

## Learning by Researching

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The Master Course Advanced Construction and Building Technology is of high relevance to the involved Chairs, to the faculty, as well as to the TUM, and it offers a chance to expand existent first-class positions. Basically two important fields can be distinguished:

- **Robotization and Automation in Building and Construction Industry:**

Robotization and automation in the building and construction industry is a research field, which has been internationally established for around 30 years now. Numerous international conferences (for example the ISARC International Symposium on Automation and Robotics in Construction), CIB-workgroups (TG 57 Industrialization; W 104 Open Building Implementation, W 96 Architectural Management), but also exhibitions (New York MoMA: Home Delivery, 2008; Pinakothek der Moderne: Wendepunkt(e) im Bauen, 2010) and initiatives (Zukunft Bau, BMBF; Bayern Innovativ) emphasize the importance of this research field. The expertise of the holder of the Chair for Building Realization and Robotics, Prof. Thomas Bock, in this field is pertinent. He has been doing research in the field of building robotics for 26 years, is considered to be one of the co-founders, was among others the president of the „International Association for Automation and Robotics in Construction“ until 2007 and has more than 300 publications, predominantly in this field, to his name. The term „Robot Oriented Design“ was initially published by him in May 1988 in Tokyo, since then his work was the foundation for more than 50 building-robotic systems, 25 automated building sites and several service-robotic systems. Prof. Bock is a member of prestigious editorial boards like „Robotica“, (Cambridge University Press), „Automation in Construction“, (Elsevier), „academie“ (RAACS) and many more.

Since architecture is also increasingly the nucleus of crystallization for embedded technologies in built life-surroundings, the thematic fields of „intelligent surroundings“ and „interaction with intelligent surroundings“ are another focus in the science and research of the Chair for Building Realization and Robotics. The special content wise positioning of the Chair lies in the combination of architecture, informatics, robotics and integrated system technology.

- **Demographic Change, Ambient Assisted Living, High- Tech Assistive Systems:**

The demographic change is a social challenge for the Scientific Community as well as it will unavoidably be a focus of political responsibility of the next generation. The TUM, the Faculty of Architecture and the Chair for Building Realization and Robotics are deeply committed to these research fields.

The Master Course Advanced Construction and Building Technology lines up in a list of efforts to take up the relevance and potential of this topic. It particularly wants to go towards promoting the integration of assistive systems into the life and work surroundings of private and public spaces.

The holder of the Chair for Building Realization and Robotics is, since the incurrence of the innovation field of „Ambient Assisted Living“ (abbr.: AAL), member of the program committee of the same-titled initiative of the „Bundesministerium für Bildung und Forschung“ (BMBF) and was represented on all German AAL congresses with his own sessions.

The Chair and the Chaircomprehensive project group TUM AIR (Ambient Innovation Robotics) take up the topic of demographic change and try to utilize new (at the TUM developed) technologies for the support of the activities in daily life in the domestic surrounding. Several AIR-projectteams developed concepts and solutions for intelligent and adjustable life surroundings. Among the cooperation partners of the AIR group are the Chair for Applied Informatics / Cooperative Systems (Prof. Schlichter), the Chair for Medicine Technology (Prof. Steinbach, Prof. Kranz; „Ubiquitous Computing“, „Human-Machine-Interfaces“), the Chair for Medical Electronics (Prof. Wolf, Dr. Friedrich), the Chair for Human-Machine-Communication (Prof. Rigoll) as well as the Chair for Robotics and Embedded Systems (Prof. Knoll).

The Master Course wants to play a part in contributing the concentrated study of highly qualified national and international students on the above mentioned research topics over the period of four semesters. Since the Master Course equally addresses students from different areas of studies, an enrichment of the whole architecture and construction oriented research is to be expected, which is able to deal with the increasing complexity of interdisciplinary research challenges.