"Praxis der Forschung" in Summer 2025

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Prof. Dr. Nadja Klein, Prof. Dr. Marvin Künnemann, Prof. Dr. Jan Niehues,
Prof. Dr.-Ing. Ina Schaefer, Dr. Dominik Schreiber, T.T.-Prof. Dr. Benjamin Schäfer,
Prof. Dr. Dorothea Wagner, Prof. Dr. Alexander Waibel |
KIT Department of Informatics, April 23rd, 2025

Research Project (“*Praxis der Forschung*” *(PdF)*)

A different kind of course …

- Project-based on a current research topic

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⇒ Prepares for your master’s thesis

- Planned procedure
- Independent development of a research topic
- Critical handling of scientific literature
- Scientific argumentation

Learning Objectives

Learn the methodology of scientific work in a project and conduct perceptible research

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Sound knowledge within the respective field of work

AI for the energy system, AI for materials sciences, AI for speech technology, algorithmical geometry, algorithms and complexity theory, computer graphics, formal methods, high-performance humanoid technologies, machine translation, methods for big data, nano computing, scalable algorithms, scalable automated reasoning, test, validation and analysis, …

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- Conduct of scientific publications

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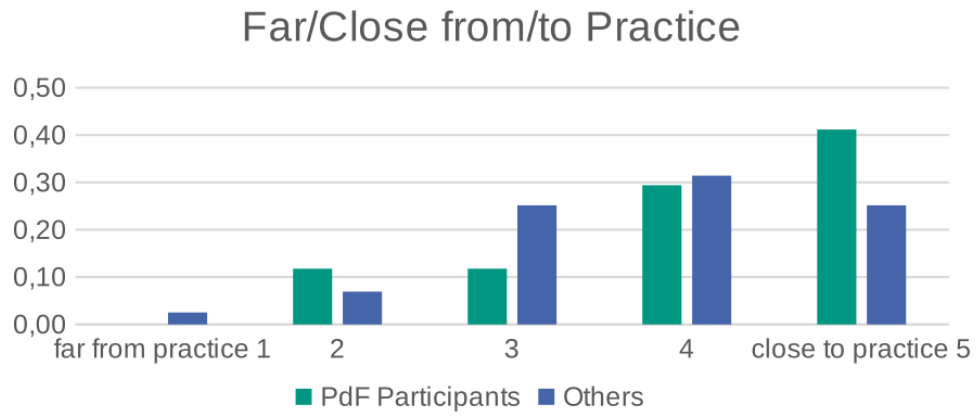
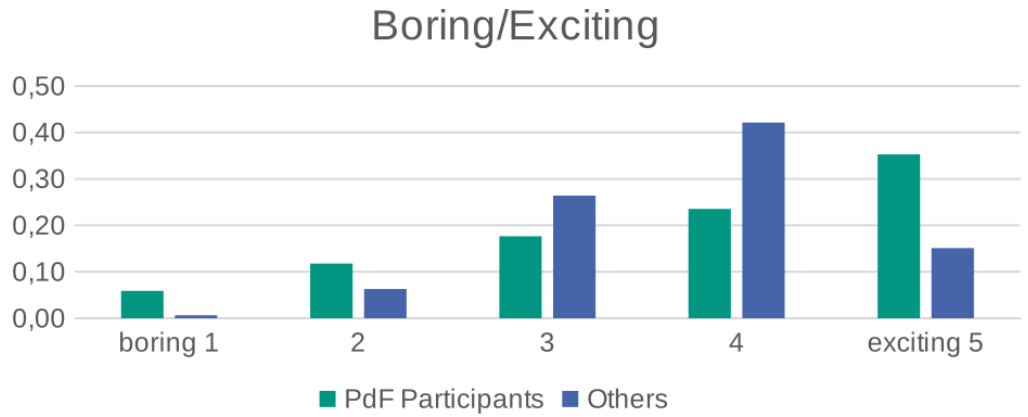
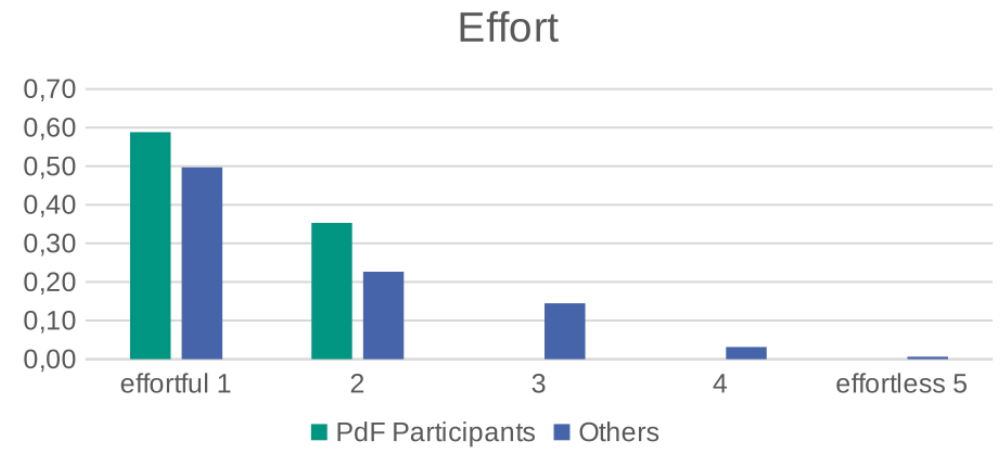
Basic knowledge of scientific work

