# Mechatronics Engineering

**(Grade 2024)**

**Course code: 080204**

## I. Cultivation Objectives

1. General cultivation objective

Mechatronics Engineering cultivates senior application-oriented engineering and technical talents with comprehensive development of moral, intellectual, physical, and aesthetic skills who have a solid foundation in natural sciences and good humanities, master basic professional knowledge and skills such as mechanical design, electrical control, computer and information technology, have good professional ethics and strong mechatronics comprehensive practical ability, can be engaged in the application and development of modern electromechanical systems, operation and control of intelligent electromechanical equipment, monitoring and pre-maintenance, system integration and technical services, etc. in the electromechanical industry or the industry applying electromechanical technology.

2. Objective of value guidance

Take the spirit of model workers and craftsmanship as the value orientation to cultivate ingenuity and educate craftsmen. In the implementation of professional courses, especially practice courses, the engineering values and engineering ethics education are embedded in the spirit of craftsmanship, and at the same time, the program will cultivate students to develop a rigorous, meticulous, focused and responsible work attitude, meticulously crafted and refined work philosophy, and master superb skills and exquisite skills, devote themselves to the transformation and upgrading of the manufacturing industry, so as to improve the quality, speed, quality and efficiency of China's "manufacturing" to China's "intelligent manufacturing".

3. Objectives that students must achieve five years after graduation:

(1)Be able to meet the technological developments in mechanical engineering and propose solutions to complex engineering problems in mechanical engineering and related fields in practical work using professional theories and engineering knowledge.

(2)Have spirit of technological innovation, the ability to perform engineering innovation, the ability to comprehensively use expertise and modern tools, and the ability to engage in the design, development and production of products related to complex engineering problems in mechanical engineering and related fields to meet the needs of companies, institutions and users.

(3)Have the sense of social responsibility, an understanding of and adherence to professional standards, and the ability to integrate legal, safety, environmental and sustainability considerations into engineering practice

(4)Have good scientific and humanistic qualities, dedication to work, selflessness, teamwork, effective communication skills and the ability to manage engineering projects

(5)Have the ability to follow the latest developments and trends at both domestic and international levels in the field of mechanical engineering in practical work, have an international perspective, and the ability for independent and lifelong learning.

## II. Requirement for Graduation

According to the 12 graduation requirements of the General Standard of China Engineering Education Accreditation Association (CEEAA), the mechatronics engineering program has expanded the core competencies and quality expressions of the 12 graduation requirements in accordance with the orientation of talent cultivation in our university, and the indicators of each graduation requirement are listed as follows:

**1. Engineering Knowledge: The ability to apply mathematical, natural science and engineering fundamentals and expertise to the solution of complex problems in mechatronics engineering and related**

**fields.**

1-1: Be able to apply the necessary mathematical, natural science and engineering fundamentals and expertise in mechatronics engineering to the formulation of complex mechanical engineering problems.

1-2: Be able to develop and solve a mathematical model for a complex mechatronics system or mechatronics control process.

1-3: Be able to apply relevant knowledge and mathematical models to the derivation, analysis and discrimination of solutions to complex problems in mechatronics engineering and related fields.

1-4: Be able to apply mathematical models and relevant engineering knowledge to analyse, compare and attempt to improve solutions to complex problems in mechatronics engineering and related fields.

**2: Analysis of the Problem:** Be able to apply the fundamental principles of mathematics, natural and engineering sciences to identify, represent, and through literature research to analyse complex problems in mechatronics engineering and related fields in order to reach valid conclusions.

2-1: Be able to apply the fundamental principles of mathematics, natural and engineering sciences to identify and determine the key techniques and parameters of complex problems in mechatronics engineering and related fields.

2-2: Be able to correctly represent, deduce and analyse complex problems in mechatronics engineering and related fields based on relevant scientific principles and mathematical models.

2-3: Be able to recognise that there are multiple options for solving complex problems in mechatronics engineering and related fields and seek alternative and stand-by solutions through literature research.

2-4: Be able to apply basic principles of mechatronics engineering and related fields to analyse how solutions may be affected during implementation and obtain valid conclusions.

**3. Design/Develop of Solutions:** Be able to design solutions to problems in mechatronics engineering and related fields, to design mechatronics systems, mechanical equipments or control systems that meet specific needs, and demonstrate the spirit of innovation in the design process, taking into account social, health, safety, legal, cultural and environmental factors.

