

# 机械工程专业人才培养方案（2021）

## Undergraduate Program for Mechanical Engineering Major

学科门类：工学	国标代码：08	
Discipline Type: Engineering	Code:	
专业类：机械类	国标代码：0802	
Type: Automation	Code:	
专业名称：机械工程	国标代码：080201	校内代码：
Title of the Major: Mechanical Engineering	Code:	

### 一、学制与学位 Duration of Schooling and Degree

学制：四年 Duration: Four years

授予学位：工学学士 Degree: Bachelor of Engineering

### 二、培养目标 Educational Objectives

本专业适应社会经济发展和能源电力相关行业技术进步需求，面向能源电力机械装备领域，培养拥有历史使命感、社会责任心、高尚品德和良好的人文素养，具有团队意识和国际视野，能够掌握和应用自然科学与机械工程相关知识，富有实践创新和持续学习能力，解决不断出现的复杂机械工程问题，能够从事能源电力机械装备领域机械产品及系统的设计、制造、检验、运维、管理或新技术研发等相关工作的高素质人才，为社会主义事业培养德智体美劳全面发展的建设者和接班人。

This major adapts to the needs of social and economic development and technology progress in relative field of energy and power. The graduates of this major can face the field of energy and power machinery and equipment; cultivate the sense of historical mission, social responsibility, noble morality and good humanistic quality; have team consciousness and international vision; own and apply relevant knowledge of natural science and mechanical engineering; be capable of innovation and continuous learning ability in practical; solve the emerging complex mechanical engineering problems. The graduates can also own high-quality talents in the design, manufacturing, inspection, operation and maintenance, management or new technology research and development in mechanical products and systems in the field of energy and power equipment. This major is to cultivate builders and successors with all-round development of morality, intelligence, physique, beauty and labor for the socialist cause.

学生毕业 5 年左右能够达到的职业和专业成就：

- (1) 具有历史使命感和社会责任心
- (2) 拥有高尚的品德和良好的人文素养
- (3) 掌握自然科学、机械工程和运行管理知识
- (4) 富有实践创新和持续学习能力
- (5) 具备优秀的团队精神、国际视野

Students can obtain career and professional achievements in about five years after graduation:

- (1) Have a sense of historical mission and social responsibility.
- (2) Have noble moral character and good humanistic quality.
- (3) Master the knowledge of natural science, mechanical engineering and operation management.
- (4) Be rich in practical innovation and continuous learning ability.
- (5) Own excellent team spirit and international vision.

### 三、专业培养基本要求 Skills Profile

本专业学生毕业时应达到以下要求：

(1) 工程知识：具备应用数学、自然科学、工程基础和机械工程专业知识解决现代能源电力机械装备领域复杂工程问题的能力。

1-1 学习数学和相关自然科学知识，发展较强的数学计算和分析能力；

1-2 掌握力学、电工电子学、材料学等工程基础知识，具备应用基本理论分析问题的能力；

1-3 利用机械设计、机械制造、测试技术等专业知识，掌握解决工程问题的基本思路和方法，具备综合应用所学知识解决能源电力机械装备领域复杂工程问题的能力。

(2) 问题分析：能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析能源电力机械装备领域复杂工程问题，以获得有效结论。

2-1 辨识工程问题核心特征，界定工程问题所属的学科领域；

2-2 通过阅读文献掌握相关问题前沿研究动态，并形成研究报告，体现复杂工程问题的本质；

2-3 应用正确的基本原理、公式、方程等建立复杂问题模型，能够对实际问题进行合理假设与简化，并进行求解，对结果进行合理性与有效性评价。

(3) 设计/开发解决方案：针对能源电力机械装备领域复杂工程问题，能够应用机械工程的基本理论和方法，设计满足特定需求的机械系统和制造工艺，开发解决方案，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。

3-1 能够对复杂机械工程问题进行分析，提出解决方案；

3-2 能够在社会、健康、安全、法律、文化、环境等因素的约束下，分析与论证解决方案的可行性；

3-3 能够设计满足特定需求的机械系统和制造工艺，并体现创新意识；

3-4 能够用图纸、报告、论文或实物等形式，呈现复杂机械系统的设计结果和解决方案。

(4) 研究：能够基于科学原理并采用科学方法对能源电力机械装备领域复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。

