MEDIZINISCHE UNIVERSITÄT
INNSBRUCK

MCI®
THE ENTREPRENEURIAL SCHOOL

connected programs:

molecular medicine / biotechnology

MEDICAL UNIVERSITY INNSBRUCK

MCI TECHNOLOGY & LIFE SCIENCES,
DEPARTMENT BIOTECHNOLOGY & FOOD ENGINEERING

study program & goals

The field of molecularly oriented life sciences is experiencing an enormous upswing and is one of the key industries of the 21st century with enormous growth potential and career development opportunities. On the one hand, this is due to advances in biomedical research, which have enabled the development of new diagnostic and therapeutic procedures. On the other hand, there has also been an increase in biotechnological methods that enable molecular findings to be translated into products and services.

The Connected Programs Molecular Medicine / Biotechnology build on corresponding relevant bachelor's degree programs. The double degree program serves to deepen and complete the theoretical and practical knowledge in the field of molecular biosciences and the comprehensive professional competence to translate this knowledge into corresponding products and services.

The combination of the existing master's degree programs in Biotechnology (MCI) and Molecular Medicine (MUI) expands the content that already exists in each program:

- Biotechnologists gain in-depth insights into the molecular fundamentals, especially medical aspects of biotechnological products.
- Molecular physicians are increasingly enabled to translate scientific findings into biotechnological products.

The profile resulting from the combination provides graduates with clear competitive advantages in taking up highly qualified professional activities in the entire field of modern life sciences, especially in research and development in the biotechnological/genetic engineering and pharmaceutical industries, in biomedical research at universities and research institutions, as well as in the regulatory administrative sector. Furthermore, the completion of the Master's program creates the prerequisites for further PhD studies as the highest academic form of education.

structure of the connected programs molecular medicine / biotechnology:

The program is designed for 6 semesters. Half of the courses are taken at MUI and half at MCI.

Semester 1 (WS): MUI
Semester 2 (SS): MCI
Semester 3 (WS): MCI
Semester 4 (SS): MUI
Semester 5 and 6 (WS/SS): Separate master's theses at MUI and MCI

1. Semester (MUI): Modules (according to Master Program Molecular Medicine, Semester 1):

- Mandatory module PM1 (Medical Interdisciplinary courses/ Mandatory project study)
- Mandatory module PM2 (Oncoscience)

2. Semester (MCI): Modules (according to Master Program Biotechnology, Semester 2):

- Bioanalytics
- Downstream Processing
- Pharmaceutical Technology & Upstream Processing
- Biodata Science & Scientific Methods
- Project Biotechnology 2
- General Management 2

3. Semester (MCI): Modules (according to Master Program Biotechnology, Semester 3):

- Biopharma & Diagnostics
- Industrial Biotechnology
- Bioinformatics
- Project Biotechnology 3
- Regulatory Framework & Scientific Methods
- General Management 3

4. Semester (MUI): Modules (according to Master Program Molecular Medicine, Semester 2)

- Mandatory module 3: Infection und Immunity
- Elective module/ project study:
    - 3-D Bioprinting and Rapid Prototyping in Biomedicine
    - Molecular Cell Biology
    - Structural Biology
    - Metabolomics
    - Computer- and Systems Biology
    - Stem Cell-based Models for Development and Disease

One elective module with 7.5 ECTS points can also be substituted with one project study after an approval by the governing body responsible for study matters. Project studies are worth 7.5 ECTS points.

5./6. Semester: Master theses and final examinations

The language of instruction is English. Master's theses are compulsory to be written in English.

admission to the connected programs molecular medicine / biotechnology

Applicants for the Connected Programs must pass both admission procedures for the Master's programs in Molecular Medicine (MUI) and Biotechnology (MCI) and obtain a study place for both programs. Applicants must express their interest in the Connected Programs prior to the admission procedures at each institution. A total of 6 places are available per academic year. After the application phase, these will be distributed among the 6 most suitable applicants.

admission process for molecular medicine (mui):

The procedure, such as the internet application, the procedure criteria, deadlines, etc. of the admission procedure of the Master's program Molecular Medicine at the Medical University of Innsbruck can be found online https://www.i-med.ac.at/studium/zulassung/erstzulassung/Zulassung-zum-Masterstudium-Molekulare-Medizin.html.

admission process for biotechnology (mci):

https://www.mci.edu/en/study/application-and-admission

Criteria: background/CV (50%), Commissioned interview (50 %)

Application deadlines are usually in November, January, March and May.

Please apply for the Connected Programs at MUI by the end of April at the latest and at MCI by the 3rd application deadline in March at the latest!

Please check the respective homepages for the exact date of the application deadline. Applications received after this date cannot be considered in the application process for the Connected Programs.

