

机械设计制造及其自动化

一、培养目标

本专业旨在培养掌握机械设计制造及其自动化学科基础理论与专业知识,具有科学、工程 and 人文素养,具备机械设计制造工程实践能力、研究应用能力、组织协调能力、创新意识和国际视野,能在机械工程及其相关交叉领域内,从事产品设计与生产制造、科研与教学、经营与管理等方面工作的高级工程技术人才。

二、毕业生要求

本专业毕业生要求具备以下十二项核心能力:

(1) 工程知识:具有解决复杂机械工程问题所需的数学、自然科学、工程基础和专业知识,了解机械设计制造及其自动化专业的前沿发展现状和趋势。

(2) 问题分析:能够应用数学、自然科学基本原理,并通过文献研究,识别、表达、分析复杂机械工程问题,以获得有效结论。

(3) 设计/开发解决方案:在考虑安全与健康、法律法规与相关标准以及经济、环境、文化、社会等制约因素的前提下,能够针对复杂机械工程问题提出相应解决方案,设计满足特定需求的机械系统、部件或工艺流程,并能够在设计环节中体现创新意识。

(4) 研究:能够基于科学原理并采用合适科学方法针对复杂机械工程问题进行研究,包括设计与实施工程实验、分析与解释实验数据并通过信息综合得到合理有效的结论。

(5) 使用现代工具:能够在机械工程实践中开发、选择和使用恰当的技术、资源、现代工程工具和信息技术工具的能力,并了解其局限性。

(6) 工程与社会:能够基于工程相关背景知识进行合理分析,正确评价机械工程实践和机械工程问题解决方案对社会、健康、安全、法律和文化的影 响,并理解应承担的责任。

(7) 环境和可持续发展:能够理解和正确评价针对工程实践对环境、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与规范,履行责任。

(9) 个人和团队:具有能够在多学科背景下的团队中发挥作用的能力。

(10) 沟通:能够就复杂工程问题与业界同行和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。

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

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

三、培养特色

通过多年的不懈努力,本专业形成了“基础知识扎实、机电结合紧密、应用能力强、综合素质高”的专业特色与优势。

1. 更新教学理念,改革教学方法,优化课程体系和教学内容,注重基础知识教育。
2. 科学设置课程,注重机电结合。
3. 创新实践教学,注重学生工程应用能力的培养。

4. 注重人文、社科知识教育，加强学生综合素质培养。

四、学制、毕业基本要求及学位授予

1. 本科基本学制 4 年，弹性学习年限 3—6 年，按照学分管理制度管理。

2. 机械制造专业学生毕业最低学分数为 165 学分，其中各类别课程及环节要求学分数如下表：

课程类别	通识必修	学门核心	学类核心	专业核心	专业选修	通识选修	集中实践	合计
学分数	27	26	34	16	21	8	33	165

3. 学生修满培养方案规定的必修课、选修课及有关环节，达到规定的最低毕业学分数，并修完规定必修但不记学分的所有课程和环节，德、智、体合格，即可毕业。

4. 满足学位授予相关文件要求的，授予工学学士学位。

五、课程设置及学分分布

(一) 通识教育课程〔必修 27+ (6) 学分+选修 8 学分〕

通识教育课程包括必修和选修两部分。通识选修课程按《湖南大学通识选修（文化素质教育）课程方案》实施，通识必修课程如下：

编码	课程名称	学分	备注
GE01101	毛泽东思想和中国特色社会主义理论体系概论	3+ (3)	
GE01039	思想道德修养与法律基础	1.5+ (1.5)	
GE01100	形势与政策	0.5+ (1.5)	
GE01102	中国近现代史纲要	2	
GE01103	马克思主义基本原理（上）	2	
GE01104	马克思主义基本原理（下）	2	
GE01012（-15）	大学英语	8	
GE01088	计算机基本能力测试	0.5	
GE01095	计算机导论与程序设计	2.5	
GE01107（-13）	心理素质与生涯发展	1	
GE01089（-92）	体育	4	

(二) 学门核心课程（26 学分）

编码	课程名称	学分	备注
GE03025	高等数学 A（1）	5	
GE03026	高等数学 A（2）	5	
GE03003	线性代数 A	3	
GE03004	概率论与数理统计 A	3	
GE03005	普通物理 A（1）	3	
GE03006	普通物理 A（2）	3	
GE03007（8）	普通物理实验 A	2	
ME03001	工程化学	2	

(三) 学类核心课程 (34 学分)

编码	课程名称	学分	备注
ME04017	机械工程图学 (1)	3	
ME04018	机械工程图学 (2)	3	
ME04019	工程材料	2	
ME04020	理论力学	4	
ME04021	材料力学	4	
ME04022	流体力学	2	
ME04023	热工学基础	3	
ME04024	机械原理	4	
ME04025	机械设计	4	
ME04026	电工电子学	3	
ME04027	控制工程基础	2	

(四) 专业核心课程 (16 学分)

编码	课程名称	学分	备注
ME05033	机械制造技术	4	
ME05034	机械制造装备	3	
ME05035	互换性与测量技术基础	2	
ME05036	液压与气压传动	3	
ME05037	微机原理	2	
ME05038	工程测试技术	2	

(五) 专业选修课程 (21 学分)