4-1 结合数学、物理学基本原理或方程式，综合应用机械工程专业知识制定研究方案并进行论证，确定研究内容与技术路线；

4-2 实施研究方案与实验，并将预期或预测结果与研究或实验结果进行比较和分析，评价数据有效性；

4-3 具备分析及解释实验数据与实验资料，并通过归纳与总结，准确表达实验或研究现象与结果，获取有效实验结论并形成报告的能力。

(5) 使用现代工具：能够针对能源电力机械装备领域复杂工程问题，开发、选择与使用互联网技术、现代测试技术和工程软件实现对复杂工程问题的预测与模拟，并能够理解其局限性。

5-1 运用图书馆、网络及其它来源搜集能源电力机械装备领域机械产品与系统设计、研发、加工等环节中复杂工程问题的研究动态与相关信息；

5-2 利用有关工程软件分析、模拟及设计产品、系统或流程；

5-3 运用专业前沿实验仪器、先进测试方法与技术，并将其应用于研究与数据获取过程的能力。

(6) 工程与社会：能够基于工程相关背景知识进行合理分析，评价机械工程专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

6-1 理解机械工业在国家和世界经济与社会发展中的地位与作用；了解与机械工程相关的技术标准、知识产权、产业政策、法律法规；

6-2 能够评价机械工程生产过程、产品、新技术、新工艺、新材料的开发和应用对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

(7) 环境和可持续发展：能够理解和评价针对复杂机械工程问题的工程实践对环境、社会可持续发展的影响。

7-1 理解国家环境保护和社会可持续发展的相关政策、法律、法规；

7-2 能正确评价针对复杂机械工程问题的工程实践对环境和社会可持续发展的影响。

(8) 职业规范：具有人文社会科学素养、社会责任感，能够在工程实践中理解并遵守工程职业道德和规范，履行责任。

8-1 具有人文社会科学素养和社会责任感，遵守工程师职业道德；能够对机械工程实践活动的社会道德进行判断评鉴；

8-2 学习技术伦理学知识，认识到技术发展可能带来的社会问题，并加以判断和自我约束。

(9) 个人和团队：能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

9-1 能够正确认识多学科团队对解决复杂机械工程问题的意义和作用；

9-2 能够主动与团队成员合作，完成团队分配的任务，承担团队成员以及负责人的角色。

(10) 沟通：能够就复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。并具备一定的国际视野，能够在跨文化背景下进行沟通和交流。

10-1 学习一门外国语，与世界范围内的其他文化、思想进行交流；具有国际视野和跨文化交流、竞争与合作能力；

10-2 利用图表、公式、计算、图纸等方式表达思想，有效传递信息；

10-3 能够与团队成员有效沟通，发展并展示有效的口头交流，并融入适合的视觉表现。

(11) 项目管理：理解并掌握工程管理原理与经济决策方法，并能在多学科环境中应用。

11-1 对机械工程专业领域内的新工艺、新材料、新设备等进行技术分析和比较，有效应用技术经济分析方法；

11-2 应对市场、用户需求及技术发展的变化，提出技术改造、系统更新、效能改进的方案，并进行经济性核算。

(12) 终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。

12-1 能够认识不断探索和学习的重要性，具有自主学习和终身学习的意识，掌握自主学习的方法，了解拓展知识和能力的途径；

12-2 自主了解机械工程领域及其相关的最新理论、技术和国际前沿动态，适应个人或职业发展的要求。

Students of this major need to meet the following requirements upon graduation:

(1) Engineering knowledge: have the ability to solve complex engineering problems in the field of modern energy and power equipment with the application of professional knowledge in mathematics, natural science, engineering foundation and mechanical engineering.

1-1 Learn mathematics and related natural science knowledge, and develop strong mathematical calculation and analysis ability;

1-2 Master basic engineering knowledge such as mechanics, electrical engineering, electronics and materials, and have the ability to analyze problems with basic theories;

1-3 Make use of professional knowledge such as mechanical design, mechanical manufacturing and measurement technology; master basic ideas and methods to solve engineering problems and have the ability to comprehensively apply the learned knowledge to solve complex engineering problems in the field of energy and power equipment.

