or business problem. You will need to identify a business problem or opportunity, decide on key questions regarding the development of an IS-enabled solution to the problem or opportunity, and specify the development process in sufficient details. Finally, you will present your results in a poster slam.

➢ Teams of 4-5 members

➢ Due date: **18th July 2024**, 11:55pm, via ILIAS

➢ Poster slam: **19th July 2024**, 10:00am-1:30pm, Room S01

➢ *Assignment details are available in ILIAS!*

2) eExam (50 points)

We assess your individual theoretical knowledge of content of the lecture and the tutorial in an electronical exam on-site.

➢ Worth 50 points (length: 60 minutes)

➢ Individual assessment

➢ You can choose between one of these two dates in an ILIAS survey:

- Date 1: **24th July 2024**, 8:30am

- Date 2: **6th August 2024**, 1:00pm

➢ Location: Room S56, building 103 (Philosophikum)

➢ Exam Q&A session: 19th July 2024

➢ *Further details are available in ILIAS!*

Exam Registration

- Regardless of the day you want to write the eExam, you must register for the **same portfolio exam in KLIPS.** The exam registration in KLIPS is **different from the course registration!** Exam Registration in KLIPS is mandatory to complete the course.
  - ➢ **Deadline:** 28th April 2024 (11:59pm)

- Additionally, you need to fill out two **surveys in ILIAS:**
  - ➢ **Team Registration Survey:** Specify your team name for the team project
    - ○ Try to find a team of motivated students you want to work with
    - ○ Pick a <u>unique</u> team name that you all specify in your individual surveys
    - ○ It is not an issue if you are less than 5 students, we will merge smaller teams after the survey deadline
    - ○ If you do not specify a team name (but register in KLIPS), we assign you to a random team
    - ○ **Deadline:** 28th April 2024 (11:55pm)
  - ➢ **eExam Registration Survey:** Specify the day you want to write the eExam
    - ○ Switching the exam date after the survey deadline is not possible
    - ○ ILIAS does not allow you to change your answers after you submit the survey. If you want to do so *before the survey deadline*, write us an email and we will manually reset the survey for you
    - ○ If you don't submit the survey (but register in KLIPS), we assign you to the first exam date
    - ○ **Deadline:** 7th July 2024 (11:55pm)

Group Formation: FAQ

- *"Can we form a group of more than five people?"*
  - ➤ Groups are limited to five students, no exceptions.

- *"We are less than five people in our group. What can we do?"*
  - ➤ Simply register your group in the survey, we will merge smaller groups after the survey deadline. We will make sure that there are no less than four people in any of the final groups.

- *"I cannot find a group."*
  - ➤ Simply fill out the survey without specifying a team name. We will assign you to a random group after the survey deadline.

Subsequent Withdrawal

Do you want to withdraw from the whole portfolio exam after the KLIPS registration deadline?

➢ Follow [these regulations](#)

Do you want to withdraw from the first eExam date after the registration survey deadline and write the eExam on the second date?

➢ Also follow [these regulations](#), but send the declaration of withdrawal to us (Janek Richter or Christian Hovestadt), **not** to the examination office

Volume

- The course is awarded with **six credit points**, equivalent to 180 semester working hours (SWH; 1 SWH = 45 minutes)
  - ➢ As a **rule of thumb**, we expect you to invest around 12 SWHs on a weekly basis in total
  - ➢ That includes physical attendance in the sessions (4 SWHs), self-study (~5 SWHs), and work on the team project (~3 SWHs)

- Try to optimize your time spent on learning:
  - ➢ **Use the book** for reading about topics you find hard to understand
  - ➢ **Write your own summaries** early in the semester, you will already remember large parts of them after writing them *in your own words*
  - ➢ **Optimize your team project progress** by dividing tasks within the team and establishing your own coordination processes

How to Succeed

Please familiarize yourself with, and monitor…

The Unit
- Unit content
- Learning goals
- The syllabus

The Involved People
- Yourself
- Your Project Team
- The Teaching Team

The Course Offerings
- Self-study materials
- Readings
- Take part in the lecture & tutorial sessions

The Assessments
- Requirements
- Due dates
- Marking scheme
- Tips in lectures & tutorials

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