

机械设计制造及其自动化专业本科培养计划 (留学生班)

Undergraduate Program for Specialty in Mechanical Design, Manufacturing and Automation

一、培养目标

I . Program Objective

培养具备机械设计制造基础知识及应用能力，能在工业生产第一线从事机械制造领域内的设计制造、科技开发、应用研究、运行管理等方面工作的高级工程技术人才。

This program aims to cultivate senior professionals who have fundamental knowledge and application skills of mechanical design and manufacturing. The students could pursue career in design and manufacturing, research and development, application study, production management in the field of mechanical manufacturing.

二、基本规格要求

II . Learning Outcomes

毕业生应获得以下几方面的知识和能力：

- 1 . 具有数学、自然科学和机械工程科学知识的应用能力；
- 2 . 具有制订实验方案、进行实验、分析和解释数据的能力；
- 3 . 具有设计机械系统、部件和过程的能力；
- 4 . 具有对于机械工程问题进行系统表达、建立模型、分析求解和论证的能力；
- 5 . 具有在机械工程实践中初步掌握并使用各种技术、技能和现代化工程工具的能力；
- 6 . 具有社会责任和对职业道德的认识；
- 7 . 具有在多学科团队中发挥作用的能力和较强的人际交流能力；
- 8 . 知识面宽广，并具有对现代社会问题的知识，进而足以认识机械工程对于世界和社会影响的能力；

9 . 具有终生教育的意识和继续学习的能力。

Students of this degree will acquire:

1. application of knowledge in mathematics,natural science and mechanical engineering;
2. experimental scheme drafting, operating and data analysis;
3. design of mechanical parts, systems and processes;
4. systematic presentation, modeling, analyzing and demonstration of mechanical engineering problems;
5. preliminary understanding and using of technology, ability and modern tools in mechanical engineering practices;
6. understanding of social obligation and professional ethics;
7. advanced communication and team work;
8. understanding the influence of mechanical engineering on the world and society based on broad knowledge and understanding of modern society issues;
9. continuous studying and lifelong education.

三、培养特色

III . Program Highlights

将信息、计算机科学与技术的知识与机械学科知识相结合；拓宽专业方向，使培养的毕业生更加适应社会。

This program integrates the knowledge of information as well as computer science and technology with that of mechanical engineering.It also broadens the disciplinary span in order to produce visible graduates who are more adaptable to the society needs.

四、主干学科

IV . Major Disciplines

力学、机械工程

Mechanics, Mechanical Engineering

五、学制与学位

V . Program Length and Degree

修业年限：四年

Duration: 4 years

授予学位：工学学士

Degrees Conferred: Bachelor of Engineering

六、学时与学分

VI . Credits Hours and Units

完成学业最低课内学分 (含课程体系与集中性实践教学环节) 要求 : 145.5

Minimum Credits of Curricula (Comprising course system and intensive practical training) : 145.5

1 . 课程体系学时与学分

Course Credits Hours and Units

课程类别		课程性质	学时/学分	占课程体系学分比例 (%)
通识教育基础课程		必修	776/47.5	35.8
学科基础课程		必修	624/38.5	29.1
专业课程	专业核心课程	必修	528/33	24.9
	专业选修课程	选修	216/13.5	10.2
合计			2144/132.5	100

Course Type		Required/Elective	Hrs/Crs	Percentage (%)
General Education Curriculum		Required	776/47.5	35.8
Discipline-related General Courses		Required	624/38.5	29.1
Major-specific courses	Core	Required	528/33	24.9
	Electives	Electives	216/13.5	10.2
Total			2144/132.5	100

2 . 集中性实践教学环节周数与学分

Practicum Credits

实践教学环节名称	课程性质	周数/学分	占实践教学环节学分比例 (%)
工程训练 (三)	必修	2/1	9.1
工程训练 (八)	必修	1/0.5	4.5
课程设计	必修	3/1.5	13.7
毕业设计 (论文)	必修	16/8	72.7
合计		22/11	100

Intership & Practical Training	Course Nature	Weeks/Credits	Percentage (%)
Engineering Training (III)	Required	2/1	9.1
Engineering Training (VIII)	Required	1/0.5	4.5
Course Project	Required	3/1.5	13.7
Undergraduate Project(thesis)	Required	16/8	72.7
Total		22/11	100

七、主要课程

VII . Main Courses

工程制图 Engineering Graphics、材料力学 Material Mechanics、理论力学 Theoretical Mechanics、

机械原理 Theory of Machines and Mechanisms、机械设计 Machine Design、电路理论 Circuit Theory、模拟电子技术 Analogue Electronics、数字电路 Digital Circuits、微机原理 Principle of Microcomputer、工程材料学 Engineering Materials、机械制造技术基础 Fundamentals of Mechanical Manufacturing Technology

八、主要实践教学环节

VIII . Practicum Module (Experiments Included)

工程训练 (三) Engineering Training (III)、工程训练 (八) Engineering Training (VIII)、课程设计 Course Project、毕业设计 (论文) Undergraduate Project (Thesis)

九、教学进程计划表

IX . Course Schedule

院 (系) : 机械科学与工程学院

专业 : 机械设计制造及其自动化 (留学生班)

