

MASTER'S DEGREE PROGRAM

# INDUSTRIAL MATHEMATICS.



Be it medical imaging techniques or the world's largest space telescope, the Master's degree program in Industrial Mathematics is an opportunity to work at the crossroads of R & D and support mankind's greatest accomplishments.



JOHANNES KEPLER  
UNIVERSITY LINZ

# Industrial Mathematics.

Precision in mathematics combined with real-world challenges: the graduate degree program in Industrial Mathematics focuses on learning how to apply mathematical methods and models towards addressing solving complex, real-world challenges.

You will learn how to analyze data, identify patterns, and predict outcomes in an effort to assist companies and organizations in their decision-making processes.

The Master's degree program in Industrial Mathematics concentrates on mathematical modeling and numerical simulation, covering subject areas that include partial differential equations, inverse problems, and financial mathematics.

## YOUR BENEFITS

**Strong Focus on Real-World Applications**

**Outstanding, Innovative Research and a network of internationally renowned partners and research institutions**

**Individual Support and Mentoring**

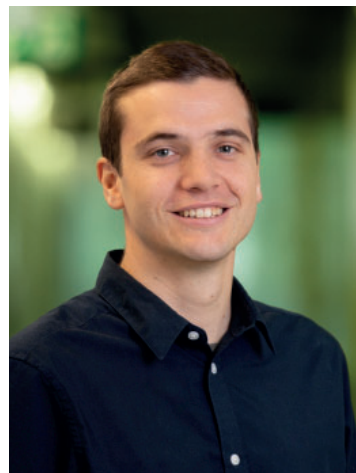
## To The Point

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**DR. BERNADETT STADLER**  
Alumni

“As a research associate at RICAM, I conduct R&D on adaptive optical systems for giant telescopes. Alongside my background in mathematics, my university studies taught me how to approach challenging problems with a flexible and structured mindset and how to persevere.”



**DI LUKAS WEISSINGER**  
Alumnus

“The unique part of my studies involved different areas of math and applying the often more abstract areas to real-world applications. We constantly face diverse challenges that would be difficult – or nearly impossible – to address and solve without a strong understanding of mathematics, be it in industry, finance, medicine, or astronomy.”

# Program Learnings and Career Prospects.

## What You Will Learn

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Students in the JKU Master's degree program in Industrial Mathematics expand on their professional expertise and learn, among other things

- the ability to work effectively as part of a team (particularly as part of an international team), how to grasp complex relationships quickly, and how to devise solutions to address complex issues
- understand the mindsets and methodologies used in other fields in order to collaborate effectively with peers in other subject areas

- how to communicate effectively and get to the heart of the issue
- how to hold scholarly presentations and speak in front of ("expert") groups.

You will also learn how to work independently in the field of mathematics (including conducting base-knowledge research, in method development and mathematical applications), as well as how to independently continue your professional development.

## Career Prospects

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As an expert in Industrial Mathematics, you bring a unique combination of analytical skills and mathematical expertise to the table, particularly to industry and to the workplace, qualifying you to pursue a wide range of challenging and exciting career paths, including:

- **Software Developer Specializing in Algorithms:** You frequently focus on creating complex algorithms designed to solve targeted problems, including issues related to artificial intelligence, machine learning, and computational simulation.
- **Data Scientist:** Use your expertise in statistics and machine learning to identify data patterns, generate predictive models, and assist in making data-driven decisions - from technology to healthcare.
- **Quantitative Analyst in the Financial Sector (quants):** Your responsibilities would include applying mathematical models to financial markets in an effort to evaluate risk as well as

devise investment strategies and value financial instruments. Your role in hedge funds, at investment banks, and at insurance companies is crucial.

- **Operations Research Analyst:** You apply mathematical and analytical methods to help companies and organizations resolve issues in areas including resource allocation, production processes, and logistics - to maximize operational efficiency and effectiveness.
- **Systems Analyst:** Your role involves analyzing current IT systems and business processes and identifying potential areas of improvement. You develop technical solutions to improve system efficiency, productivity and performance.

There are many opportunities to work in a variety of industries, e.g. Financial Services, Technology and Software Development, Biotechnology and Pharmaceuticals, Power and Energy, Logistics and Transportation, Academia, science and research.

# Master's Degree Program.

## Subject Areas

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As part of the Master's degree program, students are required to complete courses totaling 120 ECTS credits in the following areas:

CONTENT	ECTS
Mandatory subjects: Mathematic Modeling, Numerical Simulation	31,5
Electives: Core Exercises, Mathematical Seminars, Geometry, Mathematical Methods in Engineering, Mathematical Methods in the Economic Sciences, Numerical Analysis, Optimization, Probability Theory and Mathematical Statistics, Analysis, Knowledge-based Mathematical Systems, Number Theory, Soft Skills	36
Autonomous coursework	12
Master's seminar, thesis, examination	40,5
<b>TOTAL</b>	<b>120</b>

### KEY FACTS

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**Degree**  
Diplom-Ingenieur\*in  
(DI<sup>in</sup>/DI)

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**Duration**  
4 semesters

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**ECTS**  
120 credits

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**Language**  
Englisch (Level B2)

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**Location**  
Linz

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**Programm**  
Full-Time

See: [jku.at/ma-industrial-mathematics](http://jku.at/ma-industrial-mathematics) for additional program information and the curriculum.

## Admission Requirements

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In order to be admitted to the Master's degree program you must fulfill the following requirements:

- Graduates from the JKU's Bachelor's degree program in Technical Mathematics can be admitted to the Master's degree program in Industrial Mathematics without any further constraints. We also welcome graduates from other undergraduate degree programs in STEM subject areas, either from the JKU or graduates from other universities/colleges.
- While a prior background in Industrial Mathematics is not a pre-requisite, students should possess a strong background in general mathematics. Students who lack a strong background in mathematics will, however, be

required to complete certain supplementary courses. Please refer to the curriculum and if you are interested in the program, please do not hesitate to contact us!

- Submit proof of B2 level of proficiency in English

## Advanced Degrees at the JKU

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- Doktorat / PhD Engineering Science

# Academic Advising.

## The JKU in a Nutshell

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Over 24,000 students are enrolled at the JKU, making it Upper Austria's largest institution for research and higher-level education. Students can choose from around 100 academic degree programs in law, business, economics, social sciences, art x science, engineering and natural sciences, computer sciences, education, digitalization and medicine. You benefit from a unique campus environment and a low student-to-faculty ratio.

## General Information

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### STUDENT INFORMATION AND ADVISING SERVICES (SIBS)

Bank Building  
P +43 732 2468 3450  
studium@jku.at  
jku.at/sibs

### ADMISSIONS OFFICE

Bank Building  
P +43 732 2468 2010  
admission@jku.at  
jku.at/admission

### INTERNATIONAL WELCOME CENTER

Bank Building  
P + 43 732 2468 3050  
international@jku.at  
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### CONTACT

**Industrial Mathematics  
Institute**

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**jku.at**

## **JOHANNES KEPLER UNIVERSITY LINZ**

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### **Social Media**

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