

机电一体化技术（中外合作） 人才培养方案

目录

机电一体化技术 (中外合作) 专业人才培养方案	3
1. 培养目标	3
2. 职业岗位、典型工作任务及职业能力分析	3
3. 人才培养规格	4
3.1 知识结构	4
3.2 能力结构	5
3.3 素质结构	5
4. 课程体系与核心课程	6
4.1 课程体系的架构与说明	6
4.2 专业课程描述	7
5. 专业教学进程安排及说明	21
5.1 机电一体化技术专业教学进程安排	21
5.2 实践教学安排	27
5.3 分类学时学分统计表	29
5.4 各学期教学环节总体安排表	29
6. 毕业要求	30
6.1 成绩及学分规定	30
6.2 证书规定	30
7. 专业办学基本条件和教学要求	31
7.1 专业教学团队	31
7.2 教学设施	33
7.3 教学评价、考核	35

机电一体化技术（中外合作）专业人才培养方案

专业名称 机电一体化技术(中外合作)

专业代码 460301

招生对象 普通高中毕业生/三校生（职高、中专、技校毕业生）

学制与学历 三年 高职

1. 培养目标

理想信念坚定，德、智、体、美、劳全面发展，具有一定的科学文化水平，良好的人文素养、职业道德和创新意识，精益求精的工匠精神，较强的就业能力和可持续发展的能力，主要面向省内机电设备制造行业企业，掌握机械制造技术、机电产品维修和机电一体化专业知识，具备机电产品设计、制造与维修能力，具有机床操作、机电产品设计与工艺设计和机电设备维修、安装、操作能力，具有良好职业道德和职业生涯发展基础，在机械制造行业生产、服务第一线，能从事机电产品制造、装配和维修岗位的国际化高素质技术技能人才。

2. 职业岗位、典型工作任务及职业能力分析

职业岗位、典型工作任务及职业能力分析一览表

职业岗位		典型工作任务
初始 就业 岗位	自动化生产线的安装、调试	自动化生产线的安装、调试
	自动化生产线的操作	自动化生产线的操作
	自动化生产线的电气维修	自动化生产线的电气维修
	自动化生产线的机械维修	自动化生产线的机械维修
发展 就业 岗位	自动化生产线的管理	自动化生产线的管理
	自动化生产线的维修	自动化生产线的维修
拓展 就业 岗位	机电设备管理	设备管理
	生产管理	生产管理
	机电产品销售	机电产品营销

3. 人才培养规格

3.1 知识结构

机电一体化技术专业知识结构

类别	名称	描述	备注
基本知识	政治理论基本知识	理解党在社会主义初级阶段的基本路线、基本纲领和基本要求，把握建设中国特色社会主义的总依据、总任务和总布局。	
	体育锻炼基本知识	掌握体育的基本知识和科学锻炼身体的方法，养成自觉锻炼身体的习惯。	
	计算机应用基本知识	掌握计算机基本操作、常用办公软件使用及常规外设的硬件使用。	
	英语基本知识	掌握日常用语及基本对话必备的词汇、句子及段落。	
专业知识	专业群平台基本知识	掌握智能制造专业群平台的有关机械、电工、电子等基础知识，为核心专业学习做准备。	
	部分专业共享基本知识	掌握一种编程语言和一种三维绘图软件，学会利用 PLC 和单片机进行实践工程应用。	
	专业核心基本知识	掌握自动化生产线的安装、调试与维修。	
	专业拓展领域基本知识	掌握一种数控加工技术，能够进行机电产品创新设计，初步学会使用工业机器人。	
综合素质知识	写作知识	掌握公文写作的基本规格和要求。	
	社会学知识	掌握待人接物、为人处世的基本常识。	
	人际关系学知识	掌握人与人日常交往的基本礼仪与关系处理。	
	身心健康知识	掌握身体和心理健康所必须的基本知识。	

3.2 能力结构

机电一体化技术专业能力结构

类别		名称	备注
基础能力		体育锻炼方面的技能	
		英文听说读写译能力	
		计算机操作及专业软件应用能力	
专业能力	专业基础能力	机械零件图及装配图的识读与绘制	
		电工电子技术、电路设计及原理分析	
	专业核心能力	机械零件加工	
		机电设备维修与调试	
		机电产品装配与调试	
	专业拓展能力	机电产品设计	
		机电产品生产管理	
		机电产品营销	

