

MSc Advanced Synthesis and Catalysis: Program objectives

- Thematic focusing on synthesis and catalysis chemistry; teaching of modern techniques in synthesis, catalysis and analysis
- Independent and creative solution of specific chemical problems
- Close connection of theory and practice
- Research orientation
- International orientation

The qualification objective of the study program is the **independent and creative solution of specific chemical problems (problem-solving competence in chemistry)** involving **modern techniques in synthesis, catalysis and analysis**. These skills are a prerequisite for leading positions in all professional fields in the chemical, pharmaceutical and materials science industries and other sectors that require a deep understanding of molecular interactions.

The elite degree program offers a **thematically focused and international education** in the field of modern **synthesis and catalysis chemistry**, one of the most important areas of modern chemical and material sciences with a universal impact for chemical, pharmaceutical, material science and energy markets and research fields. The core competences "molecular processes" and "catalytic methods" are developed at the highest level in the degree program.

The **close combination of knowledge transfer in lectures/seminars with individual practical training** in research laboratories, which is integrated into the curriculum, provides students with this knowledge in the best possible way. This **close connection of theory and practice** is demonstrated by demanding lectures and seminars, which are supplemented by newly designed, individual laboratory and research internships, industrial placements and stays abroad.

The entire study program of the elite MSc SynCat is **research-oriented**. All experimental laboratory courses are carried out as individual research internships or thematic laboratory stations in the working groups of the participating lecturers or university and industrial partners. Special methodological teaching offers reflect the expertise and equipment of the working groups relevant for future research projects. Creating and defending a research plan and learning the research language English are trained in focused seminars. The Master's thesis with a methodological preparation phase is explicitly given a lot of space in the curriculum in order to achieve the greatest possible success in dealing with complex research questions.

The **international orientation** of the degree program is demonstrated by the fact that all courses are taught in English. Furthermore, all graduates achieve the level of subject-specific English C1 as an important prerequisite for working in an international environment. The best graduates of German and international BSc Chemistry programs with an interest in a challenging molecular specialisation are to be recruited for the program.

In addition to this, personal mentoring, individual support, an emphasis on interdisciplinary research, a high level of individual involvement in teaching and research and excellent teaching create the special profile of the elite MSc SynCat program.