(2) Problem analysis: be able to apply the basic principles of mathematics, natural science and engineering science to identify, express and analyze complex engineering problems in the field of energy and power equipment through literature research, so as to obtain effective conclusions.

2-1 Identify the core characteristics of engineering problems and define the discipline field of engineering problems;

2-2 Master the frontier research trends of relevant problems through reading literature, and obtain research reports to reflect the essence of complex engineering problems;

2-3 Using suitable basic principles, formulas, and equations to establish models of complex problems; be able to make reasonable assumptions and simplify practical problems, solve them, and evaluate the rationality and effectiveness of the results.

(3) Design/develop solutions: Aiming at the complex engineering problems in the field of energy and power equipment, be able to apply the basic theories and methods of mechanical engineering, design mechanical systems and manufacturing processes to meet specific needs, develop solutions, reflect the sense of innovation in the design link, and consider social, health, safety, legal, cultural, and environmental factors.

3-1 Be able to analyze complex mechanical engineering problems and provide solutions;

3-2 Be able to analyze and demonstrate the feasibility of solutions under the constraints of social, health, safety, legal, cultural, environmental and other factors;

3-3 Be able to design mechanical systems and manufacturing processes to meet specific needs, and reflect the sense of innovation;

3-4 Be able to present the design results and solutions of complex mechanical systems in the form of drawings, reports, papers, or physical objects.

(4) Research: Be able to study complex engineering problems in the field of energy, electric machinery and equipment based on scientific principles and scientific methods, including designing experiments, analyzing, and interpreting data, and obtaining reasonable and effective conclusions by information synthesis.

4-1 Combine the basic principles or equations of mathematics and physics, and comprehensively apply the professional knowledge of mechanical engineering to formulate and demonstrate the research plan, further schedule the research content and technical route;

4-2 Implement the research programs and experiments, compare and analyze expected or predicted results from research with experiment results, and evaluate the validity of data;

4-3 Have the ability to analyze and interpret experimental data and experimental materials,

and accurately express experimental results or research phenomena, and obtain effective experimental conclusions and form reports.

(5) Use of modern tools: For complex engineering problems in the field of energy, power machinery and equipment, develop, select and use Internet technology, modern testing technology and engineering software to predict and simulate complex engineering problems, and understand their limitations.

5-1 Use library, network and other sources to collect research trends and related information of complex engineering problems in the design, research and development, processing and other links of mechanical products and systems in the field of energy and electric machinery equipment;

5-2 Use relevant engineering software to analyze, simulate and design products, systems or processes;

5-3 Have the ability to use professional state of the art experimental equipment, advanced testing methods and technologies, and apply them to the research and data acquisition process.

(6) Engineering and society: students should be able to conduct reasonable analysis and evaluate the social, health, safety, law and cultural impacts of mechanical engineering practices and solutions to complex engineering problems based on engineering related background knowledge and understand the responsibilities to be undertaken.

6-1 Understanding the status and role of machinery industry in national and world economic and social development; understanding of mechanical engineering related technical standards, intellectual property rights, industrial policies, laws, and regulations.

6-2 Ability to evaluate the social, health, safety, law and cultural impacts from the development and application of mechanical engineering production processes, products, new technologies, new processes, and new materials, and understand the responsibilities.

(7) Environment and sustainable development: Students should be able to understand and evaluate the impact of engineering practices for complex mechanical engineering problems on environmental and social sustainable development.

7-1 Understanding of the policies, laws and regulations related to national environmental protection and social sustainable development;

7-2 Students should correctly evaluate the impact of engineering practice of complex mechanical engineering problems on the environmental and social sustainable development.

(8) Professional norm: students should have humanities and social science literacy, a sense of social responsibility, be able to understand and abide the engineering professional ethics and norms in engineering practice and perform their responsibilities.

8-1 Having humanities and social science literacy and social responsibility, abiding the engineer professional ethics; judging and evaluating the social morality of mechanical engineering practice;

8-2 Learning the knowledge of technical ethics, realizing the social problems that may be brought by technological development, and making judgment and self-restraint.

(9) Individual and team: students can undertake the roles of individual, team member and leader in a multidisciplinary team.

9-1 Students can correctly understand the significance and role of multidisciplinary teams in solving complex mechanical engineering problems;

9-2 Students can actively cooperate with team members, finish complete tasks assigned by the team, and undertake the role of team member and leader.