3.3 素质结构

机电一体化技术专业素质结构

类别	名称	备注
思想道德素质	政治与政策的认识	
	社会责任感	
	言行的自我约束与自觉规范	

	职业道德	
	敬业、吃苦耐劳的精神	
身心素质	身体健康、身体耐力与适应性全面发展	
	卫生习惯与生活规律合理	
	情感力量稳定向上、意志力量坚强恒久	
文化素质	知识行为意识	
	法律意识	
	语言规范表达	
职业素质	熟知专业理论	
	掌握专业特长技能	
	了解市场行情	
创新、创业素质	创新创业意识	
	自我意识与主动精神	
	参与和实干精神	

4. 课程体系与核心课程

4.1 课程体系的架构与说明

构建了“平台+模块”课程体系，该体系由通用素质平台、通用素质拓展平台、专业群平台、专业核心模块、专业拓展模块五部分构成。

4.1.1 通用素质平台 (公共必修)

主要开设思想道德修养与法律基础、毛泽东思想和中国特色社会主义理论体系概论、大学英语、计算机文化基础、体育与健康、心理健康教育等课程。

4.1.2 通用素质拓展平台 (公共选修)

主要开设公共关系学、管理心理学、应用文写作、国学与人生等课程，由学生根据培养进程和自身需求自主选择。

4.1.3 专业群平台(专业必修)

主要开设高等数学、机械制图、电工电子技术、工程力学、Auto CAD、机械加工基础、液压与气动技术、机械设计基础等课程。

4.1.4 部分专业共享模块(专业必修)

主要开设UG、可编程序控制器及应用、单片机原理及应用、综合实训(钳工实训、数控加工实训)、毕业综合实践(顶岗实习)等课程。

4.1.5 专业核心模块(专业必修)

主要开设现代测控技术及应用、工业网络技术及应用、PLC高级应用、自动化生产线调试与维修、机电设备维修技术和自动化生产线安装调试综合实训等课程。

4.1.6 专业拓展模块(专业限选)

主要开设数控车床编程及操作、数控铣床编程及操作、激光雕刻技术、机电一体化技术、机电产品创新设计、工业机器人技术等课程。

4.2 专业课程描述

1. MEM13014A Apply principles of occupational health and safety in the work environment

Unit descriptor:

This unit covers following occupational health and safety procedures in an engineering or similar work environment.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

2. VU22472-Apply electrotechnology principles in an engineering work environment

Unit descriptor:

This unit of competency describes the knowledge and skills required to select, set-up and use a range of test equipment to measure voltage, current and resistance.

This involves testing for continuity, insulation and identifying commonly used electrical/electronic devices for the supply of power and for the control of machines and plant in an engineering environment

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Method of Assessment:

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance.

Evidence must include demonstration of practical skills and may also include:

- observation of processes and procedures
- oral and/or written questioning on required knowledge and skills
- testimony from supervisors, colleagues, clients and/or other appropriate persons
- inspection of the final product or outcome
- a portfolio of documented evidence.

Where performance is not directly observed any evidence should be authenticated by colleagues, supervisors, clients or other appropriate persons.

Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

3. MEM18001 C Use hand tools

Unit descriptor:

This unit covers using a range of hand tools for a variety of general engineering applications.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

4. MEM16006A-Organise and communicate information

Unit descriptor:

This unit covers accessing, organising and communicating information related to processes or tasks.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

5. MEM09002B-Interpret technical drawing

Unit descriptor:

This unit covers interpreting technical drawing applying to any of the full range of engineering disciplines.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient,

current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

6. MEM22002A- Manage self in an engineering environment

Unit descriptor:

This unit covers performing work ethically and competently, making judgements about work priorities and information requirements to achieve effective working relationships and engineering outcomes.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

7. MEM16008A-Interact with computing technology

Unit descriptor:

This unit covers accessing, inputting and storing information used in manufacturing, engineering or related environments, using computing technology.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required.

The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

8. MEM30031A - Operate computer-aided design (CAD) system to produce basic drawing elements

Unit descriptor:

This unit of competency covers the skills and knowledge required to apply functions of computer-aided design (CAD) software programs that are typically used in the production of detail drawings.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

9. MEM30007A Select common engineering materials

Unit descriptor:

This unit covers recognising common materials used in engineering, assisting in the selection of a material for a specific application, and using test results to evaluate the properties of materials.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

10. MEM23004A-Apply Technical Mathematics

Unit descriptor:

This unit describes the skills and knowledge required to make good decisions and develop good relationships whilst working toward ethical and competent engineering outcomes. The focus is self-management techniques such as time and task management, effective communication strategies, document management and business relations.

