§ 30 Master's Program Mechatronics

(1) Non-Consecutive Master's Program

This non-consecutive Mechatronics Master's Program consists of three semesters and is designed for those who have already successfully completed an undergraduate program in a technical or scientific field.

Coursework and exams equivalent to at least 90 European Credit Transfer and Accumulation System (ECTS) credits must be earned in order to complete the master's degree program. These courses are listed in Tables 1 to 4 along with electives.

Graduates of Bachelor's degree programs which comprised only 180 ECTS must either demonstrate the successful completion of an additional 30 ECTS of coursework directly related to the field of mechatronics or must complete such coursework during the course of their master's degree program. This additional coursework must be approved by the examination board. The extra 30 ECTS are documented in the diploma supplement, but are not included in the master's degree final grade.

(2) Prior Education Taken into Consideration eaching language

The modules and structure of the master's degree plan are adapted according to each student's prior education. Depending on the type of undergraduate program previously completed, the following module plans apply for the MM1 to MM3 semesters:

Table 1: Module plan for students who have completed a bachelor's degree in the field of mechanical engineering.

Table 2: Module plan for students who have completed a bachelor's degree in the field of electrical engineering.

Table 3: Module plan for students who have completed a bachelor's degree in the field of computer science.

Table 4: Module plan for students who have not completed a bachelor's degree in any field corresponding to Tables 1, 2, or 3.

Each student is assigned to one of the four module plans by the chairperson of the program's examination board.

Tables 1 to 3 include elective modules. The list of pre-approved electives is announced at the beginning of each semester. Furthermore, additional courses from other Ravensburg-Weingarten University master's programs can also be taken with the approval of the Mechatronics Master's Program examination board chairperson.

(3) Language of Instruction eaching language

The courses are offered in the English language

(4) Assessment

The assessments scheduled for the MM1, MM2, and MM3 semesters are listed in Tables 1 to 4. The type and scope of the coursework, as well as corresponding assessments are indicated as follows:

Type of Course		Assessment		Other Abbreviations	
L	Lecture	W(xx)	Written Exam; duration in (xx) minutes	SH	Number of Semester Hours
LH	Lab/Hands-on	SWP	Seminar Work and Presentation	ECTS	Number of Credits Earned (§3)
T	Tutorial	PR	Project Result		
S	Seminar/Presentation	PF	Portfolio		
P	Project	RPA	Practical work (50%) with presentation (50%)		

Tutoring can satisfy elective module requirements but may not exceed 5 ECTS in total. When in doubt, the chairperson of the respective examination board shall decide on the number of ECTS to be awarded.

(5) **Master's** Thesis

At least 45 ECTS must be earned in the MM1 and MM2 semesters before a student may apply to begin work on their master's thesis. Students have 6 months to complete the thesis and it must be written in English.

After submission, the master's theses are presented in a public event at Ravensburg-Weingarten University.

(6) Master's Degree Certificate & Transcript

The master's degree certificate and transcript are issued in English. All of the completed modules from table 1, 2, 3, or 4 are included in the transcript. Any additional modules which were taken but not included in the overall grade may be included in the transcript upon request.

(7) Final Grade

Both completed examinations as well as the master's thesis are included in the calculation of the final GPA (grade point average). The contribution of each assessment to the final grade is weighted according to its respective number of ECTS credits

Table 1: MM1 to MM3 module plan for students who have completed a bachelor's degree in the field of mechanical engineering

| Module | Course | Program Semester | | | | Graded Assessment |
| | | | MM1 | MM2 | MM3 | |
		Type/SH	ECTS	ECTS	ECTS	
Applied Mathematics	Applied Mathematics	V+P/4	5			K90 or PF
Numerical Methods	Numerical Methods	V+P/4	5			K90 or PF
Elective Module				5		
Power Electronics	Power Electronics	V/4	5			K90
Elective Module					5	
Elective Module			5			
Automation	Automation	V/4		5		K90
Process Interface Equipment	Process Interface Equipment	V/4	5			PF
	Laboratory on Process Interface Equipment	P/2		2		
Simulation of Mechatronic Systems	Simulation of Mechatronic Systems	V/4	5			K90
Scientific Project	Working in International Scientific Project Teams	S/1		5		PF
	Scientific Project	PR/4				
Advanced Control Systems	Advanced Control Systems	V/4		6		K90*
	Advanced Control Systems Lab	P/2				
Robotics	Robotics	V/4		7		K90
	Lab on Robotics	P/2				
Master's thesis	Master's thesis with Colloquium 20%				25	
Summe ECTS			30	30	30	

*Lab attendance documented by not graded lab report is required for admission to exam.