(10) Communication: Be able to effectively communicate with professional peers and the public on complex engineering issues, including writing reports and design documents, presentation, clear expression or response to instructions. Besides, students should have a certain international horizon and be able to communicate in a cross-cultural context.

10-1 Learning a foreign language to communicate with other cultures and ideas worldwide; having the ability of international horizon, cross-cultural communication, competition and cooperation;

10-2 Using charts, formulas, calculations, drawings and other ways to express their ideas and effectively convey information;

10-3 Be able to communicate effectively with team members, develop and demonstrate effective oral communication, and combine appropriate visual presentation.

(11) Project management: Understand and master the knowledge of the principles of engineering management and economic decision-making methods and can apply them in a multi-disciplinary environment.

11-1 Give a technical analysis and comparison on new processes, materials, equipment, etc. in the field of mechanical engineering. Can accomplish hands on tasks that require the application of knowledge of technical and economic analysis methods;

11-2 Propose technological transformation, system renewal, and efficiency improvement plans, and carry out economic accounting to respond to changes in the market, user needs and technological development.

(12) Lifelong learning: Have the consciousness of independent learning and lifelong learning, and can continuously learn and adapt to development

12-1 Recognize the importance of continuous exploration and learning, have the awareness of independent learning and lifelong learning. Master the methods of independent learning and understand the ways to expand knowledge and abilities;

12-2 Independently understand the field of mechanical engineering and its related latest theories, technologies, and international cutting-edge trends, and meets the requirements of personal or professional development.

#### 四、学时与学分 Hours and Credits

	类别	学时	学分	比例
必修课 Required courses	公共基础 Public infrastructure	660	33	19.41%
	学科门类基础 Basis of discipline	608	38	22.35%
	专业类基础 Basis of major	352	22	12.94%
	专业核心 Required courses of major	224	14	8.24%
	集中实践 Intensive practice	608	38	22.35%
必修课小计 Subtotal of Required courses		2320	145	85.29%
选修课 Electives		320	20	11.76%
课外实践学分 Practice credits of extra-curricular		5 周 5 weeks	5	2.94%

总计 Total	2640 学时+5 周	170	100%
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说明:

1. 必修实践环节学分包括: 集中实践课程 38 学分, 课外实践课程 5 学分。

Note:

1. Total of 43 credits for required practice training, including: 38 credits for Intensive practice, 5 credits for practice credits of extra-curricular.

## 五、专业主干课程 Main Course

机械制图(1)、机械制图(2)、工程材料、理论力学、材料力学、热工与流体力学基础、公差与技术测量、工程控制理论与技术、机械原理、机械设计、机械制造技术基础、液压与气压传动、测试技术、数字化设计与制造

Mechanical Drawing (1), Mechanical Drawing (2), Engineering Materials, Theoretical Mechanics, Material Mechanics, Foundation of Thermal And Fluid Mechanics, Tolerance And Technical Measurement, Engineering Control Theory And Technology, Mechanical Principle, Mechanical Design, Foundation Of Mechanical Manufacturing Technology, Hydraulic And Pneumatic Transmission, Testing Technology, Digital Design And Manufacturing

## 六、总周数分配 Arrangement of the Total Weeks

学期 Semester	一	二	三	四	五	六	七	八	合计
教学环节 Teaching Program									
理论教学 Theory Teaching	16	16	17	17	17	16	16		115
复习考试 Review and Exam	2	2	2	2	2	2	1		11
集中实践环节 Intensive Practice	2	3(2)	1(3)	2(1)	1(1)	3(1)	3	19	34(2)
小计 Subtotal	20	21	20	21	20	21	20	19	162
寒假 Winter Vacation	5		5		5		5		20
暑假 Summer Vacation		6		6		6			18
合计 Total									200

## 七、培养目标与毕业要求关系矩阵 Relationship Matrix Between Training Tasks And Graduation Requirements

培养目标	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5
毕业要求	具有历史使命感和社会责任心	拥有高尚的品德和良好的人文素养	掌握自然科学、机械工程和运行管理知识	富有实践创新和持续学习能力	具备优秀的团队精神和国际视野
毕业要求 1 工程知识			●		
毕业要求 2 问题分析			●		