School (Department): School of Mechanical Science and Engineering

Specialty: Mechanical Design , Manufacturing and

Automation

课程类别 course type	课程性质 required / elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
通识教育课程 General Education Curriculum	必修 Required	EIC0031	微积分 (六) Calculus (VI)	96	6			1
	必修 Required	EIC0041	微积分 (七) Calculus (VII)	96	6			2
	必修 Required	EIC0061	线性代数 Linear Algebra (I)	56	3.5			1
	必修 Required	EIC0071	复变函数与积分变换 Complex Function and Integral Transform	56	3.5			2
	必修 Required	EIC0081	概率论与数理统计 Probability and Mathematics Statistics	56	3.5			3
	必修 Required	PHY0531	大学物理 (六) Physics (VI)	96	6			2
	必修 Required	PHY0701	物理实验 (一) * Physical Experiments (I)	32	1	32		2
	必修 Required	EIC0001	大学计算机基础 Fundamentals of Computer Technology	56	3.5		24	1
	必修 Required	EIC5761	C 语言程序设计 C language Programing Design	64	4		24	2

续表

课程类别 course type	课程性质 required / elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
	必修 Required	MESE0031	国际学生新生导入课 Orientation for International Students	16	1			1
	必修 Required	CHI0011	初级汉语 (上) Elementary Chinese	120	7.5			1
	必修 Required	CHI0021	中国概况 Survey of China	32	2			2
学科基础课程 Discipline-related General Courses	必修 Required	MESE0871	工程制图 (五) 上 Engineering Graphics (V) Part A	40	2.5			1
	必修 Required	MESE0881	工程制图 (五) 下 Engineering Graphics (V) Part B	64	4			2
	必修 Required	CEM0632	理论力学 Theoretical Mechanics	64	4			3
	必修 Required	CEM0521	材料力学 (二) Material Mechanics (II)	64	4	4		4
	必修 Required	MESE1031	流体力学* Fluid Mechanics	40	2.5	4		5
	必修 Required	CST0531	电路理论 (五) Circuit Theory (V)	64	4			3
	必修 Required	MESE1021	模拟电子技术 Analogue Electronics	56	3.5	12		4
	必修 Required	MESE0951	工程材料学* Engineering Materials	32	2	4		3
	必修 Required	MESE1061	系统动力学与控制 System Dynamics and Control	64	4		24	6
	必修 Required	MESE0842	工程测试技术 Engineering Measurement Technology	40	2.5	8		5
	必修 Required	MESE1001	综合测控实验* Comprehensive Experiments on Measurement and Control of Mechatronics	16	0.5	16		6
	必修 Required	EPE0561	工程传热学 (一) Heat Transfer (I)	40	2.5	2		5
	必修 Required	EPE0571	工程热力学 (一) Engineering Thermodynamics (I)	40	2.5	2		5
专业核心课程 Major-specific Core Courses	必修 Required	MESE0971	计算方法 (二) Numerical Methods (II)	40	2.5		16	3
	必修 Required	MESE5791	微机原理 Principle of Microcomputer	40	2.5	4		5
	必修 Required	MESE0662	数字电路 Digital Circuits	40	2.5	8		5

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必修 Required	MESE0961	机械原理 (三) Theory of Machines and Mechanisms (III)	64	4	8		5
必修 Required	MESE2302	机械设计(三) Machine Design (III)	64	4	8		6

续表

课程类别 course type	课程性质 required / elective	课程代码 course code	课程名称 course name	学时 hrs	学分 crs	其中 Including		设置学期 semester
						实验 exp.	上机 operation	
专业核心课程 Major-specific Core Courses	必修 Required	MESE2341	互换性与技术测量基础* Fundamentals of Interchangeability and Technology Measurement	48	3	8		6
	必修 Required	MESE0991	机械制造技术基础* Fundamentals of Mechanical Manufacturing Technology (I)	40	2.5	4		4
	必修 Required	MESE2322	机械制造技术基础 (二) Fundamentals of Mechanical Manufacturing Technology (II)	48	3			6
	必修 Required	MESE2371	液压与气压传动* Hydraulic and Pneumatic Transmission	48	3	4		6
	必修 Required	MESE2361	数控技术* Numerical Control Technology	48	3	4		6
	必修 Required	MESE2351	计算机图形学与 CAD 技术* Computer Graphics and CAD	48	3		20	4
选修课程 Major-specific Electives	选修 Elective	MESE5301	机械制造装备技术 Machinery Manufacturing Equipment and Technology	48	3	4		6
	选修 Elective	MESE5931	机电创新决策与设计 Mechantronics Creative Decisions and Design	48	3			4
	选修 Elective	MESE5811	现代设计方法 Advanced Design Methodology	32	2		8	7
	选修 Elective	MESE5252	机器视觉及应用 Machine Vision and Applications	32	2			7
	选修 Elective	MESE5562	无损检测 Nondestructive Testing	32	2	4		7
	选修 Elective	MESE5432	纳米技术导论 Introduction to Nanotechnology	32	2			7
	选修 Elective	MESE5622	先进制造技术 Advanced Manufacturing Technology	32	2			7
	选修 Elective	MESE5532	微机电系统技术基础与应用 Basis and Application of Microelectro Mechanical Systems	32	2			7

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	选修 Elective	MESE5242	机器人技术基础 Foundation of Robotics Technology	32	2			7
Practical Training Items 实践环节	必修 Required	ENG3541	工程训练 (三) Engineering Training (III)	2w	1			4
	必修 Required	ENG3571	工程训练 (八) Engineering Training (VIII)	1w	0.5			3
	必修 Required	MESE3611	课程设计 Course Project	3w	1.5			6
	必修 Required	MESE3512	毕业设计 (论文) Undergraduate Project (Thesis)	16w	8			8