	编码	课程名称	学分	备注
公共选修课程	ME06078	机械工程导论	1	
	ME06080	生产管理学	2	
制造技术方向	ME06084	精密与超精密加工	2	学生任选 21 学分, 可在全校范围内跨专业选修 11 学分。 学生在校期间参加学科竞赛获奖、公开发表学术论文等经学院认定后可以替代专业选修学分, 但最高不超过 4 个学分, 具体实施办法参照学院相关文件
	ME06043	金属塑性成形原理	2	
	ME06085	模具设计与制造工艺	2	
	ME06086	先进刀具设计与制造	2	
	ME06050	特种加工技术	2	
	ME07018	机械 CAM 技术	2	
	ME06087	高效磨削工艺及装备	2	
ME06088	增材制造技术 (双语)	2		

续表

	编码	课程名称	学分	备注
机械设计 方向	ME06089	机械可靠性设计	2	
	ME06079	机械振动学	2	
	ME06090	工程优化设计	2	
	ME06091	机械 CAD 技术	2	
	ME06092	工程中的数值方法	2	
	ME06093	机械创新设计	2	
	ME06094	机械系统运动学与动力学仿真分析	2	
	ME06095	弹性力学及有限元基础	2	
	ME06096	工业设计基础	2	
	ME06097	前沿设计技术概论	2	
	ME06098	摩擦学原理及应用	2	
	ME06046	数据库原理及应用	2	
机电控制 方向	ME06100	数控技术	2	
	ME06101	计算机控制技术	2	
	ME06102	机器人控制技术	2	
	ME06103	机电一体化系统设计	2	
	ME06104	机电系统建模与仿真	2	
	ME06105	机电系统故障诊断	2	
	ME06106	机电传动与控制	2	
工程机械 方向	ME06038	工程机械设计基础	2	
	ME06107	现代工程机械发动机与底盘构造	2	
	ME06108	工程机械液压与液力传动	2	
	ME06109	液压挖掘机	2	
	ME06110	混凝土机械与桩工机械	2	
	ME06111	工程起重机械	2	

(六) 集中实践环节 (33 学分)

编码	课程名称	学分	备注
GE01040	军事训练		
GE09003	中文写作实训	1	
GE09011	英文写作实训	1	
ME10031	机械综合实验 (1)	0.5	
ME10032	机械综合实验 (2)	0.5	
GE09010	金工实习 A	4	
GE09021	电工电子实习 B	2	

续表

编码	课程名称	学分	备注
ME10009	机械原理课程设计	1	
ME10033	机械设计课程设计	3	
ME10034	测绘工程软件应用实践	1	
ME10035	机械制造技术课程设计	2	
ME10036	专业综合课程设计	2	
ME10019	专业实习	3	
ME10037	毕业设计 (论文)	12	(含毕业实习)

六、课程体系与毕业生核心能力的关联度矩阵

课程类别	课程名称	工程知识	问题分析	设计/开发解决方案	研究	使用现代工具	工程与社会	环境与可持续发展	职业规范	个人和团队	沟通与交流	项目管理	终身学习
通识必修课程	毛泽东思想和中国特色社会主义理论体系概论							H					
	思想道德修养与法律基础						L	H					
	形势与政策							H					
	中国近现代史纲要								H				
	马克思主义基本原理(上)								H			H	
	马克思主义基本原理(下)								H			H	
	大学英语					M					H		
	计算机基本能力测试	M				H							M
	计算机导论与程序设计(C模块)	M				H							M
	心理素质与生涯发展							L				M	
体育									M				
通识选修课程	文化素质选修(公选课)								H			M	M
学科核心课程	高等数学 A	H											
	线性代数 A	H	M										
	概率论与数理统计 A	M	H										
	普通物理 A	H											
	普通物理实验 A					H							
学科核心课程	工程化学	H					L	M					
	机械工程图学	H				H	L						
	工程材料	H		M									
	理论力学	H											
	材料力学	H											
	流体力学	H	L										
	热工学基础	H					M	M					
	机械原理	H		H									
	机械设计	H		H		H	M		L				
电工电子学	H												
控制工程基础	H	H			M								

续表

课程类别	课程名称	工程知识	问题分析	设计/开发解决方案	研究	使用现代工具	工程与社会	环境与可持续发展	职业规范	个人和团队	沟通与交流	项目管理	终身学习
专业核心课程	机械制造技术	H		H			M						
	机械制造装备	M		H			M						
	互换性与测量技术基础	M			H								
	液压与气压传动	H					M						
	微机原理	H		M									
	工程测试技术	H				H	M						
选修课		M										M	M
集中实践环节	军事训练								H	M			
	中文写作实训										H		
	英文写作实训										H		
	机械综合实验				H								
	金工实习 A	M					L		L				
	电工电子实习 B	M					L		L				
	机械原理课程设计			H							L		L
	机械设计课程设计			H		H			L		L		L
	测绘工程软件应用实践	H				H					L		
	机械制造技术课程设计			H		H				M		M	L
	专业综合课程设计			H		H				M			L
	专业实习					H					M	L	
毕业设计(论文)	H	H	H		H	M	M		L	H	H	H	