3-1: Master the basic design/development methods and techniques for the full life cycle and full process of mechatronics engineering design and mechatronics product development. Be able to describe design objectives and understand the factors that influence design objectives and technical solutions.

3-2: Be able to develop solutions and complete designs of system, component and part for problems in mechatronics engineering and related fields, especially for specific needs in mechatronics equipment and control process.

3-3: Be able to design complex mechatronics system or mechatronics control process and to demonstrate the spirit of innovation in the design.

Indicators 3-4: Be able to comprehensively consider social, health, safety, legal, ethical, cultural and environmental factors in design.

**4: Research:** Be able to use scientific principles and methods to investigate problems in mechatronics engineering and related fields, including designing experiments, analysing and interpreting data, and synthesizing information to reach reasonable and valid conclusions.

4-1: Be able to investigate and analyse problems in mechatronics engineering and related fields based on scientific principles, combined with literature research or related methods.

4-2: Be able to select routes of research and design experimental protocols based on the characteristics of problems in mechatronics engineering and related fields.

4-3: Be able to construct experimental systems based on experimental protocols, conduct experiments in a safe and standardized manner, and collect experimental data correctly.

4-4: Be able to correctly analyse and interpret experimental results and synthesize information to reach reasonable and valid conclusions.

**5: Use of Modern Tools:** Be able to develop, select and use appropriate techniques, resources, modern engineering tools and information technology tools for problems in mechatronics engineering and related fields, including prediction and simulation of problems in mechatronics engineering and related fields, and be able to understand their limitations.

5-1: Understand the principles and methods of using modern instruments, information technology tools, engineering tools and simulation software commonly used in mechatronics engineering, and understand the limitations of their use.

5-2: Be able to select and use appropriate instruments, information resources, engineering tools and specialist simulation software to analyse, calculate and design problems in mechatronics engineering and related fields.

5-3: Be able to develop or select modern tools to meet specific needs, simulate and predict specialist problems for specific objects of problems in mechatronics engineering and related fields and be able to analyse their limitations.

**6: Engineering and Society:** Be able to perform reasonable analysis based on engineering-related contextual knowledge and evaluate how engineering practices and solutions to problems in mechatronics engineering and related fields may impact society, health, safety, law, and culture, and understand the responsibilities involved.

6-1: Understand the system of technical standards, intellectual property rights, industrial policies and laws and regulations in fields related to mechatronics engineering and understand the impact of different social cultures on engineering activities.

6-2: Be able to analyze and evaluate the impacts of mechatronics engineering practices on society, health, safety, law, culture and the impacts of these constraints on project implementation, and understand the responsibilities involved.

**7: Environment and Sustainable Development:** Be able to understand and evaluate the impacts of engineering practices for problems in mechatronics engineering and related fields on environment and sustainable development of society.

7-1: Understand the meaning and significance of environmental protection and sustainable development of society and be able to practise environmental protection and sustainable development of society when solving problems in mechatronics engineering and related fields.

7-2: Be able to evaluate the potential damage and hazards to humans and the environment in relation to actual mechatronics engineering projects, and understand the social, safety and legal responsibilities involved.

**8: Professional Codes:** Have humanistic, social and scientific qualities, social responsibility, and the ability to understand and comply with engineering ethics and codes in the practice of mechatronics engineering and fulfill the responsibilities.

8-1: Have humanistic, social and scientific qualities, correct values, understanding of the relationship between the individual and society, and knowledge of the Chinese context.

8-2: Understand the engineering ethics and codes of honesty, fairness and integrity, and be able to consciously observe them in the practice of mechatronics engineering.

8-3: Understand the social responsibility of mechatronics engineers for the safety, health and well-being of the public, and for environmental protection, and be able to consciously exercise this responsibility in the practice of mechatronics engineering.

**9: Individual and team:** Be able to assume the role of individual, team member and leader of multidisciplinary team.

9-1: Be able to communicate effectively and work independently or collaboratively.

9-2: Be able to organize, coordinate and direct teams in a multidisciplinary team.

**10: Communication:** Be able to communicate and interact effectively with industry peers and the public on complex mechatronics engineering issues, including writing reports and design submissions, presenting statements, clearly expressing or responding to instructions, and having an international perspective and the ability to communicate and interact in a cross-cultural context.

10-1: Be able to express views accurately, respond to challenges and understand the differences in communication with industry peers and the public on complex mechatronics engineering issues, either orally, in manuscripts, diagrams or drawings.