Table 2:   MM1 to MM3 module plan for students who have completed a bachelor's degree
            in the field of electrical engineering

| Module | Course | Program Semester | | | | Graded Assessment |
| | | | MM1 | MM2 | MM3 | |
		Type/SH	ECTS	ECTS	ECTS	
Applied Mathematics	Applied Mathematics	V+P/4	5			K90 or PF
Numerical Methods	Numerical Methods	V+P/4	5			K90 or PF
Electrical Drives	Electrical Drives	V/4		5		K90
Elective Module				5		
Engineering Design and Materials	Engineering Design and Materials	V+Ü/4	5			K90 or RPA
Advanced Engineering Mechanics	Advanced Engineering Mechanics	V/4	5			K90 or RPA
Elective Module				5		
Elective Module					5	
Simulation of Mechatronic Systems	Simulation of Mechatronic Systems	V/4	5			K90
Scientific Project	Working in International Scientific Project Teams	S/1		5		PF
	Scientific Project	PR/4				
Advanced Control Systems	Advanced Control Systems	V/4		6		K90*
	Advanced Control Systems Lab	P/2				
Embedded Computing 1	Embedded Computing	V/4	5			PF
Embedded Computing 2	Embedded Computing Lab	P/2		4		PF
	Embedded Computing Seminar	S/2				
Master's thesis	Master's thesis with Colloquium 20%				25	
Summe ECTS			30	30	30	

*Lab attendance documented by not graded lab report is required for admission to exam.

B. Special Part: Master's Program Mechatronics
valid from SoSe2025 (technical version P011)

Table 3: MM1 to MM3 module plan for students who have completed a bachelor's degree in the field of computer science

Module	Course	Type/SH	MM1 ECTS	MM2 ECTS	MM3 ECTS	Graded Assessment
Applied Mathematics	Applied Mathematics	V+P/4	5			K90 or PF
Numerical Methods	Numerical Methods	V+P/4	5			K90 or PF
Electrical Drives	Electrical Drives	V/4		5		K90
Power Electronics	Power Electronics	V/4	5			K90
Engineering Design and Materials	Engineering Design and Materials	V+Ü/4			5	K90 or RPA
Advanced Engineering Mechanics	Advanced Engineering Mechanics	V/4	5			K90 or RPA
Elective Module				5		
Process Interface Equipment	Process Interface Equipment	V/4	5			
Process Interface Equipment	Laboratory on Process Inter- face Equipment	P/2		2		PF
Elective Module			5			
Scientific Project	Working in International Scientific Project Teams	S/1		5		PF
Scientific Project	Scientific Project	PR/4				
Advanced Control Systems	Advanced Control Systems	V/4		6		K90*
Advanced Control Systems	Advanced Control Systems Lab	P/2				
Robotics	Robotics	V/4		7		K90
Robotics	Lab on Robotics	P/2				
Master's thesis	Master's thesis with Colloquium 20%				25	
Summe ECTS			30	30	30	

*Lab attendance documented by not graded lab report is required for admission to exam.

Table 4: MM1 to MM3 module plan for students who have not completed a bachelor's degree in any field corresponding to Tables 1, 2, or 3

Module	Course	Type/SH	MM1 ECTS	MM2 ECTS	MM3 ECTS	Graded Assessment
Applied Mathematics	Applied Mathematics	V+P/4	5			K90 or PF
Numerical Methods	Numerical Methods	V+P/4	5			K90 or PF
Electrical Drives	Electrical Drives	V/4		5		K90
Power Electronics	Power Electronics	V/4	5			K90
Engineering Design and Materials	Engineering Design and Materials	V+Ü/4			5	K90 or RPA
Advanced Engineering Mechanics	Advanced Engineering Mechanics	V/4	5			K90 or RPA
Automation	Automation	V/4		5		K90
Process Interface Equipment	Process Interface Equipment	V/4	5			
	Laboratory on Process Interface Equipment	P/2		2		PF
Simulation of Mechatronic Systems	Simulations of Mechatronic Systems	V/4	5			K90
Scientific Project	Working in International Scientific Project Teams	S/1		5		PF
	Scientific Project	PR/4				
Advanced Control Systems	Advanced Control Systems	V/4		6		K90*
	Advanced Control Systems Lab	P/2				
Robotics	Robotics	V/4		7		K90
	Lab on Robotics	P/2				
Master's thesis	Master's thesis with Colloquium 20%				25	
Summe ECTS			30	30	30	

* Lab attendance documented by not graded lab report is required for admission to exam.