注：1) 表中教学活动包括：课程、实践环节、训练等；

2) 课程与毕业生核心能力关联度的高度分别用“H(高)”“M(中)”“L(低)”表示。

七、课程责任教师一览表

序号	姓名	职称	学历学位	专业特长	课程 (专业核心、专业选修、通识选修)
1	韩旭	教授	博士	数值模拟；汽车 CAE 技术；反问题理论和方法；优化理论与方法	工程中的数值方法
2	周志雄	教授	博士	切削、磨削技术及数控装备；机械制造综合自动化；CAD/CAM；有限元分析计算；刀具技术	先进刀具设计与制造
3	杨旭静	教授	博士	汽车车身制造工艺及设备技术；复合材料成型技术；复杂曲面数控加工技术	机械工程导论、机械 CAM 技术
4	金湘中	教授	博士	激光材料加工；激光器件；机械制造	机械制造技术、特种加工技术、机械工程导论
5	陈根余	教授	博士	激光加工	机械制造装备
6	程军圣	教授	博士	动态信号分析与处理；机电设备状态监测与故障诊断；振动与噪声控制	工程测试技术
7	冯凯	教授	博士	空气轴承；转子动力学；直驱电机；齿轮设计；永磁电机	机械制造装备
8	郭力	教授	博士	高效精密磨削与制造自动化；机械设计 与制造	机械制造装备

续表

序号	姓名	职称	学历学位	专业特长	课程 (专业核心、专业选修、通识选修)
9	黄星梅	教授	博士	计算机辅助设计与制造; 图学理论及应用; 三维数字化工厂中的虚拟装配工艺设计和装配过程仿真	机械工程图学
10	姜 潮	教授	博士	现代设计方法; 结构优化和工程反问题计算; 汽车 CAE 技术	工程优化设计、机械设计
11	金 滩	教授	博士	高效及超精密磨削工艺和装备	机械 CAM 技术、高效磨削工艺及装配
12	李落星	教授	博士	轻量化构件优化设计、制造; 铝、镁、高强度钢等轻量化材料成型理论; 成形过程模拟仿真建模	工程材料、机械制造技术、金属塑性成形原理
13	刘继常	教授	博士	数字化智能化激光制造技术; 先进成型及其模具技术; 快速原型技术	工程材料、机械制造技术、模具设计与制造工艺
14	刘江南	教授	博士	产品开发创新设计; 机械系统优化设计	机械设计、创新设计理论与方法
15	刘子建	教授	博士	新一代数字化设计理论与关键技术; 复杂高速装备关键设计、分析理论与技术; 流体生活和工业产品开发	机械 CAD 技术
16	彭晓燕	教授	博士	机械电子工程; 汽车电子与控制	微机原理及控制技术
17	宋立军	教授	博士	激光材料加工; 传感及控制; 激光光谱学	机电一体化系统设计、增材制造技术
18	王文格	教授	博士	机电控制; 图像视觉检测; 数控技术	数控技术
19	熊万里	教授	博士	超高速超精密电主轴系统动力学	高效磨削工艺及装备
20	徐道临	教授	博士	海洋工程; 振动与控制; 非线性动力学; 计算力学	机械振动学
21	杨 宇	教授	博士	动态信号处理; 机电设备状态监控与故障诊断; 模式识别与智能计算	控制工程基础
22	尹韶辉	教授	博士	纳米制造; 超精密加工; 超微细加工; 超高速加工	精密与超精密加工、高效磨削工艺及装配
23	张 屹	教授	博士	激光技术及其数字化加工装备; 汽车车身激光制造技术; 激光微细加工技术	机械制造装备
24	周惦武	教授	博士	汽车车身及结构件 CAE 成型方法、加工工艺技术与装备; 汽车轻量化材料计算与设计理论; 储氢合金与锂离子电池材料优化设计	工程材料、机械制造技术、模具设计与制造工艺
25	陈久久	副教授	博士	汽车中的振动与降噪及优化; 机械材料中的无损检测及评估; 智能结构与材料	工程中的数值方法
26	陈敏钧	副教授	在读博士	机械故障诊断和机械振动	机械原理
27	湛霖霖	副教授	在读博士	数据库原理及应用; CAD 技术基础; C 语言	机械 CAD 技术、数据库原理及应用
28	范 叶	副教授	在读博士	生产计划与控制; 生产成本控制; 物流设施与规划; 项目管理; 汽车技术与产业发展战略	生产管理学
29	龚志辉	副教授	博士	汽车覆盖件模具与设计制造	互换性与测量技术基础
30	胡德安	教授	博士	机械 CAE; 计算力学; 结构动力学	弹性力学及有限元基础

续表

序号	姓名	职称	学历学位	专业特长	课程 (专业核心、专业选修、通识选修)
31	胡仲勋	副教授	博士	几何误差测量及其数据处理的理论与技术研究; 汽车覆盖件模具 CAD、CAPP、CAM; 机械 CAD、CAPP、CAM	互换性与测量技术基础
32	金秋谈	副教授	在读博士	机械设计及其理论	机械设计
33	李 莉	副教授	博士	道路交通事故深度调查分析; 事故再现和防护技术; 主动安全防撞系统	机械工程图学
34	刘建宁	副教授	本科	机械设计及其自动化	液压与气压传动
35	王伏林	副教授	博士	模具 CAD/CAM 技术; 数字制造与数控技术; 大功率设备机电液复合软启动传动与控制技术	机械制造技术
36	王珂娜	副教授	在读博士	模式识别与智能系统; 智能控制理论与应用; 智能信息处理与融合	现代工业网络、数控技术实验
37	王文林	副教授	博士	流体传动及控制; 机械系统动力学及控制	液压与气压传动
38	吴长德	副教授	本科	机械设计; 汽车车身及零部件性能检测装备与测试; CAD/CAM	机械设计
39	鄢 铨	副教授	博士	激光加工; 机械产品数字化设计与制造技术	机械制造技术
40	颜运昌	副教授	博士	微型计算机应用的研究与开发; 汽车电子	工程测试技术实验
41	杨 华	副教授	硕士	机械设计理论	机械原理、机械系统运动学与动力学仿真分析
42	杨 军	副教授	在读博士	切削、磨削技术及其数控装备; 工具技术; 机械制造综合自动化; CAD/CAM	机械制造技术、先进刀具设计与制造
43	叶南海	副教授	博士	疲劳寿命计算机仿真分析与可靠性设计方向研究	机械 CAD 技术、机械可靠性设计
44	张爱军	副教授	在读博士	机械设计	机械工程图学
45	张邦基	副教授	在读博士	汽车 NVH; 振动噪声控制; 现代测试技术和智能信息处理	机械设计
46	周长江	副教授	博士	传动机械学; 机械摩擦学; 汽车 CAE 理论与技术; 工程机械	机械设计和摩擦学原理及应用
47	陈逢军	助理教授	博士	超精密加工与控制; 先进光学制造; 超精密特种加工	机器人控制技术、数控技术
48	陈 静	助理教授	硕士	机电一体化; 机械工程自动控制	工程测试技术
49	崔俊佳	助理教授	博士	材料成型及控制	工程材料、模具设计与制造工艺
50	黄 晶	助理教授	博士	车辆与交通安全; 损伤生物力学	机电系统建模与仿真
51	李 立	助理教授	博士	阻尼结构动态分析及设计	机械设计基础
52	李荣启	助理教授	博士	车身覆盖件的可制造性评价; 模具 CAD/CAE	工程材料、机械制造技术、金属塑性成形原理
53	刘桂萍	助理教授	博士	多目标优化理论及工程应用	机械工程图学