毕业要求 3 设计/开发解 决方案	●	●	●	●	
毕业要求 4 研究			●		
毕业要求 5 使用现代工具			●		
毕业要求 6 工程与社会	●	●			
毕业要求 7 环境和可持续 发展	●			●	
毕业要求 8 职业规范	●	●			
毕业要求 9 个人和团队		●			●
毕业要求 10 沟通					●
毕业要求 11 项目管理			●		
毕业要求 12 终身学习				●	



## 机械工程专业必修课程体系及教学计划

Table of Teaching Schedule for Required Course and Teaching Plan

类别 Type	课程编号 Course ID	课程名称 Course name	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	课外学时 Off class hours	开课学期 Semester	
公共基础类课程 Public basic courses	00700975	中国近现代史纲要 Outline of Modern Chinese History	3	48	32		16	1	
	00701353	思想道德与法治 Ideological Morality and law	3	48	32		16	2	
	00700983	毛泽东思想和中国特色社会主义理论体系概论 Mao Zedong Thought and the theory of building socialism with Chinese Characteristics	5	80	64		16	4	
	00700977	马克思主义基本原理 Marxism Basic Principle	3	48	32		16	4	
	00700988	习近平新时代中国特色社会主义思想概论 Outline of Xi Jinping's New China's Socialist Ideology	2	32	28		4	1	
	00701661	形势与政策（1） Current Affair and Policy(1)	0.25	8	8			1	
	00701662	形势与政策（2） Current Affair and Policy(2)	0.25	8	8			2	
	00701663	形势与政策（3） Current Affair and Policy(3)	0.25	8	8			3	
	00701664	形势与政策（4） Current Affair and Policy(4)	0.25	8	8			4	
	00701665	形势与政策（5） Current Affair and Policy(5)	0.25	8	8			5	
	00701666	形势与政策（6） Current Affair and Policy(6)	0.25	8	8			6	
	00701667	形势与政策（7） Current Affair and Policy(7)	0.25	8	8			7	
	00701668	形势与政策（8） Current Affair and Policy(8)	0.25	8	8			8	
	01390011	军事理论 Military Theory	1	36	36			1	
	J100010	现代电力工程师 Modern power Engineer	2	32	32			1	
	00801410	通用英语 General English	4	64	64			1	
	00801400	学术英语 Academic English	4	64	64			2	
	01000011	体育(1) Physical Education (1)	1	36	30		6	1	
	01000021	体育(2) Physical Education (2)	1	36	30		6	2	
	01000031	体育(3) Physical Education (3)	1	36	30		6	3	
	01000041	体育(4) Physical Education (4)	1	36	30		6	4	
		公共基础课程小计 Subtotal of public basic courses		<b>33</b>	<b>660</b>	<b>560</b>	<b>0</b>	<b>100</b>	

类别 Type	课程编号 Course ID	课程名称 Course name	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	课外学时 Off class hours	开课学期 Semester
学科门类基础课程 Basis of discipline	00900130	高等数学(1) Advanced Mathematics (1)	5.5	88	88			1
	00900140	高等数学(2) Advanced Mathematics (2)	6	96	96			2
	00900462	线性代数 Linear Algebra	3	48	48			2
	00900053	大学物理(1) College Physics (1)	3.5	56	56			2
	00900111	概率论与数理统计 B Probability and Mathematical Statistics B	3.5	56	56			3
	00900064	大学物理(2) College Physics (2)	3	48	48			3
	新增	工程化学 Engineering Chemistry	2	32	32			3
	00600204	C/C++程序设计 Programming of C/C++	3.5	56	36	20		3
	00200130	电工技术基础 Fundamentals of Electro Techniques	3	48	40	8		4
	00500160	电子技术基础 Fundamentals of Electronics	3	48	40	8		5
	新增	工程计算方法 Engineering Calculation Method	2	32	32			6
	工程基础类课程小计 Subtotal of Engineering foundation			<b>38</b>	<b>608</b>	<b>572</b>	<b>36</b>	
专业基础类课程 The major basic courses	改名	机械制图(1) Mechanical Drawing (1)	3.5	56	56			1
	改名	机械制图(2) Mechanical Drawing (2)	2.5	40	40			2
	改名	工程材料 Engineering Materials	2	32	32			4
	改名	理论力学 A Theoretical Mechanics A	3.5	56	56			3
	改名	材料力学 A Mechanics of Materials A	3.5	56	56			4
	新增	热工与流体力学基础 Basics of Thermal Engineering and Fluid Mechanics	3	48	48			5
	改名	公差与技术测量 Tolerance and Technical Measurement	2	32	32			3
	新增	工程控制理论与技术 Engineering Control Theory and Technology	2	32	32			4
专业基础类课程小计 Subtotal of The major basic courses			<b>22</b>	<b>352</b>	<b>352</b>			
专业核心课程 Required courses of major	00301910	机械原理 Mechanical Principle	2.5	40	40			3
	00300630	机械设计 Mechanical Design	3	48	48			4
	改名	机械制造技术基础 Basics of Mechanical Manufacturing Technology	2.5	40	40			5
	00301710	液压与气压传动 Hydraulic and Pneumatic Transmission	2	32	32			6

