DEPARTMENT OF MOLECULAR BIOTECHNOLOGY
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
NWI302	3			6
Title	**T**	**A**	**L**	**ECTS**
Statistical and Numerical Methods	2	2	0	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Molecular Biotechnology					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	The participants of the module are enabled to plan and carry out data collection in a technical working environment, taking into account statistical principles, as well as to analyze the collected data. Based on the data collection and analysis, key methods applicable in operational practice for problem identification and sustainable solution in the engineering field are taught.					
Content	1) Data analysis and problem solving as the basis of Data Science. 2) Fundamentals of Descriptive Statistics 3) Introduction to R 4) Data Analysis Process 5) Model Data 6) Random Variables and their Distribution 7) Deductive Statistics 8) Inductive Statistics 9) Engineering Methods					
Prerequisites	Basic mathematics knowledge					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement	-					

Recommended or Required Reading	
Books / Lecture Notes	1. Sachs L., Hedderich J. (2006): Angewandte Statistik, 12.Auflage, Springer, Berlin. 2. Montgomery, Runger: Applied Statistics and Probability for Engineers, Wiley 2006
Other Sources	
Additional Course Material	
Documents	
Assignments	
Exams	
Course Composition	

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Mathematics und Basic Sciences	100	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz		
Assignments	5	20
Attendance		
Recitations		
Projects	1	10
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	15	2	30
Self-Study	15	5	75
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	15	2	30
Laboratory			
Projects	1	30	30
Final Exam	1	2	2
		Total Work Load	**169**
		ECTS Points (Total Work Load / Hours)	**6**

Learning Outcomes

1	
2	
3	

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4	
5	
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7	
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9	
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12	
Weekly Content	
1	
2	
3	
4	
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11	
12	
13	
14	
15	

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1							
2							
3							
4							
5							
6							
7							

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8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	01.03.2021