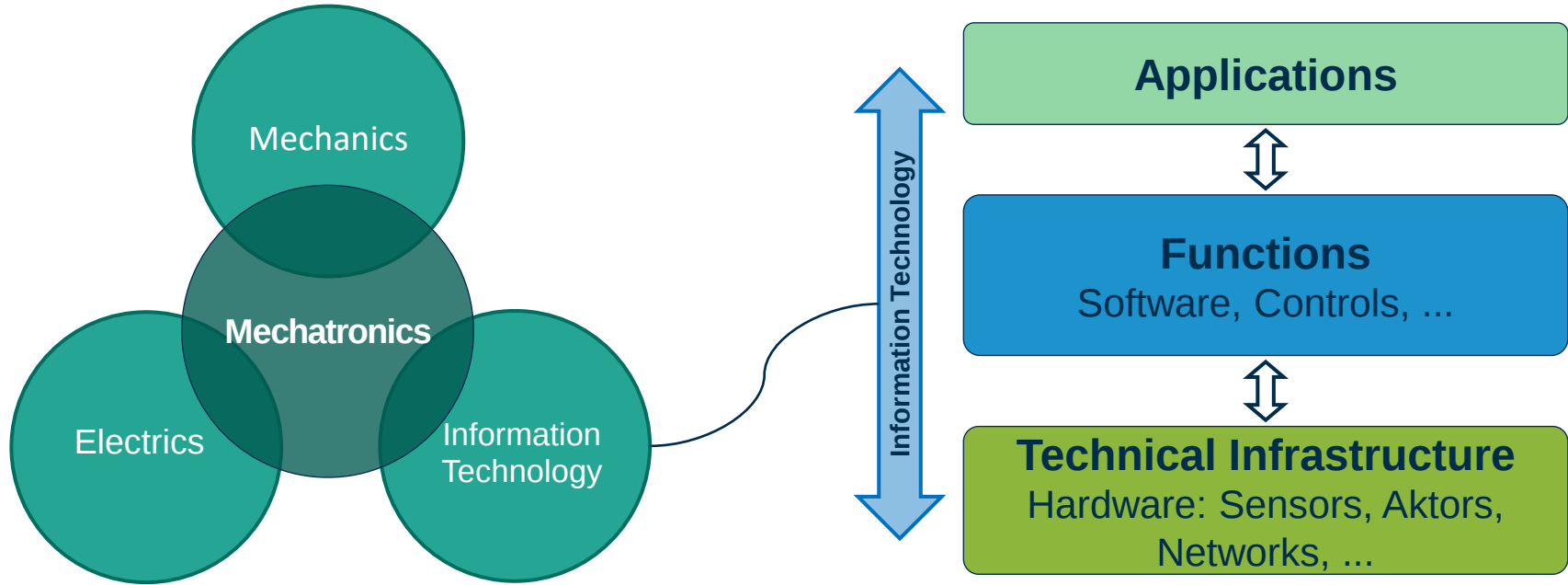




Mechatronics and Information Technology

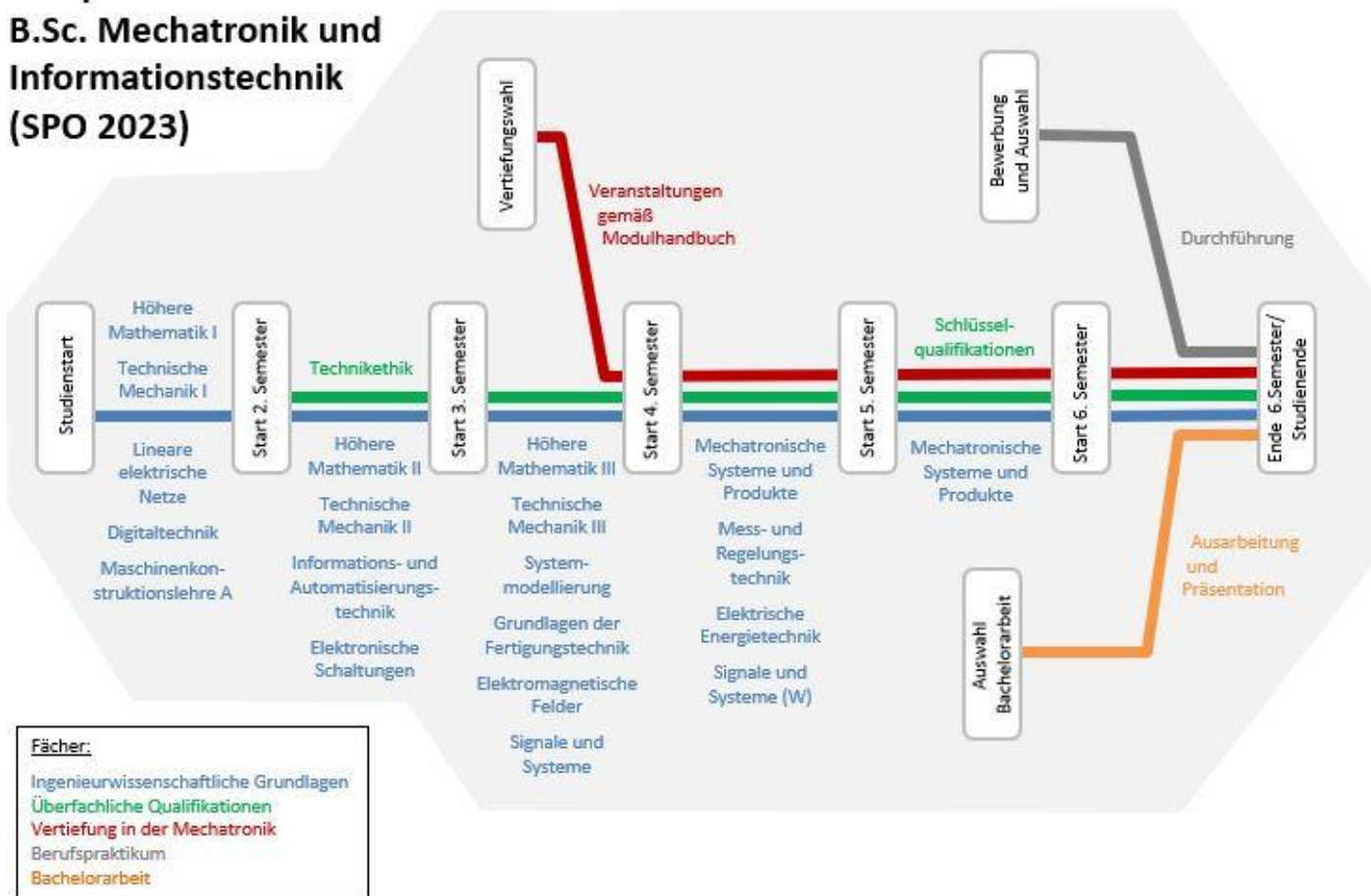
Master-Studies

