智能制造工程专业人才培养方案（2019 版）

学科门类：工学 专业代码：080213T

一、培养目标

本专业培养掌握自然科学、机械工程、控制工程、计算机技术等学科相关的基本知识和理论，能够适应轻工行业智能制造装备的需求，从事机械工程智能装备与控制领域的研究开发、设计制造、运营管理等方面工作，具有解决复杂机械工程问题的能力、较强的工程实践和持续学习能力、创新能力和国际化视野的高素质工程应用型人才。

二、培养要求

本专业要求学生掌握自然科学、工程基础知识和专业知识，通过实践环节掌握机械结构和产品设计、优化等的基本技能，提高学生分析和解决问题的能力，注重人文社科、法律法规和责任道德的素质修养。具体地说，本专业培养的毕业生必须达到如下知识、能力与素质的培养要求：

1、工程知识：掌握数学、自然科学、工程基础、人工智能和机械工程专业知识，能够运用其理论和方法解决机械设计、制造过程及其自动化中的复杂工程问题。

2、问题分析：能够应用数学、自然科学、人工智能和机械工程科学的基本原理和方法，对机械设计、制造过程及其自动化系统进行识别、表达和分析，能够结合文献研究分析、论证机械工程领域的复杂工程问题，并获得有效结论。

3、设计开发解决方案：针对复杂工程问题，能够应用机械工程及人工智能的基本理论和方法，设计满足特定需求的机械系统和制造工艺，开发解决方案，并能够在机械系统设计、制造工艺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。

4、研究：能够基于机械工程和人工智能领域的工程科学原理并采用科学方法，利用理论分析、文献研究和实验方法机械设计、制造过程及自动化中的复杂工程问题和智能化问题进行研究，能够制定研究方案、设计实验、分析数据、阐述现象、揭示机理，并能够综合理论分析、文献研究和实验数据得出科学合理有效的结论。

5、使用现代工具：在解决复杂机械工程问题过程中，能够开发、选择与使用恰当的技术、资源、现代工程工具、信息技术工具和人工智能技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。

6、工程与社会：能够基于工程相关背景知识进行合理分析，评价机械产品设计、制造和产品运用对社会、健康、安全、法律以及文化的影响，并理解应承担的责任，能够采取合理的技术手段降低或避免其不利影响。

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。

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

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。

10、沟通：能够就复杂机械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说明书、陈述发言、清晰表达。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，有不断学习和适应发展的能力。

三、修业年限

四年（弹性学制3至8年）

四、授予学位

工学学士。

五、主干学科

机械工程、控制科学与工程、计算机科学与技术

六、主要课程

高等数学、线性代数、大学物理、机械制图、工程力学、智能技术的数学基础、机械设计基础、电工技术基础、模拟电子技术、数字电子技术、控制工程基础、人工智能、工业大数据与云计算、制造系统网络与通信、传感与精密测试技术、制造系统的感知与决策、智能制造技术基础、液压与气压传动、精密传动与智能设计、工业机器人技术、智能制造装备等。

七、主要实践性教学环节和主要专业实验

课程实验、课程设计、生产实习、毕业实习、毕业设计（论文）等。

八、毕业学分要求及学分学时分配

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **项目** | **准予毕业** | **通识教育必修课** | **通识教育选修课** | **学科（专业）基础 必修课** | **学科（专业）基础选修课** | **专业必修课** | **专业选修课** | **集中性实践环节** | **总实践环节** |
| **要求学分** | 160 | 38 | 8 | 41 | 17 | 11 | 17 | 28 | 48 |
| **要求学时** | 3160+32周 | 760 | 128 | 736 | 352 | 208 | 312 | 32周 | 664+32周 |
| **学分占比** | 100% | 23.75% | 5% | 25.62% | 10.63% | 6.88% | 10.62% | 17.5% | 30.00% |

