

Mechatronics Engineering

Educational Objectives

Mechatronics engineering is a multidisciplinary field of science that includes a combination of mechanical engineering, electrical engineering and control engineering. Rather than embrace traditional divisions of engineering as distinct entities, this is a degree that embraces the interdisciplinary area of mechanical engineering, control engineering and software development, especially for controlling sophisticated smart machines. Mechatronics engineering program teaches students to design and build computer controls for mechanical systems and machines like hybrid vehicles and robots. Additionally, the bachelor's program combines advanced engineering studies with projects that provide real-world experience in a variety of technologies and fields.

Core Courses

1. Common basic courses

Mathematical Analysis for Engineering, Physics, Linear Algebra, Probability Theory and Mathematical Statistics, Computer Science and Programming

2. Specialized basic courses

Fundamentals of Electric Circuit, Analog Electronics, Digital Logic Circuit and CPU, Theoretical Mechanics, Machine Design, Microprocessor Systems and Assembly Language, Signals and Systems

3. Specialized courses

Introduction to Robotics, MATLAB Foundation and Its Application in Robotics, Innovation Practice-Intelligent Mechatronic System, Mechatronic Control Technology, Sensing and Testing Technology, Python and Fundamentals of Artificial Intelligence

Program Outcomes

Students graduate with unique abilities in the full spectrum of smart machine design. Among the skills acquired is the development of autonomous systems such as self-operating robots, vehicles, as well as a thorough knowledge of industrial automation.

The graduates are able to solve the mechanical and electrical system engineering problem and to communicate effectively with the industry peers and the social public communication, including designing documents and writing reports, giving presentations and responding to commands. Furthermore, the graduates will have a certain international vision and communication ability in a cross-cultural circumstances.

Duration and Degree

4 years, Bachelor Degree of Engineering in Mechatronics Engineering

Curriculum

Semester 1			Credits
100172103	工科数学分析 I	Mathematical Analysis for Engineering	6
101190003	大学化学 C (英文)	General Chemistry C	2
101080081	计算机技术与编程 (英文)	Computer Science and Programming	3
100245105	国际交流英语 I	International English Communication I	2
100230057	知识产权法基础	Practical Administrative Law	1
100270001	思想道德修养与法律基础	Ideological and Moral Cultivation and Basics of Law	3
100980001	军事理论	Military Theory	1
100980002	军事训练	Military Training	1.5
100320001	体育 I	Gym I	0.5
100172002	线性代数 B	Linear Algebra B	3.5
100620001	学科动态与科学素养	Discipline progress and scientific literacy	0
100930001	大学生心理素质发展	Psychological Quality Development of College Students	1
Total Hours			24.5
Semester 2			Credits
100172203	工科数学分析 II	Mathematical Analysis for Engineering	6
101037302	工程制图 (英文)	Engineering Graphics	4
100270002	中国近现代史纲要	The History of Modern China	2
101180111	大学物理 I (英文)	College Physics I	4
100180116	物理实验 B I	Physics Laboratory B I	1
100245106	国际交流英语 II	International English Communication II	2
101080082	C 语言编程实践	C Programming Practice	1
101062219	电路分析基础实验 A (英文)	Electric Circuit Experiment A	1
101062102	电路分析基础 A (英文)	Fundamentals of Electric Circuit A	3.5
100320002	体育 II	Gym II	0.5
Elective	通识教育选修课	General Electives	2
Total Hours			27

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Semester 3			Credits
101013001	理论力学 (英文)	Theoretical Mechanics	4
100172003	概率与数理统计 (双语)	Probability Theory and Mathematical Statistics	3
101180121	大学物理 II (英文)	College Physics II	4
100180125	物理实验 B II	Physics Laboratory B II	1
100172001	复变函数与积分变换	Complex Variables and Integral Transform	2
100051294	电子实习	Electronic Practice	1
100270003	马克思主义基本原理概论	Introduction to Basic Principles of Marxism	3
100320003	体育 III	Gym III	0.5
101062104	模拟电子技术基础 A (英文)	Analog Electronics A	3.5
100062203	模拟电子技术实验 A	Analog Electronics Experiment A	0.75
Elective	通识教育选修课	General Electives	2
Total Hours			24.75
Semester 4			Credits
101037304	机械原理 (英文)	Theory of Machines and Mechanisms	3
101037305	工程材料与应用 (英文)	Principle and Application of Engineering Materials	3
100270004	毛泽东思想和中国特色社会主义理论体系概论	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics	4
101014001	材料力学 (英文)	Mechanics of Materials	3.5
100320004	体育 IV	Gym IV	0.5
101037313	制造技术基础训练 (双语)	Basic Training of Manufacturing Technology	2
102027103	微系统设计与制造 (英文)	Micro-electro-mechanical System Design and Fabrication	2
101053205	算法与数据结构 (英文)	二选一	2
101063115	概率建模与离散事件系统仿真 (英文)		
Elective	通识教育选修课	General Electives	2
Total Hours			20
Semester 5			Credits
101037307	机械设计 (英文)	Machine Design	3

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101037303	科学研究与写作 (英文)	Research Methods and Academic Writing	1
101037308	机械设计综合课程设计 (英文)	Machine Design Project	2
101027125	MATLAB 基础与机器人学应用 (英文)	MATLAB Foundation and Its Applications in Robotics	2
101063107	数字逻辑与 CPU (英文)	Digital Logic Circuit and CPU	5
102027109	创新创业实践-智能机电系统综合实践 (双语)	Innovation Practice – Intelligent Mechatronic system	2
100270005	社会实践	Social Practice	2
Elective	通识教育选修课	General Electives	2
Total Hours			21.5
Semester 6			Credits
102027118	机电控制技术 (英文)	Mechatronic Control Technology	3
102027119	传感与测试技术 (英文)	Sensing and Testing Technology	3
101027120	微处理器与汇编语言 (英文)	Microprocessor Systems and Assembly Language	3
102027121	机器人学 (双语)	Introduction to Robotics	3
101027122	宏微系统流体力学 (英文)	Mechanics of Fluids in Macro/Micro Systems	2
Total Hours			14
Semester 7			Credits
101027124	Python 与人工智能基础 (英文)	Python and Fundamentals of Artificial Intelligence	2
102027114	生产实习	Internship in Industry	3
101064115	决策与支持系统 (英文)	二选一	2
101037328	产品设计与开发 (英文)		
Total Hours			7
Semester 8			Credits
102027117	毕业设计 (论文)	Graduation Project (Thesis)	12
Total Hours			12
Total Credit Hours			150.75