Methods of assessment:

Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge.

Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure correct interpretation and application.

Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.

Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

Assessment may be in conjunction with assessment of other units of competency where required.

11. MEM22001A-Perform engineering activities

APPLICATION:

This unit covers the performance of technical aspects of engineering work in accordance with established engineering principles and practices.

This unit applies to technical activities carried out within a range of engineering disciplines. It incorporates the personal and technical requirements to perform engineering activities where outcomes and performance measures are negotiated with appropriate personnel, technical experts and

specialists.

This unit only has application in qualifications that are not points based.

ASSESSMENT METHODS:

You will be required to undertake a range of assessment tasks to establish competence for the unit/s you are undertaking. It is important to understand the types of assessment you may be required to complete as part of the evidence gathering process.

Please see below the range assessment methods that are used at Chisholm to ensure competency is appropriately measured and valid, reliable and fair assessment judgements are made.

The assessor will provide all required information about the assessment process and conditions prior to the assessment taking place.

Observation 、 Questioning 、 Test/Quiz、 Presentation 、 Portfolio 、 Report/ Essay、 Project

12. MEM09009C-Create 2D drawings using computer aided design system

Unit descriptor:

This unit covers preparing the CAD environment, creating 2D drawings, and producing output including linked bills of materials.

Method of Assessment:

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

13. VU22480-Implement basic principles of materials science to engineering applications

Unit descriptor:

This unit of competency describes the knowledge and skills required to apply basic principles of materials science to engineering problems applications.

It involves testing of materials to evaluate the engineering properties of materials and includes the recognition of common materials used in engineering, the classification of materials, the properties of materials and the factors that influence those properties.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Method of Assessment:

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance .

Evidence must involve demonstration of practical skills and may also include:

- observation of processes and procedures
- oral and/or written questioning on required knowledge and skills
- testimony from supervisors, colleagues, clients and/or other appropriate persons
- inspection of the final product or outcome
- a portfolio of documented evidence.

Where performance is not directly observed any evidence should be authenticated by colleagues, supervisors, clients or other appropriate persons.

Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

14. VU22505-Write and modify basic CNC programs

Unit Descriptor:

This unit of competency describes the knowledge and skills required to create and modify basic computer numerical control (CNC) programs for linear and circular turning and milling operations limited to two dimensional and two and

half dimensional (2D and 2.5D).

(This excludes programming machines with multiple spindles and using complex programming structures such as canned cycles and subroutines).

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Methods of assessment:

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance.

Evidence must involve demonstration of practical skills and may also include:

observation of processes and procedures

oral and/or written questioning on required knowledge and skills

testimony from supervisors, colleagues, clients and/or other appropriate persons

inspection of the final product or outcome

a portfolio of documented evidence

Where performance is not directly observed any evidence should be authenticated by colleagues, supervisors, clients or other appropriate persons.

Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

15. VU22499-Apply hydraulic principles to achieve an engineering task

Unit Descriptor:

This unit of competency describes the knowledge and skills required to apply hydraulic principles to achieve an engineering task.

The unit includes selecting system components, construction of the hydraulic system and machine control circuitry, system operation, testing, fault finding and routine maintenance requirements. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Methods of assessment:

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance.

Evidence must involve demonstration of practical skills and may also include:

observation of processes and procedures

oral and/or written questioning on required knowledge and skills

testimony from supervisors, colleagues, clients and/or other appropriate persons

inspection of the final product or outcome

a portfolio of documented evidence.

Where performance is not directly observed any evidence should be authenticated by colleagues, supervisors, clients or other appropriate persons.

Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

16. VU21270-Implement control processes using PLCs

Unit Descriptor:

This unit of competency sets out the knowledge and skills required to program Programmable Logic Controllers (PLCs) within an industrial setting.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Methods of assessment:

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance .

Evidence must involve demonstration of practical skills and may also include:

- observation of processes and procedures

- oral and/or written questioning on required knowledge and skills
- testimony from supervisors, colleagues, clients and/or other appropriate persons
- inspection of the final product or outcome
- a portfolio of documentary evidence.