续表

序号	姓名	职称	学历学位	专业特长	课程 (专业核心、专业选修、通识选修)
54	莫富灏	助理教授	博士	人体生物力学；仿生设计及汽车碰撞	机械原理
55	尚正涛	助理教授	博士	超高速高效磨削技术；超硬砂轮修整技术；磨削液注入技术	机械工程图学
56	王滔	助理教授	博士	液压节能技术；永磁电机及其控制	计算机控制技术、液压与气压传动
57	伍素珍	助理教授	在读博士	机械设计及理论	机械原理、机械 CAD 技术
58	谢桂芝	助理教授	博士	难加工材料高速/超高速磨削工艺及关键技术	机械设计
59	熊德红	助理教授	硕士	模具设计与制造；冲压模具设计与制造；模具制造与工艺；模具设计与 Auto CAD	机械工程图学
60	杨钦文	助理教授	博士	机械系统设计	机械工程图学
61	张飞铁	助理教授	博士	自动变速器控制研究；发动机控制研究；车用传感器研究	微机原理
62	张军	助理教授	博士	汽车电子控制技术；混合动力汽车整车控制与仿真	汽车电子与控制、计算机控制技术
63	钟翔	助理教授	硕士	机电一体化；计算机系统集成；网络通讯；软件工程；视频技术；安全防范领域的研究	计算机控制技术

八、专业责任教授

序号	姓名	职称	学历学位	专业特长	承担授课课程
1	金湘中	教授	博士	激光材料加工、激光器件、机械制造	机械制造技术、特种加工技术、机械工程导论

Mechanical Design, Manufacture & Automation

I . Educational Objectives

This program aims at the cultivation of advanced talents who master the fundamental theory and specialized knowledge, are of good qualities of science, engineering and humanities, abilities of engineering practice, research and application, organization and coordination, consciousness of innovation and open mind, to be qualified for product design and manufacturing, research and teaching, management and administration and so on in the areas of Mechanical Engineering and related interdisciplines.

II . Skills Profile

Students of this degree will require:

1. **Engineering Knowledge:** Knowledge of mathematics, natural science, engineering fundamentals and engineering specialization, understanding the status and tendency of this program.

2. **Problem Analysis:** An ability to identify, formulate and analyze the complex engineering problems to reach substantiated conclusions using principles of mathematics and natural science.

3. **Design/Development of Solution:** An ability to design system, components and technological process for complex engineering problems with appropriate considerations of safety, health, laws, regulations, related standards and constraints from economy, environment, culture and society.

4. **Investigation:** An ability to investigate engineering problems with related scientific principles and appropriate scientific approaches, including designing and implementing engineering experiments, analyzing and interpreting experimental data, obtaining the effective conclusions through information synthesis.

5. **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, modern engineering tools and IT tools, including prediction and simulation for complex engineering problems and understanding the limitations.

6. **The Engineering and Society:** An ability to rationalize and assess societal, health, safety, legal and cultural issues and the consequent responsibilities involving professional engineering practice and solutions to complex engineering problems by contextual knowledge.

7. **Environment and Sustainability:** An ability to understand and evaluate the impact of professional engineering work on sustainability of society and environment.

8. **Ethics:** An ability to understand and follow engineering professional ethics and norms, perform the responsibilities, with qualities of humanistic and social science, sense of social responsibility.

9. **Individual and Team Work:** An ability to function effectively as an individual, and as a member or leader in diverse and multi-disciplinary teams.

10. **Communication:** An ability to communicate effectively with the engineering community and general public on complex engineering activities at home and abroad, such as being able to comprehend and write effective reports, design documentations, make effective presentations, and give and receive clear instructions.

11. **Project Management:** An ability to understand and apply engineering management principles

and economic decision-making to managing projects as a member or leader in a multi-disciplinary team.

12. Lifelong Learning: An ability to recognize the need and prepare for independent and life-long learning in the broadest context of technological change.

III. Program Features

Solid fundamental knowledge, mechanical and electrical integration, high applied ability and high comprehensive quality.