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qualification & professions

Graduates of the Connected Programs Molecular Medicine / Biotechnology possess in-depth knowledge of both the molecular basis of medical issues and the biotechnological translation of this knowledge into pharmaceutical or diagnostic products. They work at the interface of natural sciences and technology. On the one hand, they deal with molecular and medical methods, on the other hand with engineering methods. Graduates are qualified for independent scientific work in basic medical research as well as for the direct handling of tasks in application-oriented areas in the development of molecular-based diagnostic and therapeutic concepts. They work with cell culture techniques, operate bioreactors and develop biotechnological processes. Graduates are able to transfer processes developed in the laboratory to the industrial scale and to be responsible for smooth processes in production.

Due to the broad, interdisciplinary education, graduates are offered a variety of fields of employment, especially in the following areas and industries:

- Biomedical research and development, for example in the fields of
    - Oncoscience
    - Infection und immunity
    - Genetics-Epigenetics-Genomics
    - Structural biology and bioinformatics
    - Molecular cell biology

- Biopharmaceutical development and production
- Diagnostics

overview courses

COURSES 1. SEMESTER (MUI)	TYPE	ATTENDANCE (h)	ECTS
Basics in Oncology	VO	12	1
Gender and Diversity in Medicine	VO/SE	30	2
Ethics, Fundamentals of intellectual property, Good scientific practice	VO/SE	36	3
Animal Experiments	VO/SE	24	1,5
Animal Experiments *	Lab	18	1
Replacement and Complementary Methods for Animal Experimentation	VO/SE	9	0,5
Replacement and Complementary Methods for Animal Experimentation *	VU	27	1,5
Mandatory project study	Lab	108	7,5
Oncoscience: Theoretical and Practical Fundamentals	VO	48	4
Oncoscience: Practical Laboratory Course	Lab	120	7
Oncoscience: Seminar and Journal Club	SE	36	4

***the 2 courses can be completed alternatively**

COURSES 2. SEMESTER (MCI)	TYPE	SWS	ECTS
Drug Discovery	SE	1	1,5
Preclinical & Clinical Development	SE	1	1,5
Biopharmacy & Dosage Formulations	ILV	1	2
Upstream Processing	ILV	2	3
Bioanalytics	VO	2	3
Bioanalytics laboratory	LB	1	1
Downstream Processing	VO	2	3
Downstream Processing laboratory	Lab	1	1
Project Biotechnology 2	ILV	3	4
Research Seminar 2	ILV	1	1
Scientific Literature	SE	1	1
Biodata Science	ILV	3	4
Asset & Risk Management	ILV	1	2
Legal Framework in Corporate Management	ILV	1	2

COURSES 3. SEMESTER (MCI)	TYPE	SWS	ECTS
Bioinformatics	ILV	2	3
Omics Technologies	VO	2	3
Clinical Diagnostics	VO	1	2
Biopharmaceutical Development and Production	VO	1	2
Biopharmaceutical Development and Production Seminar	ILV	1	1
Industrial Biotechnology	VO	2	3
Technical Biocatalysis	SE	2	3
Biosafety	SE	1	1
Qualification and Validation in Biotechnological Industry	VO	1	1
Intellectual Property Rights in Biotechnology	SE	1	1
Research Seminar 3	ILV	1	1
Academic Writing	SE	1	1
Project Biotechnology 3	ILV	3	4
Management & Leadership Skills for Engineers	ILV	2,5	4
Bioinformatics	ILV	2	3

COURSES 4. SEMESTER (MUI)	TYPE	ATTENDANCE (h)	ECTS
Infection and Immunity: Theoretical and Practical Fundamentals	VO	48	4
Infection and Immunity: Practical Lab Course	Lab	120	7
Infection and Immunity: Seminar and Journal Club	SE	36	4
Elective module *: Theoretical and Practical Fundamentals	VO	24/48	2/4
Elective module *: Practical Lab Course	Lab	60/120	3,5/7
Elective module *: Seminar and Journal Club	SE	18/36	2/4

* Elective modules award 7.5 or 15 ECTS points each. The students have to complete elective modules worth 15 ECTS points (either one module worth 15 ECTS points or two modules worth 7,5 ECTS points each), whereby one elective
module with 7.5 ECTS points can also be substituted with one project study after an approval by the governing body responsible for study matters. Project studies are worth 7.5 ECTS points.

COURSES 5. SEMESTER (MCI)	SWS	ECTS
Master's Seminar	3	3
Master's Thesis		25
Final Examination		2

Link to the study plans:

https://www.i-med.ac.at/studium/molmed/docs/Curriculum_EN.pdf

file:///C:/Users/LUSCHEURER/Downloads/200702_Curriculum_MA_BT-1.pdf