10-2: Understand international trends and research hotspots in the field of mechatronics engineering, as well as understand and respect the differences and diversity of different cultures around the world.

10-3: Be able to communicate verbally and in writing across cultures and to communicate and interact in a basic way in the cross-cultural context on complex mechatronics engineering issues.

**11: Project Management:** Understand and master the principles of engineering management and economic decision-making methods and be able to apply them in a multidisciplinary environment.

11-1: Master the principles of engineering management and economic decision-making methods involved in mechatronics engineering activities.

11-2: Understand the cost components of mechatronics engineering and mechatronics products throughout their life cycle and processes, and understand the engineering management and economic decision-making issues involved.

Target point 11-3: Be able to apply engineering management and economic decision-making methods in the design and development of mechatronics engineering project solutions in a multidisciplinary environment (including simulated environment).

**12: Spirit and ability of lifelong learning:** Have the spirit of independent and lifelong learning and the ability to learn and adapt to development constantly.

12-1: Be able to properly understand the necessity of self-exploration and lifelong learning and have the spirit of independent and lifelong learning.

12-2: Be able to adopt an appropriate approach to independent learning according to personal or professional development needs and be able to adapt to technological developments and knowledge updates in society and in the field of mechatronics engineering.

**III. Schooling System**

Four years.

**IV. Length of Study**

Flexible study period, generally four years, the minimum length of flexibility is not less than three years, the longest not more than six years.

**V. Requirements for Graduation and Degree Conferring**

Students of this program must complete the minimum credits required for each category of courses and complete all the content specified in extracurricular class according to the requirements of the instructional training plan, and the total credits must reach 166 credits for graduation; those who meet the requirements for bachelor's degree

can be conferred bachelor degree in engineering.

**VI. Discipline**

Mechanical Engineering(0802), Electronic Science & Technology, Control Science and Engineering(0811)

**VII. Core Courses**

Modern engineering drawing I/II, Engineering Mechanics I/II, Fundamentals of Mechanical Design, Fundamentals of the Programming Design, Electrical and Electronic Engineering I/II, Fundamentals of Control Engineering, Embedded Systems and Its Applications, Sensors and Intelligent Detection technology, CNC machine tools and programming, Electromechanical Drive Control, Modern Engineering Drawing and Surveying, Practice for Embedded System and Its Applications, Mechanical Design and Course Design, Practice for PLC control system design , Practice for sensor and test technology, Practice for CNC machining, Practice for CNC system, Practice for electromechanical system design comprehensive

**VIII. Course Structure and Course Hours**

| Category | Total Credit | % | Total Course Hours | Theory Learning | Practical Training |
|---|---|---|---|---|---|
| Public Fundamental Course | 60.5 | 37 | 1104 | 1018 | 86 |
| General Education | 10 | 6 | 160 | 152 | 8 |
| Engineering Fundamental Course | 21 | 13 | 336 | 288 | 48 |
| Professional Fundamental Course | 17 | 10 | 272 | 242 | 30 |
| Professional Course | 22 | 13 | 352 | 298 | 54 |
| Professional Practice | 34.5 | 21 | 976 | 0 | 976 |
| **Total** | **165** | **100** | **3200** | **1998** | **1202** |
| Theory : Practice(%) | 62:38 | | | | |