What is „Mechatronics“?

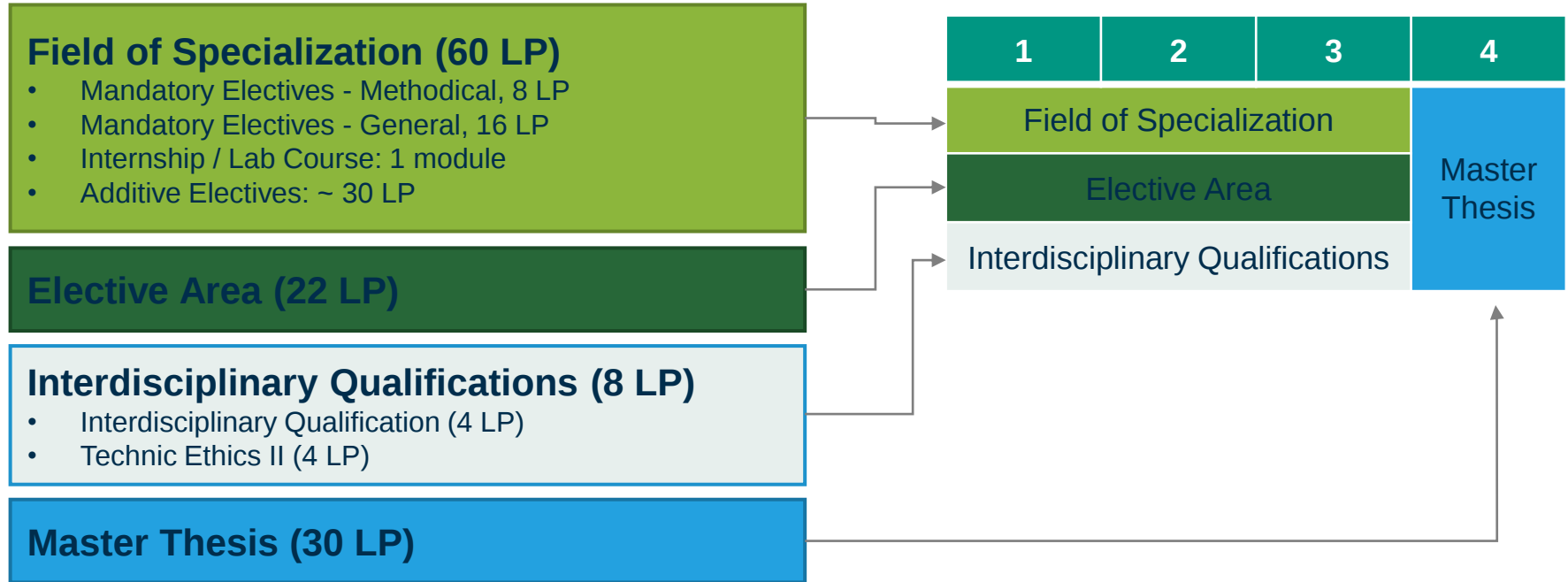


Information Technology is an enabler of modern and smart systems.