Where performance is not directly observed any evidence should be authenticated by colleagues, supervisors, clients or other appropriate persons.

Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

17. VU21232-Program, operate and select a robotics system

Unit Descriptor:

This unit of competency sets out the knowledge and skills required to program; operate and select a robotics system. This includes identification, installation and maintenance procedures, program simulated industrial applications, CAD techniques to program robots off-line and to download programs to robots.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Methods of assessment:

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance .

Evidence must involve demonstration of practical skills and may also include:

- observation of processes and procedures
- oral and/or written questioning on required knowledge and skills
- testimony from supervisors, colleagues, clients and/or other appropriate persons
- inspection of the final product or outcome

- a portfolio of documentary evidence.

Where performance is not directly observed any evidence should be authenticated by colleagues, supervisors, clients or other appropriate persons.

Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

18. MEM23109 A-Apply engineering mechanics principles

Unit Descriptor:

This unit of competency sets out the knowledge and skills required to apply mechanics concepts and principles to solve problems common to all engineering fields.

This includes:

Forces and Gravity

Equilibrium

Moment and Torque

Beams

Frames

Wedges

Methods of assessment:

Assessment must satisfy the endorsed Assessment

Guidelines of the MEM05 Metal and Engineering

Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge.

Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure correct interpretation and

application.

Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.

Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.

Assessment may be in conjunction with assessment of other units of competency where required.

19. VU22451- Investigate advanced technology applications in the manufacturing industry and related industries

Unit Descriptor:

This unit describes the knowledge and skills required to learner to investigate advanced manufacturing technologies that have been recognised as innovative and/or cutting edge and have significantly improved production processes, products and/or services and present the findings.

No licensing, legislative, regulatory or certification requirements apply to this unit of competency at the time of publication.

This unit contains employ ability skills.

This unit applies to a person who is preparing for a career in the engineering, manufacturing or related industries and is required to investigate current and emerging advanced manufacturing technologies

Methods of assessment:

The following suggested assessment methods are suitable for this unit:

research project findings

presentation of information

written report/ documented evidence

oral and written questioning

20. VU22452- Use communication network concepts and practices in

manufacturing and engineering applications

Unit Descriptor:

This unit describes the skills and knowledge in communication network concepts and practices that are used in manufacturing and engineering applications.

Specifically, the unit covers:

The manner in which data traverses

Networks

Protocols

Networking and communication devices

Internet Protocol (IP) addressing

Routing protocols

Virtual Local Area Networks (VLANs)

Troubleshooting logs and networking monitoring tools

Methods of assessment:

Evidence can be gathered through a variety of ways including:

observation of processes and procedures ;

oral and/or written questioning on required knowledge and skills ;

testimony from supervisors, colleagues, clients and/or other appropriate persons ;

inspection of the final product or outcome ;

portfolio of documented evidence.

Where performance is not directly observed any evidence should be authenticated by an appropriate person such as a workplace supervisor.

5. 专业教学进程安排及说明

5.1 机电一体化技术专业教学进程安排

课程类别	序号	课程名称	学时分配			各学期周学时分配						考核方式	课程性质	学分	
			总学时	理论	实践	一	二	三	四	五	六				
						1 5 周	1 6 周	16 周	16 周	16 周	1 6 周				
公共课	1	思政课程 1	64	30	30	4							试	必	4
	2	思政课程 2	64	44	20		4						试	必	4
	3	大学英语	128	64	64	4	4						试	必	8
	4	体育与健康	94	46	48	2	2	2					查	必	6
	5	形式与政策	40	40		√	√	√	√	√			查	必	2
	6	职业生涯规划与就业指导	32	18	14		2						试	必	2
	7	大学生创新创业教育	32	18	14				2				查	必	2
	8	心理健康教育	32	16	14	2							查	必	2
	9	军事理论	32	16	16	2							查	必	2
	10	大学语文	128	96	32	4	4						试	必	8
	11	计算机文化	64	32	32	4							试	必	4