## IX. Teaching schedule (1)

| Category | Type | Provided by | Course Code | Course Name | Assessment | Credit | Course Hour | Theory Learning | Practical Training | Recommended Semester |
|---|---|---|---|---|---|---|---|---|---|---|
| | required | School of Marxism | b1080006 | Outline of Chinese Modern History | non-test | 3 | 48 | 42 | 6 | Autumn 1 |
| Public Fundamental Course | required | School of Marxism | b1080001 | Basic principles of Marxism | test | 3 | 48 | 42 | 6 | Spring 1 |
| | required | School of Marxism | b1080009 | Ethics and the Rule of Law | non-test | 3 | 48 | 42 | 6 | Spring 1 |
| | required | School of Marxism | b1080010 | Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics | test | 3 | 48 | 42 | 6 | Spring 2 |
| | required | School of Marxism | b1080011 | Introduction to Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era | test | 3 | 48 | 42 | 6 | Autumn 2 |
| | required | School of Marxism | ----- | Situation and Policy (module 1 ~ 4) | non-test | 2 | 32 | 28 | 4 | Autumn 1 ~ Spring 2 |
| | required | School of Marxism | b1080008 | Labor Education A | non-test | 0.5 | 16 | 16 | | Autumn 2 |
| | required | Others | b1110004 | Mental Health Education for University Students | non-test | 2 | 32 | 16 | 16 | Autumn 1 |
| | required | School of Mathematics, Physics and Statistics | b1020080 | Advanced Mathematics A1 | test | 4 | 64 | 64 | | Autumn 1 |
| | required | School of Mathematics, Physics and Statistics | b1020081 | Advanced Mathematics A2 | test | 4 | 64 | 64 | | Spring 1 |
| | required | School of Mathematics, Physics and Statistics | b1020012 | Linear algebra | test | 2 | 32 | 32 | | Spring 1 |
| | required | School of Mathematics, Physics and Statistics | b1020013 | Probability Theory and Mathematical Statistics | test | 2 | 32 | 32 | | Autumn 2 |
| | required | School of Mathematics, Physics and Statistics | b1020076 | Calculation method | test | 2 | 32 | 32 | | Spring 2 |
| | required | School of Mathematics, Physics and Statistics | b1020023 | Complex function and integral transformation | non-test | 2 | 32 | 32 | | Spring 2 |
| | required | School of Mathematics, Physics and Statistics | b1020062 | Academic Physics A(module 1) | test | 3 | 48 | 48 | | Spring 1 |
| | required | School of Mathematics, Physics and Statistics | b1020065 | Academic Physics B | test | 2 | 32 | 32 | | Autumn 2 |
| | required | School of Mathematics, Physics and Statistics | b1020111 | Academic Physics C | non-test | 1 | 32 | | 32 | Spring 1 |
| | required | College of Resources and Environment | b1013001 | Academic Chemistry | test | 1 | 32 | 28 | 4 | Autumn 1 |
| | required | School of Foreign Language and Cultural Communication | b1020018 | Academic Chinese | non-test | 2 | 32 | 32 | | Spring 1 |
| | required | College of Physical Education | ----- | Physical Education I ~ VI | non-test | 3 | 160 | 160 | | Autumn 1 ~ Autumn 4 |
| | required | Others | b1110003 | Military skills | non-test | 0.5 | 2W | | | Autumn 1 |
| | required | Others | b1110002 | Military theory | non-test | 0.5 | 32 | 32 | | Autumn 2 |
| | ★ College English (10 Credits for 1 Module) | Module A | b1020003 | General English III | test | 3 | 48 | 48 | | Autumn 1 |
| | | | b1020004 | General English IV | test | 3 | 48 | 48 | | Spring 1 |
| | | | b1020005 | General Academic English A | test | 2 | 32 | 32 | | Autumn 2 |
| | | | --- | English development | non-test | 2 | 32 | 32 | | Spring 2 |
| | | Module B | b1020002 | General English II | test | 3 | 48 | 48 | | Autumn 1 |
| | | | b1020003 | General English III | test | 3 | 48 | 48 | | Spring 1 |
| | | | b1020006 | General Academic English B | test | 2 | 32 | 32 | | Autumn 2 |
| | | | --- | English development | non-test | 2 | 32 | 32 | | Spring 2 |

| Category | Type | Provided by | Course Code | Course Name | Assessment | Credit | Course Hour | Theory Learning | Practical Training | Recommended Semester |
|---|---|---|---|---|---|---|---|---|---|---|
| | ★ College German | School of Foreign Language and Cultural Communication | b1020040 | College German I | test | 3 | 48 | 48 | | Autumn 1 |
| | | School of Foreign Language and Cultural Communication | b1020041 | College German II | test | 3 | 48 | 48 | | Spring 1 |
| | | School of Foreign Language and Cultural Communication | b1020042 | College German III | test | 4 | 64 | 64 | | Autumn 2 |
| | ★ College Japanese | School of Foreign Language and Cultural Communication | b1020077 | College Japanese I | test | 3 | 48 | 48 | | Autumn 1 |
| | | School of Foreign Language and Cultural Communication | b1020078 | College Japanese II | test | 3 | 48 | 48 | | Spring 1 |
| | | School of Foreign Language and Cultural Communication | b1020079 | College Japanese III | test | 4 | 64 | 64 | | Autumn 2 |
| **Total (Public Fundamental Course)** | | | | | | **60.5** | **1104** | **1018** | **86** | |
| **General Education** | selective | School of Computer and Information Engineering | b1012001 | Artificial Intelligence Application and Practice | non-test | 1 | 16 | 8 | 8 | Autumn 1 |
| | selective | School of Resources and Environmen | b1012002 | Green, Low-carbon and Ecological Civilization | non-test | 1 | 16 | 16 | | Spring 1 |
| | selective | Art Education Center | b0----- | Aesthetic Education | non-test | 2 | 32 | 32 | | Autumn, Spring |
| | selective | Each College | b0----- | Social Science and Humanities Literacy (4 credits) | non-test | 4 | 64 | 64 | | Autumn, Spring |
| | | | | Natural Science and Technological Innovation | non-test | 2 | 32 | 32 | | Autumn, Spring |
| **Subtotal (General Education)** | | | | | | **10** | **160** | **152** | **8** | |