**集中进行的实践教学环节**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 课程编码 | 实践环节名称 | 学分 | 周数 | 各学期周数分配 | | | | | | | |
| 一 | 二 | 三 | 四 | 五 | 六 | 七 | 八 |
|  | 军事理论与技能 | 2 | 2 | 2 |  |  |  |  |  |  |  |
|  | 公益劳动 |  | （1） |  |  |  |  |  |  |  |  |
|  | 安全教育 |  | （2） |  |  |  |  |  |  |  |  |
|  | 社会实践 |  | （2） |  |  |  |  |  |  |  |  |
|  | 工程训练 | 2 | 2 |  |  | 2 |  |  |  |  |  |
|  | 机械设计基础课程设计 | 2 | 2 |  |  |  | 2 |  |  |  |  |
|  | 制造系统网络与通信课程设计 | 1 | 1 |  |  |  |  | 1 |  |  |  |
|  | 工业机器人技术综合实训 | 1 | 1 |  |  |  |  |  | 1 |  |  |
|  | 智能制造系统综合设计 | 2 | 2 |  |  |  |  |  | 2 |  |  |
|  | 生产实习 | 3 | 3 |  |  |  |  |  |  | 3 |  |
|  | 毕业实习 | 5 | 5 |  |  |  |  |  |  |  | 5 |
|  | 毕业设计 | 10 | 1 |  |  |  |  |  |  |  | 14 |
| 合计 |  | 28 | 32 | 2 |  | 2 | 2 | 1 | 2 | 3 | 19 |