		基础											
小 计 (A)		71 0	42 0	290	2 1	1 7	2	3	0	0			44
公共课拓展模块 (公共选修)	全院公选课由教务处统一安排, 第二、三、四学期开设, 至少修 4 学分	中华民族精神	29	29			√					查 选	2
		中西文化比较	33	33				√				查 选	3
		公共关系礼仪实务	31	31						√		查 选	3
		从“愚昧”到“科学”: 科学技术简史	32	32			√					查 选	3
小 计 (B)		12 5	12 5										11
专业 课	1	机械制图	12 4	90	34	4	4					试 必	8
	2	MEM13014A Apply principles of occupational health and safety in the work environment	20	10	10			2				试 必	2
	3	MEM18001C Use hand tools	40	10	30			3				试 必	3
	4	MEM16006A	30	24	6			2				试 必	2

	Organise and communicate information												
5	MEM09002B Interpret technical drawing	50	10	40			3				试	必	3
6	MEM16008A Interact with computing technology	20	2	18			2				试	必	2
7	MEM30031A Operate computer-aided design (CAD) systems to produce basic drawing elements	50	10	40			3				试	必	3
8	MEM22002A Manage self in an engineering environment	50	30	20			3				试	必	3
9	MEM30007A Select common engineering	50	25	25			3				试	必	3

	materials												
10	MEM23004A Apply Technical Mathematics	80	60	20			5				试	必	5
11	MEM09009C Create 2D drawings using computer aided design system	100	10	90			6				试	必	6
12	VU22472- Apply electrotech nology principles in an engineering work environment	30	15	15			2				试	必	2
13	VU22480- Implement basic principles of materials science to engineering application s	50	25	25			3				试	必	3
14	VU22505-	60	20	40			4				试	必	4

	Write and modify basic CNC programs												
15	VU22499- Apply hydraulic principles to achieve an engineering task	80	50	30				5			试	必	5
16	MEM22001A Perform engineering activities	80	60	20				5			试	必	5
17	VU21270- Implement control processes using PLCs	100	50	50					6		试	必	6
18	VU21232- Program, operate and select a robotics system	80	20	60					5		试	必	5
19	MEM23109A Apply engineering mechanics principles	80	60	20					5		试	必	5

20	VU22451- Investigate advanced technology application s in the manufacturi ng industry and related industries	80	40	40					5	试	必	5
21	VU22452- Use communicati on network concepts and practices in manufacturi ng and engineering applicati ons	50	30	20					3	试	必	3
22	毕业综 合实习	48 0	0	480								8
小 计 (C)		17 84	65 1	113 3	4	4	26	25	24	0		91
合计 (A+B+C)		26 19	11 96	142 3	2 5	2 4	28	25	24	0		14 6

5.2 实践教学安排

实践教学	课程名称	总学时	实践学时	教学地点	对实践教学的相关说明
理论+ 实践	思政课程 1	45	15	多媒体教室	根据课程设计要求进行
	思政课程 2	64	20	多媒体教室	根据课程设计要求进行
	职业生涯规划与就业指导	32	12	多媒体教室	根据课程设计要求进行
	创新创业教育	32	12	多媒体教室	根据课程设计要求进行
	心理健康教育	30	14	多媒体教室	根据课程设计要求进行
	电工电子技术	60	30	多媒体教室, 电工实训室	根据课程设计要求进行
	工程力学	64	12	多媒体教室, 力学实训室	根据课程设计要求进行
	机械设计基础	64	10	多媒体教室, 机械设计实训室	根据课程设计要求进行
	单片机原理及应用	64	32	多媒体教室, 单片机实训室	根据课程设计要求进行
	现代测控技术及应用	64	32	多媒体教室, 变频实训室, 伺服实训室	理论课 2 学时/周, 实训 2 学时/周
	工业网络技术及应用	64	32	多媒体教室, 工业网络技术实训室	理论课 2 学时/周, 实训 2 学时/周
	PLC 高级应用	64	32	多媒体教室, PLC 实训室	根据课程设计要求进行

