



Smart Factories

Winter School

The RWTH International Academy Winter School offers a dynamic and engaging academic and cultural environment for its international visitors. The academic winter courses in the charming historic city of Aachen allows students to take part in state-of-the-art teaching combined with hands-on approaches to technical learning at one of Europe's leading science and research institutions. Our winter courses provide a fantastic opportunity to experience what studying at RWTH Aachen University is really like.



Program Objective

This Winter School revolves around the “Smart Factory”. It will focus on the merging of the virtual and the physical worlds through cyber-physical systems. These systems are part of the Industry 4.0 movement of automation and data exchange in manufacturing technologies.

In this context, digitization, automation, human-machine interaction as well as better networked production systems play important roles.



Applicant's Profile

This program is especially designed for B.Sc./B.E. students enrolled at top universities. Applicants need proficient knowledge of the English language and should be studying Mechanical Engineering or a related field. Mandatory is the completion of the first year.



Quickfacts

Study format	Winter School
Duration	2 weeks
Workload	60 Teaching Units
Qualification	Certificate
Language	English



Application Information

We will evaluate the applications based on the cover letter, the completion of the special requirements of each program, the overall strength of your academic record, and extracurricular experiences.



Academic Staff

The Institute of Mechanism Theory, Machine Dynamics and Robotics of RWTH Aachen exists since 1959.

In education and research the employees of the IGMR focus on analysis, design and optimization of all kinds of mechanisms.

Research and teaching at the Cybernetics Lab IMA & IfU represents consistent interdisciplinarity and cybernetic research methods since four decades. As an interdisciplinary research association, it is an institute of the Faculty of Mechanical Engineering of RWTH Aachen.

Further teaching is conducted by the Chair of Digital Additive Production/ Fraunhofer Institute for Laser Technology ILT, the Research Institute for Operations Management as well as Chair and Institute of Industrial Engineering and Ergonomics IAW.



Modules	Lectures (Teaching Units)	Tutorials/ Lab time (Teaching Units)
Welcome: Introduction to Advanced Production Engineering	4	-
Introduction to Industrial Robotics and Industry 4.0	4	-
Kinematic Calculation of Industrial Robots	4	-
Kinematic Calculation of Industrial Robots – Practical Exercise I	-	4
Kinematic Calculation of Industrial Robots – Practical Exercise II	-	2
Path Planning and Control of Industrial Robots	2	
Path Planning and Control of Industrial Robots – Practical Exercise	-	4
Additive Digital Manufacturing I	4	
Additive Digital Manufacturing II	4	
Mastertalk: RWTH International Academy Master Office	4	
Mobile Robotics in Production	4	
Advanced Production Processes by Integrated Production Networks	4	
The Digital Supply Chain	4	
Ergonomic Design of Human-Machine Interaction in Advanced Manufacturing Systems	4	
Visit of “Smart Automation Lab”	-	4
Final Exam	4	-
Total	46	14

Qualification

• **Certificate of Participation**

At the end of the Winter School program, the students will receive their Certificate of Participation together with a Certificate Supplement from RWTH Aachen University, stating the workload and the academic content of the Winter School.

• **Executive Certificate**

Upon successful completion of the Winter School examination, each student will receive an Executive Certificate and a Certificate of Performance from RWTH Aachen University, stating their final grade.