**校历及时间分配总表（智能制造工程专业）**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | 理论教学 | 考试 | 实习 | 课程设计 | 毕业设计 | 入学  毕业  教育 | 综合实验 | 计算机实验 | 假期 | 合计 |
| 周次  学期 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | ←→ | ∶ | Χ | Ⅱ | Ⅲ | T | Δ | Ο | ≡ |  |
| 一 |  |  | T | ← |  |  |  |  |  |  |  |  |  |  |  | |  |  |  | → | ∶ | ∶ | ≡ | ≡ | ≡ | ≡ | ≡ | 16 | 2 |  |  |  | 2 |  |  | 5 | 24 |
| 二 | ← |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  | → | ∶ | ∶ | ≡ | ≡ | ≡ | ≡ | ≡ | ≡ | 18 | 2 |  |  |  |  |  |  | 6 | 26 |
| 三 | ← |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | → | ∶ | ∶ | Ⅱ | Ⅱ | ≡ | ≡ | ≡ | ≡ | ≡ | 17 | 2 |  | 2 |  |  |  |  | 5 | 26 |
| 四 | ← |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | → | ∶ | ∶ | Ⅱ | Ⅱ | ≡ | ≡ | ≡ | ≡ | ≡ | ≡ | 16 | 2 |  | 2 |  |  |  |  | 6 | 26 |
| 五 | ← |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  | → | ∶ | ∶ | Ⅱ | ≡ | ≡ | ≡ | ≡ | ≡ | 18 | 2 |  | 1 |  |  |  |  | 5 | 26 |
| 六 | ← |  |  |  |  |  |  |  |  |  |  |  |  |  | → | | ∶ | ∶ | Δ | Ⅱ | Ⅱ | ≡ | ≡ | ≡ | ≡ | ≡ | ≡ | 15 | 2 |  | 2 |  |  | 1 |  | 6 | 26 |
| 七 | Χ | Χ | Χ | ← |  |  |  |  |  |  |  |  |  |  | |  |  |  |  | → | ∶ | ∶ | ≡ | ≡ | ≡ | ≡ | ≡ | 16 | 2 | 3 |  |  |  |  |  | 5 | 26 |
| 八 | Χ | Χ | Χ | Χ | Χ | Ⅲ | Ⅲ | Ⅲ | Ⅲ | Ⅲ | Ⅲ | Ⅲ | Ⅲ | Ⅲ | Ⅲ | | Ⅲ | Ⅲ | Ⅲ | Ⅲ | T |  |  |  |  |  |  |  |  | 5 |  | 14 | 1 |  |  |  | 20 |
|  | | | | | | | | | | | | | | | | | | | | | | | 合计 | | | | | **116** | **14** | **8** | **7** | **14** | **3** | 1 |  | 38 | 200 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | | 1．通识教育必修课 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 必修 学分：38 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
| **修课 要求** | | | **课程名称** | | | | **学分** | **课时** | | | | | | | | | **学年、学期、学分** | | | | | | | | | | | | | | | | | | | **考核 方式** | | **课程编码** | | | | | **备注** |
| **讲课** | | | **实验** | | **上机** | | **实践** | | **一** | | | | | | **二** | | | | **三** | | | | **四** | | | | |
| **秋** | | | **春** | | | **秋** | | **春** | | **秋** | | **春** | | **秋** | | **春** | | |
| **必修** | | | 思想道德修养与法律基础 | | | | 3 | 32 | | |  | |  | | 32 | |  | | | 3 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B121601 | | | | |  |
| 中国近现代史纲要 | | | | 3 | 32 | | |  | |  | | 32 | | 3 | | |  | | |  | |  | |  | |  | |  | |  | | | 考试 | | B121602 | | | | |  |
| 马克思主义基本原理概论 | | | | 3 | 32 | | |  | |  | | 32 | |  | | |  | | | 3 | |  | |  | |  | |  | |  | | | 考试 | | B121603 | | | | |  |
| 毛泽东思想和中国特色社会主义理论体系概论 | | | | 5 | 64 | | |  | |  | | 32 | |  | | |  | | |  | | 5 | |  | |  | |  | |  | | | 考试 | | B121604 | | | | |  |
| 形势与政策1 | | | | 0.5 | 8 | | |  | |  | |  | |  | | | 0.5 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B121605 | | | | |  |
| 形势与政策2 | | | | 0.5 | 8 | | |  | |  | |  | |  | | |  | | |  | | 0.5 | |  | |  | |  | |  | | | 考试 | | B121606 | | | | |  |
| 形势与政策3 | | | | 0.5 | 8 | | |  | |  | |  | |  | | |  | | |  | |  | |  | | 0.5 | |  | |  | | | 考试 | | B121607 | | | | |  |
| 形势与政策4 | | | | 0.5 | 8 | | |  | |  | |  | |  | | |  | | |  | |  | |  | |  | | 0.5 | |  | | | 考试 | | B121608 | | | | |  |
| 大学英语 I | | | | 4 | 64 | | |  | |  | |  | | 4 | | |  | | |  | |  | |  | |  | |  | |  | | | 考试 | | B101401 | | | | |  |
| 大学英语 Ⅱ | | | | 4 | 64 | | |  | |  | |  | |  | | | 4 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B101402 | | | | |  |