类别 Type	课程编号 Course ID	课程名称 Course name	学分 Credits	总学时 Hours	课内学时 In class hours	实验学时 Lab hours	课外学时 Off class hours	开课学期 Semester
	00301690	测试技术 Measurement Technology	2	32	32			5
	新增	数字化设计与制造 Digital design and manufacturing	2	32	32			6
	专业核心课程小计 Subtotal of Required courses of major		<b>14</b>	<b>232</b>	<b>232</b>			
必修课学分合计 Subtotal of Required courses			107					

## 机械工程专业集中性实践环节设置

Table of Teaching Schedule for Main Practical Training

类别 Type	课序号 ID	环节名称 Name	学分 Credits	周数 Weeks	学时数 Hours	开课学 期 Semester
必修 Required	01390012	军事实践 Military Training	2	2周		1
	00900440	物理实验(1) Experiments of Physics (1)	2		32	2
	新增	机械基础综合实验(1) Mechanical Basic Comprehensive Experiment (1)	1		16	3
	00900450	物理实验(2) Experiments of Physics (2)	2		32	3
	00390550	金工实习 A Metalworking Practice A	3	3周		2
	00390520	机械原理课程设计 Mechanical Principle Course Project	1	1周		3
	新增	机械基础综合实验(2) Mechanical Basic Comprehensive Experiment (2)	1		16	4
	00390192	机械设计课程设计 Mechanical Design Course Project	2	2周		4
	新增	机械制造技术基础课程设计 Mechanical Manufacturing Technology Course Project	1	1周		5
	新增	机械基础综合实验(3) Mechanical Basic Comprehensive Experiment (3)	1		16	5
	改名	专业综合实验与实践 Professional comprehensive experiment and practice	3	3周		7
	新增	机械基础综合实验(4) Mechanical Basic Comprehensive Experiment (4)	1		16	6
	00390590	生产实习 Production Practice	3	3周		6
	00390020	毕业设计 Graduation Project	13	13周		7-8
改名	劳动教育 Labor Education	2		32	2-7	
集中实践小计 Subtotal of major practical training			38	28周	160	

# 机械工程专业选修课教学进程

## Teaching Schedule for Electives

选修课程分为专业领域课程、其它专业课程、通识教育课程 3 个部分，总学分不低于 20 学分。其中，专业领域课程不低于 12 学分。学生可根据自身情况、兴趣爱好等进行选课。

Elective courses are divided into 3 parts: major field courses, general education courses and other major courses. The total elective credits are not less than 20 credits. The total credits of the major field courses are not less than 12 credits. Students can choose courses according to their own situation and interests.

### 1. 专业领域课程 Major field courses

专业领域课程旨在培养学生在本专业某领域内具备综合分析、处理（研究、设计）问题的技能及专业前沿知识。本专业领域的选修课程如下表所示。

Major field courses aim to develop students' skills and advanced knowledge of comprehensive analysis, addressing (research, design) problems in a certain field of the major. Elective courses in this field are shown in the following table.

### 2. 其他专业课程 Other major courses

为了培养复合型人才，鼓励学生跨专业选修专业课程。学生可以选修我校开设的任何专业的专业课程。

To cultivate inter-disciplinary talents, students are encouraged to choose crossing discipline elective courses. Students can take any courses offered by the university.