1. Updating teaching concepts, improving teaching methods, optimizing curriculum systems and courses, focusing on fundamentals;
2. Setting up curricula scientifically and emphasizing mechanical and electrical integration;
3. Innovative practice teaching and cultivation of engineering application ability;
4. Emphasizing the education of humanities and social science and strengthening the cultivation of comprehensive quality.

IV. Length of Schooling, Graduation Requirements and Degree Awarded

1. The length of schooling is usually 4 years, but flexibly 3—6 years based on the credit system.
2. The minimum credits for the program are 165, which are distributed as follows:

Category	Credit(s)
General Education Courses	27
Core Courses in General Discipline	26
Core Courses in General Category	34
Core Courses in Specialty	16
Elective Courses in Specialty	21
Elective Courses in General Education	8
Intensive Practicum	33
Total	165

3. The students will be qualified for graduation when they finish all required courses, elective courses and practices specified in this program to get the required minimum credits, complete other required courses without credits, and qualified in virtue, wisdom and health.

4. The students who satisfy the above requirements will be awarded Bachelor of Engineering.

V. Curriculum and Credit Distribution

1. General Education Courses [required 27+(6) + elective 8 credits]

The general education courses consist of required courses and elective courses. General education electives are designed according to the *Curriculum Design of General Education Electives of Hunan University*. Required general education courses are illustrated in the following table.

Code	Course Title	Credit(s)	Remarks
GE01101	Introduction to Maoism and Theoretical System of Socialism with Chinese Characteristics	3+ (3)	
GE01039	Moral Cultivation and Law Basics	1.5+ (1.5)	
GE01100	Current Situation and Policies	0.5+ (1.5)	
GE01102	Outline of Modern Chinese History	2	
GE01103	Fundamentals of Marxism I	2	
GE01104	Fundamentals of Marxism II	2	
GE01012(-15)	College English	8	
GE01088	Computer Proficiency Test	0.5	
GE01095	Introduction to Computer Science and Programming	2.5	
GE01107(-13)	Psychological Health & Career Planning	1	
GE01089(-92)	Physical Education	4	

2. Core Courses in General Discipline (26 credits)

Code	Course	Credit(s)	Remarks
GE03025	Advanced Mathematics A(I)	5	
GE03026	Advanced Mathematics A(II)	5	
GE03003	Linear Algebra A	3	
GE03004	Probability and Mathematical Statistics A	3	
GE03005	Physics A(I)	3	
GE03006	Physics A (II)	3	
GE03007(8)	Physics Experiment A	2	
ME03001	Engineering Chemistry	2	

3. Core Courses in General Category (34 credits)

Code	Course	Credit(s)	Remarks
ME04017	Mechanical Engineering Graphics I	3	
ME04018	Mechanical Engineering Graphics II	3	
ME04019	Engineering Materials	2	
ME04020	Theoretical Mechanics	4	
ME04021	Material Mechanics	4	
ME04022	Fluid Mechanics	2	
ME04023	Fundamentals of Thermal Engineering	3	
ME04024	Mechanical Principles	4	
ME04025	Mechanical Design	4	
ME04026	Electrotechnics and Electronics	3	
ME04027	The Basis of Control Engineering	2	

4. Core Courses in Specialty(16 credits)

Code	Course	Credit(s)	Remarks
ME05033	Mechanical Manufacturing Technology	4	
ME05034	Mechanical Manufacturing Equipment	3	
ME05035	Fundamentals of Interchangeability and Measurement Technology	2	
ME05036	Hydraulic and Pneumatic Transmission	3	
ME05037	Micro Computer Principles	2	
ME05038	Engineering Measurement Technology	2	

5. Elective Courses in Specialty(21 credits)

	Code	Course	Credit(s)	Remarks
General Elective Courses	ME06078	Introduction to Mechanical Engineering	1	The students are required to select courses to 21 credits, in which 11 credits can be from transdisciplinary studies. The awards in academic competitions and academic paper publications which are recognized by the college, can be used to substitute the credits of elective courses in specialty. The maximum number of substituted credits is four. The measures for the implementations refer to relevant documents of the college.
	ME06080	Production Management	2	
Manufacturing Technology	ME06084	Precision and Ultra-precision Machining	2	
	ME06043	Principles of Metal Plastic Forming	2	
	ME06085	Die & Mould Design Technology	2	
	ME06086	Advanced Tool Design and Manufacturing	2	
	ME06050	Non-traditional Processing Technology	2	
	ME07018	Mechanical CAM Technology	2	
	ME06087	High Efficiency Grinding Technology and Equipment	2	
Mechanical Design	ME06088	Additive Manufacturing Technology (bilingual)	2	
	ME06089	Reliability in Engineering Design	2	
	ME06079	Mechanical Vibration	2	
	ME06090	Engineering Optimization Design	2	
	ME06091	Mechanical CAD Technology	2	
	ME06092	Numerical Methods in Engineering	2	
	ME06093	Mechanical Innovative Design	2	
	ME06094	Simulated Analysis of Mechanical System Kinematics and Dynamics	2	
	ME06095	Fundamentals of Elastic Mechanics and Finite Element	2	
	ME06096	Basis of Industrial Design	2	
	ME06097	Introduction of Front Design Technology	2	
	ME06098	Principle and Application of Tribology	2	
ME06046	Theory and Application of Database	2		