	自动化生产线安装调试与维修	64	36	多媒体教室, 自动化生产实训室	根据课程设计要求进行
	机电设备维修技术	60	36	多媒体教室, 机电设备维修实训室	根据课程设计要求进行
	机电一体化技术	60	32	多媒体教室, 机电一体化实训室	根据课程设计要求进行
	机电产品创新设计	60	24	多媒体教室, 机电产品创新工作室	根据课程设计要求进行
	工业机器人技术	60	24	多媒体教室, 工业机器人实训车间	根据课程设计要求进行
教学做一体化	计算机文化基础	60	44	多媒体教室	根据课程设计要求进行
	体育与健康	94	48	多媒体教室, 操场	根据课程设计要求进行
	机械制图	124	34	多媒体教室, 机械制图室	根据课程设计要求进行
	机械加工基础	156	76	多媒体教室, 机械加工相关车间、实训室	根据课程设计要求进行
	液压与气动技术	64	16	多媒体教室, 液压与气动实训室	根据课程设计要求进行
	可编程序控制器及应用	60	48	多媒体教室, PLC 实训室	根据课程设计要求进行
	数控车床编程及操作	64	32	数控车间	理论课 2 学时/周, 实训 2 学时/周
	数控铣床编程及操作	64	24	数控车间	理论课 2 学时/周, 实训 2 学时/周
	激光雕刻技术	64	32	激光雕刻实训室	理论课 2 学时/周, 实训 2 学时/周

实践项目	入学教育	72	48	多媒体教室	入学教育 3 周
	Auto CAD	64	64	多媒体教室	实训4 学时/周
	UG	64	64	多媒体教室	实训4 学时/周
	综合实训（钳工实训）	90	90	机加工车间	实训 30 学时/周
	自动化生产线安装调试综合实训	60	60	自动化生产实训室	实训 30 学时/周
实习	毕业综合实践（顶岗实习）	480	480		

5.3 分类学时学分统计表

课程类别	学分	计划学时			
		总学时	理论教学学时	实践教学学时	实践教学学时
公共必修课	44	710	420	290	40.8%
公共选修课	11	125	125	0	0%
专业课	91	1784	651	1133	63.5%
合计	146	2619	1196	1423	54.3%

5.4 各学期教学环节总体安排表

学期	课堂教学（含课内实践）	整周实践			复习考试	机动	合计（周）	说明：公益劳动 1 周，由各系在第 1-5 学期课外时间
		军训、入学、安全教育	专业实训	毕业综合实践				
1	15	3			1	1	20	

2	16		2		2		20	安排, 在第 5 学期期末完成考核, 录入成绩。
3	16				2	1	20	
4	16				2		20	
5	12		2	4	2		20	
6	0			16	2	2	20	
合计	75	3	4	20	11	4	120	

6. 毕业要求

6.1 成绩及学分规定

学生毕业时必修课及限选课成绩全部及格, 学分不低于 140 分。

6.2 证书规定

证书考核一览表

序号	证书名称	发证单位	等级	备注
1	计算机	山东省教育厅	初级	必考
2	普通话	山东省教育厅	二级乙等以上	必考
3	数控车工	人力资源与社会保障部	中级	选考
4	维修电工	人力资源与社会保障部	中级	选考
5	英语	Chisholm Institute of TAFE, Victoria Australia	Elicos-Pre- intermediate	必考

7. 专业办学基本条件和教学要求

7.1 专业教学团队

本专业现有专任教师 10 人，其中教授 4 人、副教授 3 人、中级职称 3 人、具有硕士学位的 8 人；外籍教师 9 人。专任教师 100%具有双师素质任职资格。

表 14 职业能力课程师资状况表

专业课程 (Unit of Competency)	能力结构要求	校内专任教师	澳方外教
机械制图	双师素质	李**	
MEM13014A - Apply principles of occupational health and safety in the work environment	双师素质	李**	Josh Venu
MEM18001C - Use hand tools	双师素质	杨**	
MEM16006A - Organise and communicate information	双师素质	杨**、李**	
MEM09002B- Interpret technical drawing	双师素质	赵**	
MEM22002A Manage self in an engineering environment	双师素质	牛**、李**	
MEM16008A- Interact with computing technology	双师素质	李**、邵**	James Shen
MEM30031A-	双师素质	赵**	

Operate computer-aided design (CAD) systems to produce basic drawing elements	质	孙**	
MEM09009C- Create 2D drawings using computer aided design system	双师素质	赵**	James Shen
MEM30007A Select common engineering materials	双师素质	牛**、 侯**	
VU22472- Apply electrotechnology principles in an engineering work environment	双师素质	李**、 李**	Josh Venu
VU22480- Implement basic principles of materials science to engineering applications	双师素质	牛**	Damodara Reddy Kodav aluru
VU22505- Write and modify basic CNC programs	双师素质	李**、 李**	David Pepyat
VU22499- Apply hydraulic principles to achieve an engineering task	双师素质	侯**、 郑**	
MEM22001A- Perform engineering activities	双师素质	李**	James Shen
VU21270- Implement control processes using PLCs	双师素质	孙**	Medhi Korki
VU21232-	双师素质	侯**	Medhi Korki