| 大学英语 Ⅲ | | | | 4 | 64 | | |  | |  | |  | |  | | |  | | | 4 | |  | |  | |  | |  | |  | | | 考试 | | B101403 | | | | |  |
| 体育Ⅰ | | | | 1 | 32 | | |  | |  | |  | | 1 | | |  | | |  | |  | |  | |  | |  | |  | | | 考试 | | B150001 | | | | |  |
| 体育Ⅱ | | | | 1 | 32 | | |  | |  | |  | |  | | | 1 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B150002 | | | | |  |
| 体育Ⅲ | | | | 1 | 32 | | |  | |  | |  | |  | | |  | | | 1 | |  | |  | |  | |  | |  | | | 考试 | | B150003 | | | | |  |
| 体育Ⅳ | | | | 1 | 32 | | |  | |  | |  | |  | | |  | | |  | | 1 | |  | |  | |  | |  | | | 考试 | | B150004 | | | | |  |
| 信息检索 | | | | 1 | 8 | | |  | | 16 | |  | |  | | | 1 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B031003 | | | | |  |
|  | | | 大学生职业生涯规划 | | | | 1 | 16 | | |  | |  | |  | | 1 | | |  | | |  | |  | |  | |  | |  | |  | | | 考查 | | B191001 | | | | |  |
| 创业教育与就业指导 | | | | 2 | 32 | | |  | |  | |  | |  | | |  | | |  | |  | |  | | 2 | |  | |  | | | 考查 | | B081003 | | | | |  |
| 科技发展与学科专业概论 | | | | 1 | 16 | | |  | |  | |  | | 1 | | |  | | |  | |  | |  | |  | |  | |  | | | 考查 | | B011001 | | | | |  |
| 中国传统文化概论 | | | | 1 | 16 | | |  | |  | |  | |  | | | 1 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B121610 | | | | |  |
| **小计** | | | | **38.0** | **584** | | |  | | **16** | | **160** | | **10** | | | **10.5** | | | **8** | | **6.5** | |  | | **2.5** | | **0.5** | |  | | |  | |  | | | | |  |
|  |  | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | 2．通识教育选修课 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 最低要求学分：8 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 注：应按要求修读通识教育课程中不同知识领域共计不少于8学分的课程,但与本专业相关的课程除外。通识教育选修课程从一年级开始选修。 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | |
|  |  | | | 3.学科（专业）基础必修课 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 最低要求学分：41 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
| **修课 要求** | | | **课程名称** | | | **学分** | | | **课时** | | | | | | | | **学年、学期、学分** | | | | | | | | | | | | | | | | | | | **考核 方式** | | **课程编码** | | | | | **备注** |
| **讲课** | | **实验** | | **上机** | | **实践** | | **一** | | | | | | **二** | | | | **三** | | | | **四** | | | | |
| **秋** | | | **春** | | | **秋** | | **春** | | **秋** | | **春** | | **秋** | | **春** | | |
| **必修** | | | 高等数学I（上） | | | 5 | | | 80 | |  | |  | |  | | 5 | | |  | | |  | |  | |  | |  | |  | |  | | | 考试 | | B113101 | | | | |  |
| 高等数学I（下） | | | 6 | | | 96 | |  | |  | |  | |  | | | 6 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B113102 | | | | |  |
| 线性代数I | | | 3 | | | 48 | |  | |  | |  | |  | | |  | | | 3 | |  | |  | |  | |  | |  | | | 考试 | | B113121 | | | | |  |
| 工程化学 | | | 2 | | | 24 | | 16 | |  | |  | |  | | |  | | | 2 | |  | |  | |  | |  | |  | | | 考试 | | B043024 | | | | |  |
| 大学物理I(上) | | | 4 | | | 64 | |  | |  | |  | |  | | | 4 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B113201 | | | | |  |
| 大学物理I(下) | | | 2 | | | 32 | |  | |  | |  | |  | | |  | | | 2 | |  | |  | |  | |  | |  | | | 考试 | | B113202 | | | | |  |
| 大学物理实验Ⅰ | | | 1.5 | | |  | | 48 | |  | |  | |  | | |  | | | 1.5 | |  | |  | |  | |  | |  | | | 考试 | | B117201 | | | | |  |
| 电工技术基础 | | | 2 | | | 24 | | 16 | |  | |  | |  | | |  | | | 2 | |  | |  | |  | |  | |  | | | 考试 | |  | | | | |  |
| 模拟电子技术 | | | 2 | | | 24 | | 16 | |  | |  | |  | | |  | | | 2 | |  | |  | |  | |  | |  | | | 考试 | | B023203 | | | | |  |