**★Note: The total number of credits for the first foreign language is 10, including 3 languages, namely College English, College German, and College Japanese, and the language should be selected as needed; among them, when choosing College English, the appropriate module should be selected in Module A and B.**

## IX. Teaching schedule (2)

| Category | Type | Provided by | Course Code | Course Name | Assessment | Credit | Course Hour | Theory Learning | Practical Training | Recommended Semester |
|---|---|---|---|---|---|---|---|---|---|---|
| Engineering Fundamental Course | required | School of Intelligent Manufacturing and Control Engineering | b2011137 | Modern Engineering Drawing I | test | 3 | 48 | 40 | 8 | Autumn 1 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011138 | Modern Engineering Drawing II | non-test | 3 | 48 | 32 | 16 | Spring 1 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011397 | Fundamentals of Engineering Materials | test | 2 | 32 | 26 | 6 | Spring 1 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011049 | Engineering Mechanics I | test | 3 | 48 | 48 | 0 | Autumn 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011050 | Engineering Mechanics II | test | 3 | 48 | 44 | 4 | Spring 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2090013 | Electrical and Electronic Engineering I | test | 2.5 | 40 | 36 | 4 | Autumn 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2090014 | Electrical and Electronic Engineering II | test | 2.5 | 40 | 36 | 4 | Spring 2 |
| | required | Engineering Training | b2011521 | Fundamentals of Thermal Engineering and Fluid Mechanics | test | 4 | 64 | 54 | 10 | Spring 2 |
| **Subtotal (Engineering Fundamental Course)** | | | | | | **21** | **336** | **288** | **48** | |
| Professional Fundamental Course | required | School of Intelligent Manufacturing and Control Engineering | b2011237 | Introduction to Mechatronics Engineering | non-test | 1 | 16 | 16 | 0 | Autumn 1 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011315 | Fundamentals of Programming | test | 2 | 32 | 26 | 6 | Autumn 1 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011497 | Fundamentals of mechanical design | test | 4 | 64 | 60 | 4 | Spring 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011444 | Mechanical principles | test | 3 | 48 | 42 | 6 | Autumn 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011176 | Hydraulic and Pneumatic Transmission | test | 2 | 32 | 28 | 4 | Autumn 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011119 | Principles of engineering control | test | 3 | 48 | 44 | 4 | Autumn 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011143 | Project management | non-test | 2 | 32 | 26 | 6 | Spring 3 |
| **Subtotal (Professional Fundamental Course)** | | | | | | **17** | **272** | **242** | **30** | |
| Professional Course | required | School of Intelligent Manufacturing and Control Engineering | b2011443 | Embedded Systems and Its Applications | test | 2 | 32 | 26 | 6 | Spring 2 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011562 | Electrical and PLC control of machine tools | test | 2 | 32 | 26 | 6 | Autumn 3 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011561 | Sensor and Intelligent Detection Technology | test | 3 | 48 | 42 | 6 | Spring 3 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011119 | CNC machine tools and programming | test | 2 | 32 | 26 | 6 | Autumn 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011563 | Mechatronics drive control | test | 2 | 32 | 26 | 6 | Spring 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b2011446 | Technology for industrial robots | non-test | 2 | 32 | 28 | 4 | Spring 3 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011520 | Scientific and Technical Paper Writing and Literature Search | non-test | 1 | 16 | 16 | 0 | Autumn 3 |
| | Selective 8 credits | **Subtotal (Required Professional Course)** | | | | **14** | **224** | **190** | **34** | |
| | | School of Intelligent Manufacturing and Control Engineering | b2011530 | Python Programming | test | 2 | 32 | 28 | 4 | Autumn 4 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011531 | Machine Vision Technology and Its Applications | non-test | 2 | 32 | 26 | 6 | Autumn 4 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011447 | Matlab and Mechatronics System Simulation | non-test | 2 | 32 | 28 | 4 | Autumn 4 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011251 | Introduction to Intelligent Manufacturing | non-test | 2 | 32 | 28 | 4 | Autumn 4 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011156 | Finite Element Analysis and Practice | non-test | 2 | 32 | 24 | 8 | Spring 3 |
| | | School of Intelligent Manufacturing and Control Engineering | b2011433 | Production Management of Intelligent Manufacturing (MES/ERP) | test | 2 | 32 | 24 | 8 | Spring 3 |
| | **Subtotal (Selective Professional Course)** | | | | | **8** | **128** | **108** | **20** | |
| **Subtotal (Professional Courses)** | | | | | | **22** | **352** | **298** | **54** | |