Program, operate and select a robotics system			
MEM23109A- Apply engineering mechanics principles	双师素质	郑**	
VU22451- Investigate advanced technology applications in the manufacturing industry and related industries	双师素质	李**	Adrian Shortland
VU22452- Use communication network concepts and practices in manufacturing and engineering applications	双师素质	李**	You Juan Jia
MEM23004A- Apply Technical Mathematics	双师素质	张** 邵**	Fengxian He

7.2 教学设施

7.2.1 校内实训基地

序号	实训室名称	实训项目	主要设备要求 (含硬件、软件)
1	钳工车间	金工实训	金工实训
2	数控实训车间	数控车床编程与加工、数控铣床及加工中心编程与加工、	数控车削编程与加工 数控铣削编程与加工
3	数控实训基地	学生顶岗实习、社会培训、职业资格鉴定	
4	CAD 实训室	计算机辅助绘图	Auto CAD、机械制图 培养机械识图能力、绘图能力

5	液压与气压传动实训室	液压元件、回路的演示及操作安装	液压与气动技术 液压与气动系统的安装、调试和维修能力
6	电工与电子实训室	电工线路的安装, 电子线路的焊接设计	电工电子技术 电工操作与电子线路焊接、调试基本能力
7	电机实训室	电机拖动控制方法, 电机的维修	电机拖动技术 电机拆装、维修能力及电机控制线路的设计
8	机床故障诊断实训室	常用机床控制电路故障诊断与维修	车床、铣床、磨床、钻床等常用机床控制电路的故障诊断
9	PLC 电气控制实训室	自动控制设计	单片机原理及应用, 可编程控制器原理及应用 机电一体化设备电气控制基本能力
10	焊接车间	各种焊接方法的学习	焊接操作及管理能力 焊接工艺实习
11	机械传动实训室	常用传动机构认识、变速器拆装	机械设计基础

7.2.2 校外实训基地

序号	基地名称	合作单位	主要教学项目
1	***专用汽车有限公司实训基地	***专用汽车有限公司	机械加工及数控加工
2	***股份有限公司实训基地	***股份有限公司	机械加工及数控加工

3	***机械有限公司实训基地	***机械有限公司	机械加工及数控加工
4	***筑路机械有限公司实训基地	***筑路机械有限公司	机械加工及数控加工
5	***特种车有限公司实训基地	***特种车有限公司	PLC 项目实训
6	***伊万福电机有限公司	***伊万福电机有限公司	电气故障维修
7	***电力设备有限公司实训基地	***电力设备有限公司	电气故障维修
8	***工程机械科技有限公司实训基地	***工程机械科技有限公司	单片机项目实训

7.3 教学评价、考核

7.3.1 知识考核

依据《***职业技术学院教学管理工作规范》进行考试或考查并评定成绩。

提倡考试模式创新和改革，采用多种考试方式，如笔试、一张纸考试、大型作业、探究式考试，充分反映学生的知识掌握程度。

7.3.2 实践考核

1. 实验实训

实验实训包括课程实验实训、课程设计、专业综合实训等。实行课程化管理，成绩不合格者不具备毕业资格。

依据《***职业技术学院实验实训教学管理办法》的要求评定成绩。

2. 顶岗实习

顶岗实习是培养学生职业能力的关键教学环节，是深化“工学结合”人才培养模式、强化学生职业道德和职业素质教育的良好途径。实行校企双重考核评价，成绩不合格者不具备毕业资格。

依据《***职业技术学院学生顶岗实习管理办法》的要求评定成绩。

3. 毕业设计（论文）

毕业设计(论文) 是实践教学的重要组成部分, 毕业设计(论文) 按优秀(90—100), 良好(80—89), 中等(70—79), 及格(60—69), 不及格(60 分以下) 五级进行评定。

依据《**职业技术学院毕业设计（论文）工作条例》的要求评定成绩。

7.3.3 能力、素质考核

依据本专业能力、素质考核指标体系, 实行过程性考核。

7.3.4 课程学分替代

提倡学生积极进行创新创业活动与参加职业技能比赛, 获得成绩可参照学院《课程 学分替代制度实施细则》进行学分替代。

执笔人: 李** 审核人: 唐* 修订时间: 2021.05.16