| 数字电子技术 | | | 2 | | | 24 | | 16 | |  | |  | |  | | |  | | |  | | 2 | |  | |  | |  | |  | | | 考试 | | B023260 | | | | |  |
| 机械制图(1) | | | 3.5 | | | 56 | |  | |  | |  | | 3.5 | | |  | | |  | |  | |  | |  | |  | |  | | | 考试 | | B013001 | | | | |  |
| 机械制图(2) | | | 2.5 | | | 24 | |  | | 32 | |  | |  | | | 2.5 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B013002 | | | | |  |
| 机械设计基础 | | | 3 | | | 40 | | 16 | |  | |  | |  | | |  | | |  | | 3 | |  | |  | |  | |  | | | 考试 | | B013005 | | | | |  |
| 控制工程基础 | | | 2.5 | | | 40 | |  | |  | |  | |  | | |  | | |  | | 2.5 | |  | |  | |  | |  | | | 考试 | | B014812 | | | | |  |
| **小计** | | | 41 | | | 576 | | 128 | | 32 | |  | | 8.5 | | | 12.5 | | | 12.5 | | 7.5 | |  | |  | |  | |  | | |  | |  | | | | |  |
|  |  | | | 4.学科（专业）基础选修课 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 最低要求学分：17 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
| **修课 要求** | | | **课程名称** | | **学分** | | | **课时** | | | | | | | | | **学年、学期、学分** | | | | | | | | | | | | | | | | | | | **考核 方式** | | **课程编码** | | | | | **备注** |
| **讲课** | | | **实验** | | **上机** | | **实践** | | **一** | | | | | | **二** | | | | **三** | | | | **四** | | | | |  | |  | | | | |  |
| **秋** | | | **春** | | | **秋** | | **春** | | **秋** | | **春** | | **秋** | | **春** | | |  | |  | | | | |  |
| **选修** | | | 概率论与数理统计 | | 2.5 | | | 40 | | |  | |  | |  | |  | | |  | | | 2.5 | |  | |  | |  | |  | |  | | | 考试 | | B118123 | | | | |  |
| 智能技术的数学基础 | | 3 | | | 48 | | |  | |  | |  | |  | | |  | | |  | | 3 | |  | |  | |  | |  | | | 考试 | | B018951 | | | | |  |
| 程序设计基础 | | 2 | | | 24 | | |  | | 16 | |  | |  | | | 3 | | |  | |  | |  | |  | |  | |  | | | 考试 | | B031004 | | | | |  |
| 人工智能 | | 2 | | | 32 | | |  | |  | |  | |  | | |  | | |  | | 2 | |  | |  | |  | |  | | | 考试 | | B018952 | | | | |  |
| 工业大数据与云计算 | | 2 | | | 24 | | |  | | 16 | |  | |  | | |  | | |  | |  | | 2 | |  | |  | |  | | | 考试 | | B018953 | | | | |  |
| 工程材料 | | 2 | | | 24 | | | 16 | |  | |  | |  | | |  | | |  | | 2 | |  | |  | |  | |  | | | 考试 | | B018333 | | | | |  |
| 工程力学 | | 3 | | | 40 | | | 16 | |  | |  | |  | | |  | | | 3 | |  | |  | |  | |  | |  | | | 考试 | | B014804 | | | | |  |
| 液压与气压传动 | | 2.5 | | | 32 | | | 16 | |  | |  | |  | | |  | | |  | |  | |  | | 2.5 | |  | |  | | | 考试 | | B015107 | | | | |  |
| 轻工机械概论 | | 2 | | | 32 | | |  | |  | |  | |  | | |  | | | 2 | |  | |  | |  | |  | |  | | | 考试 | | B018118 | | | | |  |
| **小计** | | 21 | | | 288 | | | 48 | | 32 | | 0 | | 0 | | | 3 | | | 7.5 | | 7 | | 2 | | 2.5 | | 0 | | 0 | | |  | |  | | | | |  |
|  |  | | | 5.专业核心课 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 最低要求学分：11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | |
| **修课 要求** | | **课程名称** | | | **学分** | | | **课时** | | | | | | | | | **学年、学期、学分** | | | | | | | | | | | | | | | | | | | **考核 方式** | | **课程编码** | | | | | **备注** |
| **讲课** | | | **实验** | | **上机** | | **实践** | | **一** | | | | | | **二** | | | | **三** | | | | **四** | | | | |  | |  | | | | |  |
| **秋** | | | **春** | | | **秋** | | **春** | | **秋** | | **春** | | **秋** | | **春** | | |  | |  | | | | |  |
| **必修** | | 制造系统网络与通信 | | | 3 | | | 40 | | | 16 | |  | |  | |  | | |  | | |  | |  | | 3 | |  | |  | |  | | | 考试 | | B014951 | | | | |  |
| 传感与精密测试技术 | | | 2 | | | 24 | | | 16 | |  | |  | |  | | |  | | |  | |  | |  | | 3 | |  | |  | | | 考试 | | B014952 | | | | |  |