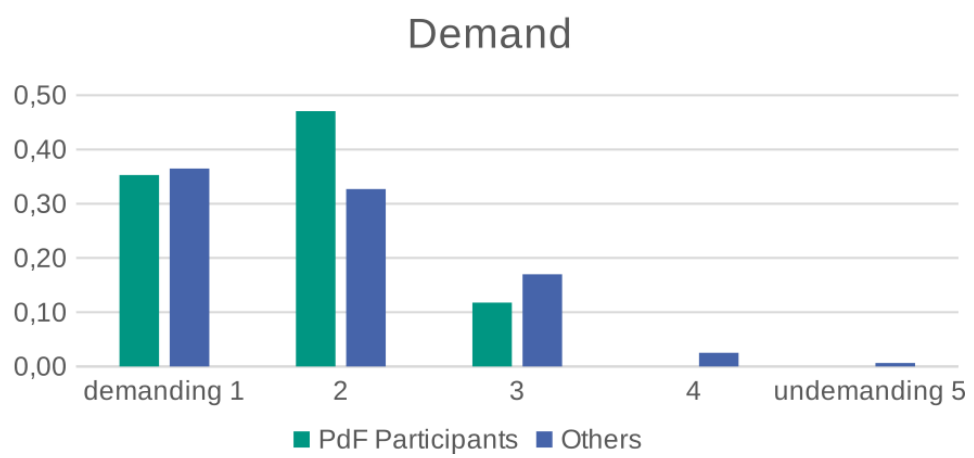
- Research methods
- Strategies for implementing projects and project planning
- Scientific literature research
- Conduct of scientific publications
- Presentation of scientific results

Assessment by Students*









*Survey in April 2018 among ca. 180 informatics students at KIT.

Organizational Matters

Target group

Master’s students within their first year

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Teams

- Up to four participants per group
- Alternative: Team consisting of student and scientist

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- 360 working hours per semester (300 hours in project, 60 hours in methods)