Cont

	Code	Course	Credit(s)	Remarks
Electromechanical Control	ME06100	Numerical Control Technology	2	
	ME06101	Computer Control Technology	2	
	ME06102	Robot Control Technology	2	
	ME06103	Electromechanical Integrated System Design	2	
	ME06104	Modeling and Simulation of Electromechanical System	2	
	ME06105	Fault Analysis of Mechanical System	2	
	ME06106	Electromechanical Transmission and Control	2	
Engineering Machinery	ME06038	Fundamental Design of Engineering Machinery	2	
	ME06107	Construction of Engine and Chassis for Modern Engineering Machinery	2	
	ME06108	Hydraulic Pressure and Hydraulic Force Drive for Engineering Machinery	2	
	ME06109	Hydraulic Excavator	2	
	ME06110	Concrete and Piling Machinery	2	
	ME06111	Engineering Lifting Machinery	2	

6. Intensive Practicum (33 credits)

Code	Courses	Credit(s)	Remarks
GE01040	Military Training	0	
GE09003	Chinese Writing Training	1	
GE09011	English Writing Training	1	
ME10031	Comprehensive Experiment for Machine I	0.5	
ME10032	Comprehensive Experiment for Machine II	0.5	
GE09010	Metal Working Practice A	4	
GE09021	Electrical and Electronic Engineering Practice B	2	
ME10009	Curriculum Design of Mechanical Principles	1	
ME10033	Curriculum Design of Mechanical Design	3	
ME10034	Application Practice of Software of Surveying & Mapping Engineering	1	
ME10035	Curriculum Design of Mechanical Manufacturing Technology	2	
ME10036	Curriculum Design of Majors of Energy and Power Engineering	2	
ME10019	Specialized Internship	3	
ME10037	Graduate Design (Thesis)	12	(Graduate Internship included)

VI. Correlation Matrix between Curriculum and Graduates Core Competence

Category	Course	Engineering Knowledge	Problem Analysis	Design/development of Solution	Investigation	Modern Tool Usage	The Engineering and Society	Environment and Sustainability	Ethics	Individual and Team Work	Communication	Project Management	Lifelong Learning
General Required Courses	General Introduction to Mao Zedong Thought and Socialist Theory with Chinese Characteristics							H					
	Morals & Ethics & Fundamentals of Law						L	H					
	Current Affairs and Policy							H					
	Survey of Modern Chinese History								H				
	Basic Theory of Marxism (I)								H			H	
	Basic Theory of Marxism (II)								H			H	
	English										H		
	Basic Computer Skills Test	M					H						M
	Introduction to Computer Technology and Programming (C module)	M					H						M
	Psychological Diathesis and Career Development											M	
Physical Education									M				
General Elective and Quality Education Courses (elective courses)									H			M	M

Cont

Category	Course	Engineering Knowledge	Problem Analysis	Design/development of Solution	Investigation	Modern Tool Usage	The Engineering and Society	Environment and Sustainability	Ethics	Individual and Team Work	Communication	Project Management	Lifelong Learning
Elective Courses		M										M	M
	Military Training								H	M			
	Chinese Writing Training										H		
	English Writing Training										H		
	Comprehensive Experiment for Machine				H								
	Metal Working Practice A	M					L		L				
	Electrical & Electronic Engineering Practice B	M					L		L				
	Curriculum Design of Mechanical Principles			H							L		L
	Curriculum Design of Mechanical Design			H			H		L		L		L
	Application Practice of Software of Surveying & Mapping Engineering	H					H				L		
Intensive Practicum	Curriculum Design of Mechanical Manufacturing Technology			H		H				M		M	L
	Curriculum Design of Majors of Energy and Power Engineering			H		H				M			L
	Specialized Internship				H						M	L	
	Graduate Design (Thesis)	H	H	H		H	M	M		L	H	H	H

VII. Curriculum-responsible Teachers

No.	Name	Position	Degree	Specialties	Courses(Core courses, elective courses and general elective courses)
1	Han Xu	Professor	Doctor	Numerical Simulation; Automobile CAE Technology; Inverse Problem Theory and Method; Optimization Theory and Method	Numerical Methods in Engineering
2	Zhou Zhixiong	Professor	Doctor	Cutting, Grinding Technology and CNC Equipment; Machining Automation; CAD/CAM; Finite Element Analysis and Calculation; Cutting Tool Technology	Advanced Tool Design and Manufacturing
3	Yang Xujing	Professor	Doctor	Vehicle Body Manufacturing Technique and Device Technology; Processing Technology of Composite Molding; Sculptured Surface NC Machining Technology	Introduction to Mechanical Engineering Mechanical CAM Technology
4	Jin Xiangzhong	Professor	Doctor	Laser Material Processing; Laser Devices; Mechanical Manufacturing	Mechanical Manufacturing Technology Special Processing Technology Introduction to Mechanical Engineering
5	Chen Genyu	Professor	Doctor	Laser Processing	Mechanical Manufacturing Equipment
6	Cheng Junsheng	Professor	Doctor	Dynamic Signal Analysis and Treatment, Electromechanical Equipment-Condition Monitoring and Fault Diagnosis; Vibration and Noise Control	Engineering Measurement Technology
7	Feng Kai	Professor	Doctor	Air Bearing; Rotor Dynamics; Direct-drive Motor; Gear Design; Permanent Magnet Motor	Mechanical Manufacturing Equipment
8	Guo Li	Professor	Doctor	High Efficiency and Precision Grinding and Manufacturing Automation; Mechanical Design and Manufacturing	Mechanical Manufacturing Equipment
9	Huang Xingmei	Professor	Doctor	Computer Aided Design and Manufacturing; Engineering Graphics Theory and Application; Virtual Assembly Process Planning and Simulation in 3D Digital Factory	Mechanical Engineering Graphics
10	Jiang Chao	Professor	Doctor	Modern Design Method; Structural Optimization and Engineering Inverse Calculation; Automobile CAE Technology	Engineering Optimization Design Mechanical Design
11	Jin Tan	Professor	Doctor	High Efficiency and Precision Grinding Process and Equipment	Mechanical CAM Technology High Efficiency Grinding Principle and Process
12	Li Luoxing	Professor	Doctor	Lightweight Component Optimal Design and Manufacturing; Forming Theory of Lightweight Material like Aluminum, Magnesium and High-strength Steel; Modeling and Simulation of Forming Process	Engineering Materials Mechanical Manufacturing Technology Principles of Metal Plastic Forming