Fahrplan fürs Studium B.Sc. Mechatronik und Informationstechnik (SPO 2023)



Structure of the Study



Possible Fields of Specialization

Fields of Specialization	Responsible	
Vehicle Systems Technology	Geimer	✓
Energy Technology	Hiller	✓
Micro System Technology	Korvink	✓
Industrial Informatics and Systems Engineering	Barth	✓
Autonomous Systems and AI	Stiller	} <i>Automation, Robotics and AI</i> ✓
Automation, Control and Robotics	Hohmann	
Design of Mechatronic Systems	Matthiesen	✓
Medizintechnik	in planning	

Field of Specialization: Vehicle Systems Technology

6.2.3 Vehicle Systems Engineering

Part of: Field of Specialization in Mechatronics and Information Technology

Credits

60

Short Description

This field of specialization covers the structure and design of vehicles, the components and systems used in them, as well as the methods for vehicle development. Application-specific requirements for vehicles are discussed and the components are introduced with the aim of designing appropriate solutions. Therefore, after successfully completing this module, students can assess, select and apply suitable methods for vehicle engineering.

Description

Election notes

All modules are listed with English titles, regardless of the course language.

To see English modules with English titles and German modules with German titles visit the [German website](#).

Mandatory
Electives –
Methodical

Mandatory Electives – Methodical (Elective: at least 8 credits)				
M-MACH-106468	Control of Mobile Machines	DE	SS	4 CP
M-MATH-105831	Numerical Methods	EN	SS	5 CP
M-MATH-106972	Numerical Methods with Programming Practice	EN	SS	6 CP
M-MACH-107053	Simulation with Lumped Parameters	DE	SS	4 CP
M-ETIT-100537	Systems and Software Engineering	EN	WS	6 CP
M-MACH-107622	Advanced Systems Engineering <i>neu</i>	EN	SS	4 CP

Field of Specialization: Vehicle Systems Technology

Mandatory Electives – General (Elective: at least 16 credits)				
M-MACH-107622	Advanced Systems Engineering neu	EN	SS	4 CP
M-MACH-100501	Automotive Engineering I	DE/EN	WS	8 CP
M-MACH-107148	Automotive Vision	EN	SS	6 CP
M-ETIT-107005	Batteries, Fuel Cells, and Electrolysis	EN	WS	6 CP
M-MACH-107060	CO ₂ -Neutral Combustion Engines and their Fuels I	DE	WS	4 CP
M-MACH-106468	Control of Mobile Machines	DE	SS	4 CP
M-MACH-107151	Data-Driven Algorithms in Vehicle Technology	EN	WS	4 CP
M-MACH-106926	Decision-Making and Motion Planning for Automated Driving	EN	WS	6 CP
M-MACH-107041	Mobile Machines	DE	SS	8 CP
M-MATH-105831	Numerical Methods	EN	SS	5 CP
M-MATH-106972	Numerical Methods with Programming Practice	EN	SS	6 CP
M-MACH-103232	Rail System Technology	DE	WS+SS	4 CP
M-MACH-102683	Rail Vehicle Technology	DE	WS+SS	4 CP
M-MACH-107638	Running Gear and Dynamic Behaviour of Rail Vehicles neu	DE	SS	6 CP
M-MACH-107053	Simulation with Lumped Parameters	DE	SS	4 CP
M-ETIT-100537	Systems and Software Engineering	EN	WS	6 CP
Internship/Lab Course (Elective: 1 item)				
M-ETIT-100381	Batteries and Fuel Cells Laboratory	DE/EN	WS	6 CP
M-MACH-106744	Cognitive Automobiles - Laboratory	DE	SS	6 CP
M-ETIT-107138	Electric Drives and Power Electronics Lab	DE/EN	SS	6 CP
M-MACH-102695	Motor Vehicle Laboratory	DE	WS+SS	4 CP
M-MACH-107052	Practical Course: Autonomous Driving	DE	WS	6 CP
M-MACH-106050	Reliability and Test Engineering	DE	WS	5 CP
M-MACH-105725	Seamless Engineering	EN	WS	9 CP
Additive Electives (Elective:)				
M-MACH-107622	Advanced Systems Engineering neu	EN	SS	4 CP
M-MACH-100501	Automotive Engineering I	DE/EN	WS	8 CP

Mandatory
Electives –
General

Internship/
Lab Course

Additive
Electives

Zugangsvoraussetzungen laut Zugangssatzung

Bachelor Mechatronik und Informationstechnik oder einem Studiengang mit im Wesentlichen gleichem Inhalt

Notwendige Mindestkenntnisse:

- 6 LP in Grundlagen der Elektrotechnik und/oder Informationstechnik
- 6 LP in Grundlagen der Technischen Mechanik und/oder Thermodynamik
- 21 LP in Höhere Mathematik
- 6 LP in Regelungstechnik

Englischkenntnisse

- Entsprechend Zulassungs- und Immatrikulationsordnung des KIT (Kenntnisse mind. B2-Level: Test oder Zeugnis)
- Alternativ:
 - Abschlusszeugnis eines englischsprachigen Bachelor- oder Masterstudiengang
 - Englischsprachige Bachelorarbeit
- Bewerbungsfristen: 30. September für das Wintersemester, 31. März für das Sommersemester