| 制造系统的感知与决策 | | | 3 | | | 40 | | | 16 | |  | |  | |  | | |  | | |  | |  | |  | | 2 | |  | |  | | | 考试 | | B014953 | | | | |  |
| 智能制造技术基础 | | | 3 | | | 40 | | | 16 | |  | |  | |  | | |  | | |  | |  | | 3 | |  | |  | |  | | | 考试 | | B014954 | | | | |  |
| **小计** | | | 11 | | | 144 | | | 64 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | 0 | | 6 | | 5 | | 0 | | 0 | | |  | |  | | | | |  |
|  |  | | | 6.专业方向课 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 最低要求学分：6.5 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
| **修课 要求** | | | **课程名称** | | **学分** | | | **课时** | | | | | | | | | **学年、学期、学分** | | | | | | | | | | | | | | | | | | | **考核 方式** | | **课程编码** | | | | | **备注** |
| **讲课** | | | **实验** | | **上机** | | **实践** | | **一** | | | | | | **二** | | | | **三** | | | | **四** | | | | |  | |  | | | | |  |
| **秋** | | | **春** | | | **秋** | | **春** | | **秋** | | **春** | | **秋** | | **春** | | |  | |  | | | | |  |
| **智能制造装备方向** | | | 精密传动与智能设计 | | 2 | | | 24 | | | 16 | |  | |  | |  | | |  | | |  | |  | |  | | 2 | |  | |  | | | 考试 | | B015951 | | | | |  |
| 工业机器人技术 | | 2.5 | | | 32 | | | 16 | |  | |  | |  | | |  | | |  | |  | |  | |  | | 2.5 | |  | | | 考试 | | B016115 | | | | |  |
| 智能制造装备 | | 2 | | | 32 | | |  | |  | |  | |  | | |  | | |  | |  | |  | | 2 | |  | |  | | | 考试 | | B015952 | | | | |  |
| **小计** | | 6.5 | | | 88 | | | 32 | | 0 | | 0 | | 0 | | | 0 | | | 0 | | 0 | | 2 | | 4 | | 2.5 | | 0 | | |  | |  | | | | |  |
|  |  | | | **7.专业任选课** | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
|  |  | | | 最低要求学分：10.5 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | | |  | |  |  |  | |  | | | |  |
| **修课 要求** | | **课程名称** | | | **学分** | | | **课时** | | | | | | | | | | **学年、学期、学分** | | | | | | | | | | | | | | | | | | **考核 方式** | | **课程编码** | | | | | **备注** |
| **讲课** | | | **实验** | | **上机** | | **实践** | | | **一** | | | | | **二** | | | | **三** | | | | **四** | | | | |  | |  | | | | |  |
| **秋** | | | **春** | | **秋** | | **春** | | **秋** | | **春** | | **秋** | | **春** | | |  | |  | | | | |  |
| 金属切削机床与刀具(双语) | | | 2 | | | 24 | | |  | |  | | 16 | | |  | | |  | |  | |  | |  | |  | | 2 | |  | | | 考试 | | B015103 | | | | | 至少选1门 |
| 单片机应用系统设计（双语） | | | 2 | | | 24 | | | 16 | |  | |  | | |  | | |  | |  | |  | |  | | 2 | |  | |  | | | 考试 | | B018101 | | | | |
| 面向对象程序设计（双语） | | | 2 | | | 16 | | |  | | 32 | |  | | |  | | |  | |  | |  | | 2 | |  | |  | |  | | | 考试 | | B016905 | | | | |
| 智能制造工艺学 | | | 2 | | | 32 | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | | 2 | |  | | | 考试 | | B016951 | | | | | 至少选1门 |
| 智能生产系统 | | | 2.5 | | | 32 | | | 16 | |  | |  | | |  | | |  | |  | |  | |  | | 2.5 | |  | |  | | | 考试 | | B016952 | | | | |
| 工业智能云服务 | | | 2 | | | 32 | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | | 1 | |  | | | 考试 | | B016953 | | | | |
| 图像处理与机器视觉 | | | 2 | | | 24 | | |  | |  | | 16 | | |  | | |  | |  | |  | |  | |  | | 2 | |  | | | 考试 | | B016954 | | | | | 至少选1门 |
| AR/VR及应用 | | | 2 | | | 24 | | |  | | 16 | |  | | |  | | |  | |  | |  | | 2 | |  | |  | |  | | | 考试 | | B016955 | | | | |
| 制造系统信息安全 | | | 2 | | | 32 | | |  | |  | |  | | |  | | |  | |  | | 2 | |  | |  | |  | |  | | | 考试 | | B016956 | | | | |
| 电器与可编程序控制器 | | | 1.5 | | | 16 | | |  | | 16 | |  | | |  | | |  | |  | |  | |  | | 1.5 | |  | |  | | | 考试 | | B016957 | | | | |