Cont

No.	Name	Position	Degree	Specialties	Courses(Core courses, elective courses and general elective courses)
13	Liu Jichang	Professor	Doctor	Digital and Intelligent laser manufacturing Technology; Advanced Molding and Die Technology; Rapid Prototyping Technology	Engineering Materials Mechanical Manufacturing Technology Die & Mould Design Technology
14	Liu Jiangnan	Professor	Doctor	Product Development and Creative Design; Mechanical System Optimal Design	Mechanical Design Theory and Method of Creative Design
15	Liu Zijian	Professor	Doctor	New Digital Design Theory and Key Technology; Design of Complex High Speed Equipment; Analysis Theory and Technology;	Mechanical CAD Technology
16	Peng Xiaoyan	Professor	Doctor	Mechanical-Electronic Engineering; Automotive Electronics and Control	Microcomputer Principle
17	Song Lijun	Professor	Doctor	Laser Material Processing; Sensing and Control; Laser Spectroscopy	Electromechanical Integrated System Design Additive Manufacturing Technology
18	Wang Wenge	Professor	Doctor	Electromechanical Control; Image Visual Inspection; Numerical Control Technology	CNC Technique
19	Xiong Wanli	Professor	Doctor	Hypervelocity and Ultra-precision Motorized Spindle System Dynamics	High Efficiency and Precision Grinding Equipment
20	Xu Daolin	Professor	Doctor	Marine Engineering; Vibration and Control; Nonlinear Dynamics; Computational Mechanics	Mechanical Vibration
21	Yang Yu	Professor	Doctor	Dynamic Signal Processing; Electromechanical Equipment Condition Monitoring and Fault Diagnosis; Pattern Recognition and Intelligent Computing	Basis of Control Engineering
22	Yin Shaohui	Professor	Doctor	Nano-fabrication; Ultra-precision Machining; Superfine Machining; Ultra-high Speed Machining	Precision and Ultra-precision Machining High Efficiency Grinding Technology and Equipment
23	Zhang Yi	Professor	Doctor	Laser Technique and Digital Machining Equipment; Laser Processing Technology of Vehicle Body; Laser Micro-fabrication Technology	Mechanical Manufacturing Equipment
24	Zhou Dianwu	Professor	Doctor	Vehicle Body and Structural Component CAE Forming Method; Forming Technology and Equipment; Automobile Lightweight Material Calculation and Design Theory; Optimal Design of Hydrogen Storage Alloy and Lithium Ion Battery Materials	Engineering Materials Mechanical Manufacturing Technology Die & Mould Design Technology
25	Chen Jiujiu	Associate Professor	Doctor	Vibration, Noise Reduction and Optimization of Automobile; Nondestructive Testing and Evaluation of Mechanical Material; Smart Structure and Material	Numerical Methods in Engineering

Cont

No.	Name	Position	Degree	Specialties	Courses(Core courses, elective courses and general elective courses)
26	Chen Minjun	Associate Professor	Ph. D. Student	Mechanical Fault Diagnosis and Mechanical Vibration	Mechanical Principles Digital Signal Processing
27	Chen Linlin	Associate Professor	Ph. D. Student	Theory and Application of Database; CAD Technology Fundamentals; C Language	Mechanical CAD Technology Theory and Application of Database
28	Fan Ye	Associate Professor	Ph. D. Student	Production Planning and Control; Production Cost Control; Logistics Facilities and Planning; Project Management; Automobile Technology and Industry Development Strategy	Production Management Cost Control
29	Gong Zhihui	Associate Professor	Doctor	Automobile Panel Die and Its Design and Manufacturing	Fundamentals of Interchangeability and Measurement Technology
30	Hu De'an	Associate Professor	Doctor	Mechanical CAE, Computational Mechanics; Structural Dynamics	Fundamentals of Elastic and Mechanics Finite Element Analysis
31	Hu Zhongxun	Associate Professor	Doctor	Theory and Technology of Geometric Error Measurement and Data Processing; Automobile Panel Die CAD, CAPP and CAM; Mechanical CAD, CAPP and CAM	Fundamentals of Interchangeability and Measurement Technology
32	Jin Qiutan	Associate Professor	Ph. D. Student	Mechanical Design and Theory	Mechanical Design
33	Li Li	Associate Professor	Doctor	Deep Investigation and Analysis of Road Traffic Accident; Accident Reconstruction and Protection Technology; Active Safety Anti-collision System	Mechanical Engineering Graphics
34	Liu Jianning	Associate Professor	Bachelor	Mechanical Design and Automation	Hydraulic and Pneumatic Transmission
35	Wang Fulin	Associate Professor	Doctor	Die CAD/CAM Technology; Digital Manufacturing and Numerical Control Technology; High Power Equipment Mechanical Electronic Hydraulic Integrated Soft-starting Transmission and Control Technology	Mechanical Manufacturing Technology
36	Wang Kena	Associate Professor	Ph. D. Student	Pattern Recognition and Intelligent System; Intelligent Control Theory and Application; Intelligent Information Processing and Fusion	Numerical Control Technology Experiments
37	Wang Wenlin	Associate Professor	Doctor	Fluid Power Transmission and Control; Mechanical System Dynamics and Control	Hydraulic and Pneumatic Transmission
38	Wu Changde	Associate Professor	Bachelor	Mechanical Design; Vehicle Body and Parts Performance Test Equipment and Testing; CAD/CAM	Mechanical Design
39	Yan Cuo	Associate Professor	Doctor	Laser Processing; Mechanical Product Digital Design and Manufacturing	Mechanical Manufacturing Technology