### 3. 通识教育课程 General education curriculum

通识教育课程包括人文社科、语言交流、文化艺术、科学技术、经济管理、创新创业等模块，学生从学校给定的通识教育课程中选择。

General education curriculum includes humanities and social sciences, language communication, culture and art, science and technology, economic management, innovation and entrepreneurship modules. Students choose from general education courses offered by the university. The courses “Introduction to environmental protection and sustainable society” and “Engineering Project Management” are suggested to be selected.

组别	课程编号	课程名称	学分	总学时	课内学时	实验学时	课外学时	开课学期	模块	
1	电力装备模块	00301880	机电传动控制 Electromechanical Transmission Control	2	32	26	6		5	总学分不少于12学分 Electives, not less than 12 credits
		00301621	机械制造装备设计 Mechanical Manufacturing Equipment Design	2	32	30	2		7	
		改名	发电技术与装备 Power Generation Technology and Equipment	2	32	32			4	
		新增	输变电技术与装备 Transmission and Transformation Technology and Equipment	2	32	32			6	
		新增	风电机组设计与制造基础 Design and Manufacturing Basis of Wind Turbines	2	32	32			5	
		新增	机械储能技术 Mechanical Energy Storage Technology	2	32	32			7	
2		跨专业选修其他专业的专业课程 Interdisciplinary Electives							公共艺术类课程至少选修2学分；其它可用组别1中课程学分替代	
		通识教育选修课程 General Education Electives								
选修课总学分不低于20学分。其中，组别1中的专业领域课程不低于12学分。										

### 选修课选课建议：Recommendations for electives

1. 第二、第三学期：建议每学期选修通识教育选修课程模块中的课程1-2门。
  2. 第四、五、六、七、八学期：建议每学期从专业选修课各模块中选修1-3门课程；也可根据个人兴趣，跨专业选修其他专业的专业课程。
1. Second and third semesters: It is recommended to select 1-2 courses in **General Education Electives** every semester.
  2. Fourth, fifth, sixth, seventh, and eighth semesters: It is recommended to choose 1-3 courses from each part of electives each semester; you can also select **Interdisciplinary Electives** based on personal interests.

## 机械工程专业分学期教学进程

### Teaching Process of Mechanical Engineering in each semester

第一学年									
第一学期					第二学期				
课程性质	课程编号	课程名称	学分	课程类别	课程性质	课程编号	课程名称	学分	课程类别
必修	00700975	中国近现代史纲要	3	理论必修	理论必修	00701353	思想道德与法治	3	理论
	00700988	习近平新时代中国特色社会主义思想概论	2			00801400	学术英语	4	
	00701661	形式与政策	0.25			00701662	形式与政策	0.25	
	00801410	通用英语	4			01000021	体育（2）	1	
	01000011	体育（1）	1			00900140	高等数学（2）	6	
	00900130	高等数学（1）	5.5			00900462	线性代数	3	
		机械制图（1）	3.5				机械制图（2）	2.5	
	01390011	军事理论	1			00900053	大学物理（1）	3.5	
	J100010	现代电力工程师	2			00600204	C/C++程序设计	3.5	
	01390012	军事实践	2			实践	00900440	物理实验（1）	
			00390550	金工实习 A	3				
必修学分小计			24.25	必修学分小计			31.75		
第二学年									
第三学期					第四学期				
课程性质	课程编号	课程名称	学分	课程类别	课程性质	课程编号	课程名称	学分	课程类别
必修				理论必修	理论必修	00700983	毛泽东思想和中国特色社会主义理论体系概论	5	理论
	00701663	形式与政策	0.25			00701664	形式与政策	0.25	
	01000031	体育（3）	1			01000041	体育(4)	1	
	00900064	大学物理（2）	3			00200130	电工技术基础	3	
							工程材料	2	
		理论力学 A	3.5			00300630	机械设计	3	
	00900111	概率论与数理统计 B	3.5				材料力学 A	3.5	