| MATLAB编程与应用 | | | 1.5 | | | 16 | | |  | | 16 | |  | | |  | | |  | |  | | 1.5 | |  | |  | |  | |  | | | 考试 | | B016134 | | | | |
| 数控加工技术 | | | 2 | | | 24 | | | 16 | |  | |  | | |  | | |  | |  | |  | |  | | 2 | |  | |  | | | 考试 | | B015104 | | | | | 至少选1门 |
| 增材制造技术 | | | 1.5 | | | 16 | | |  | |  | | 16 | | |  | | |  | |  | |  | |  | |  | | 1.5 | |  | | | 考试 | | B106958 | | | | |
| 互换性与测量技术基础 | | | 2.5 | | | 32 | | | 16 | |  | |  | | |  | | |  | |  | | 2.5 | |  | |  | |  | |  | | | 考试 | | B015106 | | | | |
| 项目管理 | | | 1 | | | 16 | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | | 1 | |  | | | 考试 | | B086008 | | | | | 至少选1门 |
| 企业管理 | | | 2 | | | 16 | | |  | |  | | 16 | | |  | | |  | |  | |  | |  | |  | | 2 | |  | | | 考试 | | B086007 | | | | |
| 工程热力学I | | | 2 | | | 32 | | |  | |  | |  | | |  | | |  | |  | | 2 | |  | |  | |  | |  | | | 考试 | | B016525 | | | | | 至少选1门 |
| 传热学 | | | 2 | | | 32 | | |  | |  | |  | | |  | | |  | |  | |  | | 2 | |  | |  | |  | | | 考试 | | B016419 | | | | |
| **小计** | | | 34.5 | | | 440 | | | 64 | | 80 | | 64 | | | 0 | | | 0 | | 0 | | 8 | | 6 | | 8 | | 11.5 | | 0 | | |  | |  | | | | |  |
|  |  | | | **8.集中性实践环节** | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | |  | | |  |  |  | |  | | | |  |
|  |  | | | 最低要求学分：28 | | | | | | | |  | |  | |  | | |  | | |  | |  | |  | |  | |  | |  | |  | | |  |  |  | |  | | | |  |
| **修课 要求** | | | **实践环节名称** | | | | | | | **学分** | | | **周数** | | | | | **学年、学期、学分** | | | | | | | | | | | | | | | | | | **考核 方式** | | **课程编码** | | | | | **备注** |
| **一** | | | | | **二** | | | | **三** | | | | **四** | | | | |  | |  | | | | |  |
| **秋** | | | **春** | | **秋** | | **春** | | **秋** | | **春** | | **秋** | | **春** | | |  | |  | | | | |  |
| **必修** | | | 军事理论与技能 | | | | | | | 2 | | | 2 | | | | | 2 | | |  | |  | |  | |  | |  | |  | |  | | | 考查 | | B197001 | | | | |  |
| 公益劳动 | | | | | | |  | | | （1） | | | | |  | | |  | |  | |  | |  | |  | |  | |  | | | 考查 | | B197002 | | | | |  |
| 安全教育 | | | | | | |  | | | （2） | | | | |  | | |  | |  | |  | |  | |  | |  | |  | | | 考查 | |  | | | | |  |
| 社会实践 | | | | | | |  | | | （2） | | | | |  | | |  | |  | |  | |  | |  | |  | |  | | | 考查 | |  | | | | |  |
| 工程训练 | | | | | | | 2 | | | 2 | | | | |  | | |  | | 2 | |  | |  | |  | |  | |  | | | 考查 | | B014825 | | | | |  |
| 机械设计基础课程设计 | | | | | | | 2 | | | 2 | | | | |  | | |  | |  | | 2 | |  | |  | |  | |  | | | 考查 | | B014829 | | | | |  |
| 制造系统网络与通信课程设计 | | | | | | | 1 | | | 1 | | | | |  | | |  | |  | |  | | 1 | |  | |  | |  | | | 考查 | | B014951 | | | | |  |
| 工业机器人技术综合实训 | | | | | | | 1 | | | 1 | | | | |  | | |  | |  | |  | |  | | 1 | |  | |  | | | 考查 | | B014952 | | | | |  |
| 智能制造系统综合设计 | | | | | | | 2 | | | 2 | | | | |  | | |  | |  | |  | |  | | 2 | |  | |  | | | 考查 | | B014953 | | | | |  |
| 生产实习 | | | | | | | 3 | | | 3 | | | | |  | | |  | |  | |  | |  | |  | | 3 | |  | | | 考查 | | B014827 | | | | |  |
| 毕业实习 | | | | | | | 5 | | | 5 | | | | |  | | |  | |  | |  | |  | |  | |  | | 5 | | | 考查 | | B017106 | | | | |  |
| 毕业设计 | | | | | | | 10 | | | 14 | | | | |  | | |  | |  | |  | |  | |  | |  | | 14 | | | 考查 | | B107107 | | | | |  |
| **小计** | | | | | | | 28 | | | 32 | | | | | 2 | | | 0 | | 2 | | 2 | | 1 | | 3 | | 3 | | 19 | | |  | |  | | | | |  |

九、课程设置及指导性教学计划进程安排