Cont					
No.	Name	Position	Degree	Specialties	Courses(Core courses, elective courses and general elective courses)
40	Yan Yunchang	Associate Professor	Doctor	Microcomputer Application Research and Development; Automotive Electronics	Engineering Testing Technology Experiments
41	Yang Hua	Associate Professor	Master	Mechanical Design Theory	Mechanical Principles Simulated Analysis of Mechanical System Kinematics and Dynamics
42	Yang Jun	Associate Professor	Ph. D. Student	Cutting, Grinding Technology and CNC Equipment; Tool Engineering; Machining Automation; CAD/CAM	Mechanical Manufacturing Technology Advanced Tool Design and Manufacturing
43	Ye Nanhai	Associate Professor	Doctor	Fatigue Life Computer Simulation Analysis and Research on Reliability Design	Mechanical CAD Technology Reliability in Engineering Design
44	Zhang Aijun	Associate Professor	Ph. D. Student	Mechanical Design	Mechanical Engineering Graphics
45	Zhang Bangji	Associate Professor	Ph. D. Student	Automobile NVH; Vibration and Noise Control; Modern Measurement Technology and Intelligent Information Processing	Mechanical Design
46	Zhou Changjiang	Associate Professor	Doctor	Drive Mechanism; Mechanical Tribology; Automobile CAE Theory and Technology; Construction Machinery	Mechanical Design Principle and Applications of Friction
47	Chen Fengjun	Assistant Professor	Doctor	Ultra-precision Machining and Control; Advanced Optical Manufacturing; Ultra-precision Special Machining	Robot Control Technology CNC Technique
48	Chen Jing	Assistant Professor	Master	Electromechanical Integration; Mechanical Engineering Automatic Control	Engineering Measurement Technology
49	Cui Junjia	Assistant Professor	Doctor	Material Forming and Control	Engineering Materials Die & Mould Design Technology
50	Huang Jing	Assistant Professor	Doctor	Vehicle and Traffic Safety; Injury Biomechanics	Modeling and Simulation of Electromechanical System
51	Li Li	Assistant Professor	Doctor	Damping Structure Dynamic Analysis and Design	Mechanical Design Fundamentals
52	Li Rongqi	Assistant Professor	Doctor	Automobile Body Panel Manufacturability Evaluation; Die CAD/CAE	Engineering Materials Mechanical Manufacturing Technology Principles of Metal Plastic Forming
53	Liu Guiping	Assistant Professor	Doctor	Multi-objective Optimization Theory and Engineering Application	Mechanical Engineering Graphics
54	Mo Fuhao	Assistant Professor	Doctor	Human Biomechanics; Bionic Design; Vehicle Crash	Mechanical Principles
55	Shang Zhentao	Assistant Professor	Doctor	Hypervelocity and Efficient Grinding Technology; Superhard Grinding Wheel Dressing Technology; Grinding Fluid Supplying Technology	Mechanical Engineering Graphics

Cont

No.	Name	Position	Degree	Specialties	Courses (Core courses, elective courses and general elective courses)
56	Wang Tao	Assistant Professor	Doctor	Hydraulic Energy Technology; Permanent Magnet Motor and Control	Computer Control Technology
57	Wu Suzhen	Assistant Professor	Ph. D. Student	Mechanical Design and Theory	Hydraulic and Pneumatic Transmission Mechanical Principles Mechanical CAD Technology
58	Xie Guizhi	Assistant Professor	Doctor	Difficult-to-cut material High Speed/ Ultra-high Speed Grinding Process and Key Technology	Mechanical Design
59	Xiong Dehong	Assistant Professor	Master	Die Design and Manufacturing; Stamping Die Design and Manufacturing; Die Manufacturing and Process; Die Design and Auto CAD	Mechanical Engineering Graphics
60	Yang Qinwen	Assistant Professor	Doctor	Mechanical System Design	Mechanical Engineering Graphics
61	Zhang Feitie	Assistant Professor	Doctor	Automatic Transmission Control; Engine Control; Automobile Sensor	Microcomputer Principle and Control Technology
62	Zhang Jun	Assistant Professor	Doctor	Automotive Electronics Control Technology; Hybrid Electric Vehicle Control and Simulation	Automotive Electronics and Control Computer Control Technology
63	Zhong Xiang	Assistant Professor	Master	Electromechanical Integration; Computer System Integration; Network Communication; Software Engineering; Video Technology; Security Protection	Computer Control Technology

VIII. Program-responsible Professor

No.	Name	Position	Degree	Specialties	Courses
1	Jin Xiangzhong	Professor	Doctor	Laser Material Processing; Laser Devices; Mechanical Manufacturing	Mechanical Manufacturing Technology Special Processing Technology Introduction to Mechanical Engineering

(翻译人:杨钦文)