Competence Model for the Postgraduate Programme in Renewable Energy at Carl von Ossietzky-University Oldenburg

IQM HE competence based

Introduction & Theoretical Competence Model

Background: The Development of a Competence Model

In this document, you will find the competence model for the Postgraduate Programme in Renewable Energy (PPRE) at Carl von Ossietzky-University Oldenburg. This model was developed during Spring and Summer 2017 following the procedure set up by the "Internal Quality Management: Evaluating and Improving Competence-Based Higher Education (IQM-HE)" project, part of Erasmus+[1]. Students, teaching faculty and alumni as well as the IQM-HE staff worked together to develop the competence model in a series of workshops.

The PPRE Competence Model

This competence model is based on the tips and tricks for formulating competences in the IQM-HE Handbook (pp. 57 – 65). This section provides a short overview of the most important facts on how to read and understand the competence model by way of introduction.

1. There are 23 competences for the Postgraduate Programme in Renewable Energy.
2. These competences were grouped into four competence areas, namely
    - Subject-related competences (6 competences)
    - Scientific and methodological competences (7 competences)
    - Social competences (6 competences)
    - Personal competences (4 competences)
3. The competence levels selected range from 1 (low) to 5 (high) and were defined for students in their 4th semester. 75% of a cohort should reach the selected level.
4. Every competence has both cognitive and practical aspects, each with their own levels. These levels can vary.

Below, we present the theoretical competence model.

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[1] For more information, please see the following website: http://www.iqm-he.eu/

Competence Model PPRE

Competence Area	Competence	Aspect	Competence Level (after 4th semester)
a) subject-related competences	1. Evaluation of energy resources	Cognitive	4
		Practical	4
	2. Explanation and application of principles of different renewable energy conversion processes	Cognitive	4
		Practical	4
	3. Technical design and assessment of renewable energy installations.	Cognitive	4
		Practical	4
	4. Technical design and assessment of the integration of renewable energy systems into energy supply networks.	Cognitive	3
		Practical	3
	5. Socio-economic and environmental evaluation of renewable energy technologies and their impact	Cognitive	3
		Practical	3
	6. Scientific modelling of renewable energy systems	Cognitive	4
		Practical	4

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Competence Area	Competence	Aspect	Competence Level (after 4th semester)
b) scientific and methodological competences	*7. Written and oral communication for natural science and related topics*	**Cognitive**	4
		Practical	4
	8. Making estimations in cases of uncertainty and evaluating their plausibility	**Cognitive**	2
		Practical	3
	9. Literature research in natural science databases	**Cognitive**	3
		Practical	4
	10. Project management	**Cognitive**	2
		Practical	3
	11. Critical and rational evaluation of scientific results, models and concepts	**Cognitive**	4
		Practical	4
	12. Contributions to scientific discussions on natural science-related topics	**Cognitive**	3
		Practical	4
	13. Natural science-related data acquisition and data evaluation methods	**Cognitive**	4
		Practical	4

Competence Area	Competence	Aspect	Competence Level (after 4th semester)
c) social competences	*14. Communication and work in a diverse team*	**Cognitive**	2
		Practical	4
	15. Networking/communication with different stakeholders	**Cognitive**	2
		Practical	4
	16. Leadership	**Cognitive**	2
		Practical	2
	17. Conflict management	**Cognitive**	2
		Practical	3
	18. Moderation	**Cognitive**	2
		Practical	2
	19. Negotiation	**Cognitive**	2
		Practical	2

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Competence Area	Competence	Aspect	Competence Level (after 4th semester)
d) personal competences	20. Analytical, outcome-driven and efficient work	Cognitive	3
		Practical	4
	21. Responsible working attitude	Cognitive	2
		Practical	4
	22. Ethical responsibility	Cognitive	3
		Practical	4
	23. Critical self-reflection with respect to professional competences and limitations	Cognitive	2
		Practical	4

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Further information on the project is available on the Erasmus+ platform for project results:

➜ Go to http://ec.europa.eu/programmes/erasmus-plus/projects.
➜ Enter the project title 'Internal Quality Management: Evaluating and Improving Competence-Based Higher Education' in the search bar to get to the project homepage.

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