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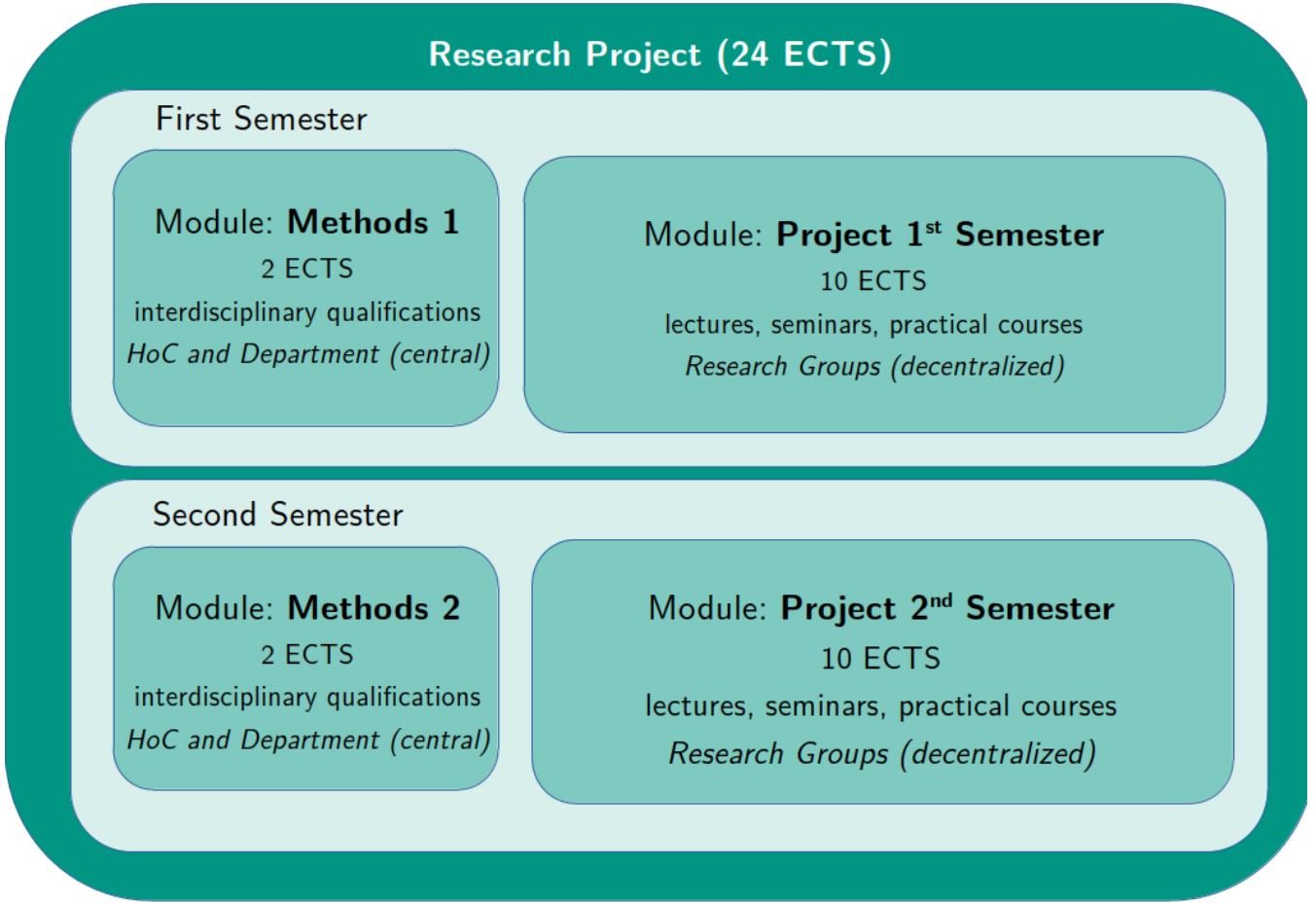
- Intensive and flexible supervision by academic employees
- Accompanying lectures on professional and methodical matters
  (seventeen events distributed over lecture time, beginning on May 2nd)

Organizational: In total four modules



Organizational: Allocation of Credit Points

Two project modules with credit points worth of seminars, lectures and practical courses (in total 20 ECTS)

- At least 5 ECTS worth of lectures (V)
- At least 3 ECTS worth of seminars (S)
- At least 3 ECTS worth of practical courses (P)

Allocation dependent on individual project

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Allocation dependent on individual project

Share of lecture

Acquisition of content-related knowledge through reading, listening, etc.

Share of seminar

Independent development and (written and oral) presentation of other people's scientific works

Share of practical course

Practical scientific work under supervision

Examination Modalities per Project Module

- Multiple project presentations (5-20 min) with subsequent discussion (in total 1/3 of the module grade)
- One (individual) oral exam respectively at the end of the semesters (1/3 of the module grade)
- One (collective) written report (1/3 of the module grade)

IMPORTANT

The weighting of the various types of credit points (lecture, seminar, practical course) does **not** change the weighting of the particular exam grades!

Examination Modalities per Methods Module

The module is ungraded

- One oral exam at the end of each semester
- Examination of another type during the course of the semesters' achievements, in particular
  - written reports,
  - short presentations,
  - discussion and exercises relating to the contents of the courses.

The amount and content of the required achievements are announced at the beginning of the semester.