## IX. Teaching schedule (3)

| Category | Type | Provided by | Course Code | Course Name | Assessment | Credit | Course Hour | Theory Learning | Practical Training | Recommended Semester |
|---|---|---|---|---|---|---|---|---|---|---|
| Professional Practice | required | Engineering Training | b4090001 | Basic engineering training A | non-test | 3 | 72 | | 72 | Autumn 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011088 | Modern Engineering Drawing and Surveying | non-test | 2 | 48 | | 48 | Summer 1 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011106 | Corporate Understanding Internship | non-test | 1 | 24 | | 24 | Summer 2 |
| | required | Engineering Training | b4090005 | Electrotechnical skills internship | non-test | 1 | 24 | | 24 | Summer 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011310 | Practice for Embedded system application | non-test | 1 | 24 | | 24 | Summer 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011043 | Practice for Interchangeability and Measurement Technology | non-test | 2 | 48 | | 48 | Summer 2 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011311 | Course Design for Mechanical Design (English) | non-test | 1 | 24 | | 24 | Autumn 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011403 | Computer Aided Design and Manufacturing | non-test | 2 | 48 | | 48 | Autumn 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4000011 | Innovation and Entrepreneurship of Mechatronics Engineering | non-test | 2 | 48 | | 48 | Spring 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011339 | Labor Education B | non-test | 0.5 | 16 | | 16 | Spring 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011312 | PRACTICE for PLC CONTROL SYSTEM DESIGN | non-test | 2 | 48 | | 48 | Spring 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011405 | Sensors and intelligent detection technology practice | non-test | 2 | 48 | | 48 | Summer 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011082 | CNC machining practice | non-test | 1 | 24 | | 24 | Summer 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011314 | Industrial robot application practice | non-test | 1 | 24 | | 24 | Autumn 4 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011345 | Explanation of the relevance of professional certificates to the course: | non-test | 3 | 72 | | 72 | Autumn 4 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011083 | Fault analysis and repair practice for CNC equipment | non-test | 2 | 48 | | 48 | Autumn 4 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011317 | Comprehensive practice for electromechanical system design | non-test | 2 | 48 | | 48 | Summer 3 |
| | required | School of Intelligent Manufacturing and Control Engineering | b4011246 | Graduation Practice and Graduation Design (Thesis) for Mechatronics Engineering | non-test | 6 | 288 | | 288 | Spring 4 |
| **Subtotal (Professional Practice)** | | | | | | **34.5** | **976** | | **976** | |
| **Extracurricular Class** | required | Others | b5110001 | Extracurricular Class | non-test | 1 | - | - | - | Autumn, Spring, Summer |
| **Total** | | | | | | **166** | **3200** | **1998** | **1201** | |

**Explanation of the relevance of professional certificates to the course:**

Students who have passed Computer Aided Design and Manufacturing, CNC machine tools and programming, CNC machining practice, CNC system practice, can participate in the professional qualification certificate assessment related to this program: UG Advanced, CNC machine tool assembly, adjustment and maintenance etc..

Students who have obtained the UG advanced certificate can apply for exemption of the Computer Aided Design and Manufacturing course and get corresponding credits.

## .X. Credit of Extracurricular Class

Through taking extracurricular classes, students are encouraged to take part in academic lectures, social practice activities, campus cultural and sports activities, innovative and entrepreneurial activities, voluntary activities, etc. to improve their social adaptability and enhance the competitiveness in the job market. Details are specified in Students' Manual.