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# Methods in Empirical Musicology 2

How to think & work like a scientist

## 1. Schedule: S: Tues, 16h–17h30, Ü: Thurs, 11h–12h30

W#	S#	Date	Topic	Assignment	Note
15	00	11.04	General introduction		
16	01	22.04	Study design		
17	02	29.04	Stimulus creation1 (S+Ü)	<b>[assi-01] Study design</b>	
18	03s	02.05 16h	Stimulus creation 2 (S)		
	03ü	04.05 11h	Stimulus creation 2 (Ü)		
19	04s	09.05 16h	Stimulus creation 3 (S)		(Leipzig)
	04ü	11.05 11h	Stimulus creation 3 (Ü)		(Leipzig)
		<b>13.05 23h</b>		<b>[assi-02] Stimulus creation</b>	
20	05s	16.05 16h	Experiment creation 1 (S)		
	05ü	18.05 11h			(Christi Himmelf.)
21	06s	23.05 16h	Experiment creation 2 (S)		
	06ü	25.05 11h	Experiment creation 2 (Ü)		
		<b>27.05 23h</b>		<b>[assi-03] Experiment creation</b>	
22		30.05 16h			(Moving)
	07s	01.06 11h	Data collection (S)		
23		06.06 16h			(Dresden)
	08s	08.06 11h	Data analysis 1 (S)		
24	08ü	13.06 16h	Data analysis 1 (Ü)		
		15.06 11h			(Keruth)
25	09s	20.06 16h	Data analysis 2 (S)		
	09ü	23.06 17h	Data analysis 2 (Ü)		
		<b>24.06 23h</b>		<b>[assi-04] Data collection</b>	
26	10s	27.06 16h	Exam prep (S)		
	10ü	29.06 11h	Exam prep (Ü)		
27	11s	04.07 16h	Exam prep (S)		
	11ü	06.07 11h?	Exam prep (Ü)		
		<b>06.07 13h</b>		<b>Beat the exam!</b>	
28	12s	11.07 16h	Report writing (S)		
	12ü	13.07 11h	Report writing (Ü)		
29	13s	18.07 16h	Wrap up (S)		
		<b>22.07 23h</b>		<b>[assi-05] Final report</b>	

Teaching period: 03. Apr. 2023 (W15) – 22. Jul. 2023 (W29) | (Fri 17:00-18:30)

## 2. Students' participation

- Mini assignments & final report

Topic	Due (23:59)	What to submit	Grading criteria (see below)
Study design	29.04.2023	Study proposal (designs, hypotheses)	Writing
Stimulus creation	13.05.2023	Stimulus files + generation code (or selection criteria)	Code
Experiment creation	26.05.2023	Experiment scripts	Code
Data collection	24.06.2023	Raw data	Data
Final report	22.07.2023	Full report (3,000–5,000 words excl. ref.)	Writing

- Grading criteria of mini-assignments
  - **Writing:** {Novelty in Ideas + Logic in Ideas + Clarity in Writing + Completeness in Writing} × -Plagiarism ∈ {-1, +1}
  - **Code:** Executability (no syntax error & portability) + Human-readability + Validity (no semantic error & doing the intended tasks)
  - **Data:** {Minimal Power (N ≥ 5) + Clarity in Curation} × -Fabrication ∈ {-1, 1}

$$\text{Total grade} = \sum_{i=1}^4 10\% \times [\text{assignment \#}i] + 60\% \times [\text{assignment \#}5]$$

## 3. Contacts

- MOODLE (course site): <https://moodle.hfm-karlsruhe.de/moodle/mod/forum/view.php?f=958>
- Zoom: <https://eu01web.zoom.us/my/sgkim>
- Email: [seung-goo.kim@ae.mpg.de](mailto:seung-goo.kim@ae.mpg.de)

## 4. References [to be updated]

- Statistical learning:
  - James et al., 2021, *An Introduction to Statistical Learning*, Springer, free PDF: <https://www.statlearning.com/>
  - Hastie et al., 2009, *The Elements of Statistical Learning*, Springer, <https://doi.org/10.1007/978-0-387-84858-7>
- AI-aided learning:
  - ChatGPT: <https://chat.openai.com/>
  - ZeroGPT: <https://www.zerogpt.com/>
- Music Information Retrieval (MIR) packages:
  - Essentia: <https://github.com/MTG/essentia>
  - librosa: <https://github.com/librosa/librosa>
  - madmom: <https://github.com/CPJKU/madmom>
  - and more: <https://www.ismir.net/resources/software-tools/>
- Psychological experiment development tools:
  - PsychoPy/JS (Python): <https://www.psychopy.org/>
  - OpenSesame (Python): <https://osdoc.cogsci.nl/>

- Psychophysics Toolbox (MATLAB): <http://psychtoolbox.org/>
- Lab.js (Javascript): <https://lab.js.org/>
- Hosting platforms:
  - [SoSciSurvey.de](https://www.sosicysurvey.de)
  - [LimeSurvey.org](https://limesurvey.org)
  - [PsyToolkit.org](https://psytoolkit.org)