Rough Procedure in Phases

First Semester

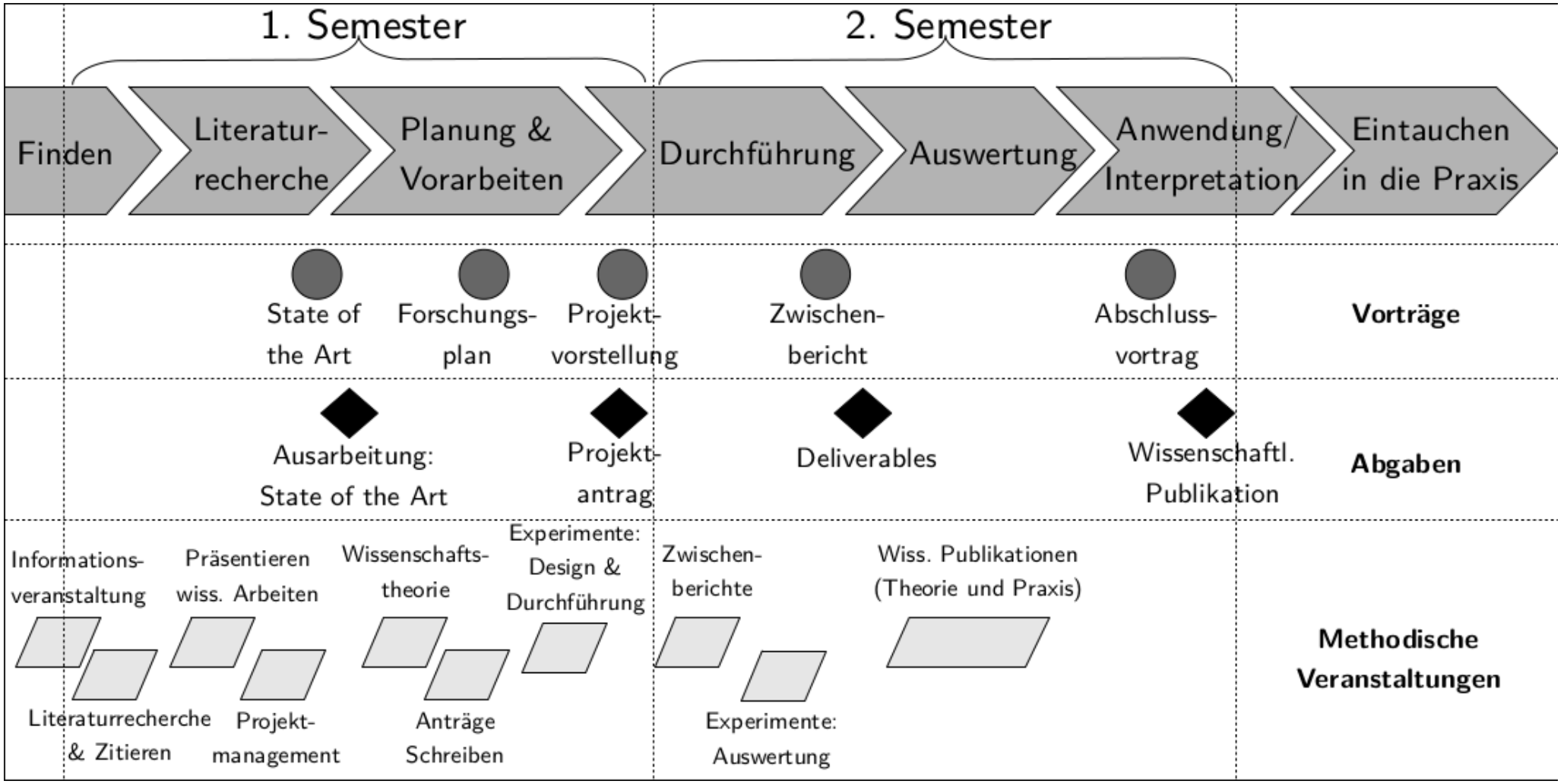
- Topic assignment
- Literature research / state of the art (6 weeks)
  Submission: Description of the state of the art
  Presentation (seminar)
- Project planning (2 weeks)
  Submission: Description of the project goals
  Planning of the preparatory works, short presentation about that
- Preparatory works (8 weeks)
  Submission: Conduct and documentation of the preparatory works
  (e.g., feasibility / preliminary studies,
  Familiarization in tools and techniques,
  Design of experiments, etc.)
  Project proposal (written)
- Presentation and Oral exam

Rough Procedure in Phases

Second Semester

- Implementation (12 weeks)
  Submisson: Dependent on project, according to project proposal
  Intermediate report presentation after 6 weeks
- Scientific paper (4 weeks)
  Submission: Scientific paper and presentation
- Oral exam

Rough Procedure: Overview



Application and Start

Application until April 30th 2025 at 6 p.m. (all four tasks)

1. Speak with advisor(s) and clarify topic assignment
   ⇒ **Directly following:** Topic presentations at the ground floor in lobby in front of the library
2. Application for topic with the advisor(s)
3. Application with central PdF coordinator at `kirsten@kit.edu`
4. Application in ILIAS course (activation is done after confirmation by the advisor(s))

Important: For each application step, indicate your name, topic and matriculation number

First event

Kickoff and Literature Research Course:
May 2nd, 2025, 11:30 a.m. – 1:30 p.m. in seminar room 010 (building 50.34)

Important Sources of Data and Information

Websites

`https://informatik.kit.edu/projektgruppe`

ILIAS course

Praxis der Forschung (1. Semester) SoSe 2025

`https://ilias.studium.kit.edu/goto_produktiv_crs_2618819.html`

(including a detailed schedule of all events)