	Preparations/Proposals	5	4	3	2	1		
Structured communication 1: Structure/Clarity/Language	**Students are able to communicate their research and that of others in a structured and catchy manner, both written and verbally.**	Structured layout: all instructions concerning the layout have been met: all headers are marked, all figures have clear and extensive captions, figures are logically placed, **concise &** clear formulation, correct use of scientific jargon, **academic use of language**, all references have been made where necessary **in a scientific format**.	Structured layout: **all** instructions concerning the layout have been met: **all** headers are marked, **all** figures have clear **and extensive** captions, figures are logically placed, **clear** formulation, **correct use of scientific jargon, all** references have been made where necessary.	Structured layout: **almost all** instructions concerning the layout have been met: **most** headers are marked, **most** figures have **clear** captions, **figures are logically placed, mostly clear formulation, some references have been made where necessary**.	Structured layout: **several** instructions concerning the layout have been met: **some** headers are marked, **some** figures have captions.	**No or very little** structured layout.	9,0	Don't forget to mention where you've found the figures that you use
		5	**4**	**3**	**2**	**1**		
Theory	**Based on a specific problem students are able to use theory to substantiate their hypothesis, measurement method, and analysis method.**	**Cutting edge** academic literature is used **quantitatively** to substantiate **all of the following: hypothesis, measuring method, and analysis method**. No irrelevant theory is mentioned.	**Academic literature** is used to substantiate the hypothesis **and the analysis method**. No irrelevant theory is mentioned.	**Suficient** knowledge of scientific theory is **used to substantiate the hypothesis. No irrelevant theory is mentioned.**	Contains **some** scientific theory.	Contains **no or very limited** theory.	7,0	Try to explain more extensively how you will use Parseval's theorem to answer your research question in the analysis plan
		5	**4**	**3**	**2**	**1**		
Repeatable measuring plan 1: Goal, Research questions, Hypotheses	**Based on a specific problem students are able to write a measuring plan from which reasonably may be expected that it will deliver usable results.**	Contains well-defined and **creative** goal, quantifiable research question **and sub questions**, and the contribution of the **expected research outcome** to science and the world is dicussed.	Contains **well-defined** goal, quantifiable research question, and the contribution of the research to science **and** the world is dicussed.	Contains a goal, **a quantifiable** research question, and **the contribution of the research to science or the world is dicussed.**	Contains **a goal and a research question**.	Contains **no** goal **or no** research question.	7,0	Try to also keep your subquestions quantifiable
Repeatable measuring plan 2: Hypotheses		Contains falsifiable **sub hypotheses & main** hypothesis: **all** quantitative and including acceptance/rejection conditions.	Contains a **falsifiable** hypothesis: quantitative **and including acceptance/rejection conditions**.	Contains a **quantitative** hypothesis.	Contains **a hypothesis**.	Contains **no hypothesis**.	7,0	Try to rephrase your hypotheses in a way so that they become falsifiable. When will you accept/reject the hypothesis?
Repeatable measuring plan 3: Setup		Contains clearly understandable visual and description of a **creative or clever** experimental setup including a description of all essential materials needed and **all critical parts, critical aspects are discussed**.	Contains **clearly understandable** visual and description of experimental setup including a description of all essential materials needed.	Contains visual **and** description of experimental setup **including a description of all essential materials** needed.	Contains **visual or description** of experimental setup.	Contains **no or a very limited** visual or description of experimental setup.	7,0	This breadboard schematic is very nice to have as it saves you time during the session to think about this. Very nice!
Repeatable measuring plan 4: Measuring method		Contains a **creative or clever repeatable** measuring method containing **all** essential steps, discusses the intended range of controlled parameters and expected measurements **and whether these are feasible, how the parameters will be controlled**, and **what needs to be kept constant**, including **how setup errors will be detected**, how raw data errors will be determined, including a task risk analysis focused on actions **not containing any unnecessary risks**.	Contains a measuring method containing **most** essential steps, **discusses the intended range of controlled parameters and expected measurements, including how raw data errors will be determined**, including a task risk analysis **focused on actions**.	Contains a measuring method containing **several** essential steps, **and what needs to be measured**, including a task risk analysis**.**	Contains **a** measuring method, **including a task risk analysis**.	Contains **no or a very limited** description of the measuring method **or no task risk analysis**.	7,0	How will you find the error on your input voltage?
		5	**4**	**3**	**2**	**1**		
Repeatable analysis plan 1: Outcome	**Based on a measuring plan students are able to write an analysis plan from which reasonably may be expected that it will deliver an answer to the research question.**	Contains a **thorough** description of expected (raw) data **(e.g. various complementary graphs)** that (after analysis) leads to a substantiated answer to **each (sub)** research question including substantiated error margins**.**	Contains a description of expected (raw) data that (after analysis) leads to a **substantiated** answer to the research question **including substantiated error margins**.	Contains a description of expected (raw) data **that (after analysis) leads to an answer to the research question**.	Contains **a limited description of expected (raw) data.**	Contains **no** description of expected data.	5,0	What results will you use to answer your research question? When do you move on to the next subquestion in your experiment?
Repeatable analysis plan 2: Error analysis and fits		Contains clear description of **all** (research specific) error analysis and fits and **a quantitative discussion of their influence on the conclusion**.	Contains **clear** description of most (research specific) error analysis **and** fits.	Contains **most (research specific)** error analysis or fit description.	Contains **very limited** error analysis or fit description.	Contains **no** error analysis or fit description.	5,0	It's good that you're using the error propagation already. When using the equation however, try to specify what the parameters are and how you will determine them
Repeatable analysis plan 3: Raw data to conclusions		Contains a **creative or clever analysis method which is coherent, logical** and **repeatable** from raw data to answering **each (sub)** research question.	Contains description of the analysis method **from raw data to answering the research question**.	Contains description of **most essential** parts of the analysis method.	Contains **very limited** description of the analysis method.	Contains **no** description of the analysis method.	5,0	What does the python script do specifically? What code from previous session will you be using?
		5	**4**	**3**	**2**	**1**		