	00301910	机械原理	2.5			工程控制理论与技术	2			
		公差与技术测量	2		00700977	马克思主义基本原理	3			
		工程化学	2			机械基础综合实验(2)		实践		
	00900450	物理实验(2)	2		00390192	机械设计课程设计	1			
		机械基础综合实验(1)	1	专业选修		发电技术与装备	2	理论		
	00390520	机械原理课程设计	1							
必修学分小计			21.75		必修与专业选修学分小计			27.75		
第三学年										
第五学期				第六学期						
课程性质	课程编号	课程名称	学分	课程类别	课程性质	课程编号	课程名称	学分	课程类别	
必修	00701665	形势与政策	0.25	理论	必修	0070166	形势与政策	0.25	理论	
	00500160	电子技术基础	3				工程计算方法	2		
		热工与流体力学基础	3				00301710	液压与气压传动		2
		机械制造技术基础	2.5				数字化设计与制造	2		
	00301690	测试技术	2	实践					实践	
		机械制造技术基础课程设计	1				机械基础综合实验(4)	1		
		机械基础综合实验(3)	1			生产实习	3			
专业选修	00301880	机电传动控制	2	理论	专业选修		输变电技术与装备	2	理论	
		风电机组设计与制造基础	2							
必修与专业选修学分小计			16.75		必修与专业选修学分小计			12.25		
第四学年										
第七学期				第八学期						
课程性质	课程编号	课程名称	学分	课程类别	课程性质	课程编号	课程名称	学分	课程类别	
必修	00701667	形势与政策	0.25	理论	必修	00701668	形势与政策	0.25	理论	
		专业综合实验与	3			实践				



		实践		践				
专业选修	00301621	机械制装备设计	2	理论	00390020	毕业设计	13	实践
		机械储能技术	2					
必修与专业选修学分小计			7.25	必修学分小计			13.25	

说明：劳动教育 2 个学分没加。

Note: The 2 credits of labor education are not added.

## 辅修机械工程专业人才培养方案

### Undergraduate Program for the Mechanical Engineering Minor

组别	课程编号	课程名称	学分	总学时	课内学时	实验学时	开课学期	备注
A		工程材料 Engineering Materials	2	32	32		4	
		热工与流体力学基础 Basics of Thermal Engineering and Fluid Mechanics	3	48	48	0	5	
		公差与技术测量 Tolerance and Technical Measurement	2	32	32	0	3	
		工程控制理论与技术 Engineering Control Theory and Technology	2	32	32	0	4	
	00301910	机械原理 Mechanical Principle	2.5	40	40	0	3	
	00300630	机械设计 Mechanical Design	3	48	48	0	4	
		机械制造技术基础 Basics of Mechanical Manufacturing Technology	2.5	40	40	0	5	
	00301710	液压与气压传动 Hydraulic and Pneumatic Transmission	2	32	32	0	6	
	00301690	测试技术 Measurement Technology	2	32	32	0	5	
		数字化设计与制造 Digital design and manufacturing	2	32	32	0	6	
	00390520	机械原理课程设计 Mechanical Principle Course Project	1				3	
	00390192	机械设计课程设计 Mechanical Design Course Project	2				4	
	机械制造技术基础课程设计 Mechanical Manufacturing Technology Course Project	1				5		
B	00390020	毕业设计 Graduation Project	13				7-8	
学分合计 Subtotal of courses			40					

说明:

1. 辅修专业需修读 A 组课程, 计 27 学分;
2. 辅修专业学士学位需修读 A、B 两组课程, 计 40 学分。

Note:

1. Minor majors need to take A course, totaling 27 credits;
2. Minor majors for the degree need to take A and B courses, totaling 40 credits.

## 培养方案必修环节课程矩阵与毕业要求关系矩阵制作说明

以人才培养目标和毕业要求为基础，制定教学计划，设置课程目标，编写教学大纲，每门课程及其教学环节支撑相应的基本能力要求指标点。各门课程通过设计教学环节、教学活动，辅之以完善的教学质量监控体系，实现课程目标，促进本专业学生毕业要求的达成，进而实现专业人才培养目标。专业所开设的全部必修课程与毕业要求的对应关系矩阵如表 1 所示，其中 H (0.25~0.35)、M (0.15~0.25)、L (0.05~0.15) 分别表示为强支撑、支撑与弱支撑。具体计算毕业要求达成度时，将对应分值量化即可。

具体毕业要求指标点（共计 13 个一级指标点，32 个二级指标点）参照《工程教育认证通用标准解读及使用指南（2020 版，试行）》确定。





