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Introduction to Research Software Engineering

Experiences from first time RSE class at the Computer Science Faculty of TU Dresden

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Starting Point



Currently covered aspects of RSE at TUD/CS

working with command line / shell

- not covered

git

- only standalone git is needed as part of robotics lab

automation (build, CI,...)

- only indirectly through courses focussed on other things

General impression

- software craftsmanship is not part of the curriculum
- Interdisciplinary work is much wanted by all, but not supported (much) in education

Demands in the faculty and beyond

Master courses

- Computational Modelling and Simulation (CMS) @ CS
- Geoinformation Technologies @ Environmental Sciences

Student needs

- Student assistants / thesis work: students have not worked in teams with collaborative tools



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Course plan



How this class will run?

Lecture	Mon 5.DS (even week)	Lab	Mon 5. DS (odd week)
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16.10.	<i>History of RSE / FAIR-RS</i>	23.10.	<i>Using the Shell for automating tasks</i>
30.10.	<i>Developing in Teams</i>	06.11.	<i>Version Control</i>
13.11.	<i>CI/CD/Testing</i>	20.11.	<i>CI/CD/Testing</i>
27.11.	<i>Build systems</i>	04.12.	<i>Build systems</i>
11.12.	<i>Licensing</i>	18.12.	<i>Licensing</i>
08.01.	<i>Software publication</i>	15.01.	<i>Software Publication</i>
22.01.	<i>Case Studies</i>	29.01.	<i>Reproducing results of others</i>

Foundations for course / used infrastructure

HIFIS

- Used the training material at <https://hifis.net/services/software/training.html>
- Used HIFIS services
 - Codebase (GitLab) for git, working in teams, CI
 - DESY notes (HedgeDoc) for common class pads

other

- Zenodo test instance
- FAIR4RS material about FAIR software



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Observations / Lessons learned



My observations

Tool knowledge

- Don't expect ANYTHING!
- Even CS master students have never seen a shell / worked with GitHub/GitLab / ... before

Homework

- Give self-study intro material as homework (shell, working with git, YAML/Markdown,...)

Students

- Interdisciplinary master courses are great!
- Very motivated

Student feedback

“Practical intro
to the tools”

“Interactive
class”

“Content was
covered too fast,
not everything
was absorbed”

“explain what is
a branch earlier”



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Summary and outlook



Summary and outlook

Recap

- Students learned a lot --> very positive feedback
- General question on how much craftsmanship to expect remains
- Already questions about course export to other faculties

Planned changes

- Move to summer semester
- Turn into 4 SWS course