

MANUFACTURING TECHNOLOGY – Associate in Applied Science

Automotive Manufacturing Technology

GENERAL EDUCATION & ELECTIVE COURSES		SEMESTER HOURS
CIS 146	Microcomputer Applications	3
ENG 101	English Composition I	3
MTH 100	Intermediate College Algebra	3
	Natural Science/Mathematics Elective*	3
	Humanities and Fine Arts Elective**	3
PSY 200	General Psychology	3
SPH 106	Fundamentals of Oral Communication	3
ORI 105	Orientation and Student Success	3

Total General Education Credit Hours24

MANUFACTURING TECHNOLOGY CORE COURSES		SEMESTER HOURS
AUT 100	Introduction to Automotive Concepts.....	3
AUT 102	Manufacturing Fundamentals (Lean Manufacturing & OSHA).....	3
AUT 104	Blueprint Reading for Manufacturing (DDT 114, MSP 121).....	3
AUT 114	Intro to Programmable Logic Controllers (ILT 194, INT 184)	3
AUT 116	Introduction to Robotics	3
AUT 197	Special Topics (Machining).....	2
ILT 160	DC Fundamentals (AUT 110, INT 101).....	3
ILT 161	AC Fundamentals (AUT 111, INT 103).....	3
MSP 125	Introduction to Machining Technology	3

Total Manufacturing Technology Core Credit Hours26

AUTOMOTIVE MANUFACTURING TECHNOLOGY OPTION

(Choose 15 credit hours from list below)		SEMESTER HOURS
AUT 106	Quality Control and Inspection Techniques	3
AUT 118	Introduction to Engineering Technology (ILT 100)	3
AUT 130	Fundamentals of Industrial Hydraulics and Pneumatics (ILT 169)	3
AUT 136	Principles of Refrigeration (ASC 111)	3
AUT 138	Principles of Industrial Mechanics (INT 117)	3
AUT 154	Metallurgy	3
AUT 158	Die Fundamentals	3
AUT 160	Die Construction and Tryout	3
AUT 161	Die Maintenance and Repair (CNC 161).....	3
AUT 169	Basic CAD (DDT 104)	3
AUT 190	Special Topics (Welding)	1
AUT 191	Special Topics (Welding)	2
AUT 192	Special Topics (Welding)	3
AUT 193	Special Topics (Electrical/Electronic)	1

AUT 194	Special Topics (Electrical/Electronic)	2
AUT 195	Special Topics (Electrical/Electronic)	3
AUT 196	Special Topics (Machining)	1
AUT 198	Special Topics (Machining)	3
AUT 206	Quality Technician Fundamentals	2
AUT 212	Robot Operation and Programming	3
AUT 213	Robotics Project	3
AUT 217	Elements of Industrial Control II	3
AUT 219	PLC Application	3
AUT 221	Advanced Programmable Logic Controllers (ILT 196).....	3
AUT 230	Preventive and Predictive Maintenance (INT 126)	3
AUT 232	Sensors Technology and Applications (ILT 165).....	3
AUT 234	Industrial Motor Controls I (ILT 209)	3
AUT 250	Introduction to Process Control (ILT 108, INT 105).....	3
AUT 251	Introduction to Servo Control	3
AUT 253	Introduction to Computer Numerical Control	3
AUT 254	CNC Programming	3
AUT 273	Injection Mold Processing	3
AUT 278	Robotic Programming and Welding (WDT 160).....	3
AUT 280	Consumable Welding Process.....	3
AUT 282	Consumable Welding Process Lab	3
AUT 286	SMAW Fillet/OFC (WDT 108).....	3
AUT 287	SMAW Fillet/OFC Lab (WDT 122).....	3
AUT 291	Automotive Cooperative Education.....	1
AUT 292	Automotive Cooperative Education.....	2
AUT 293	Automotive Cooperative Education.....	3
ILT 163	Digital Fundamentals	3
ILT 209	Motor Controls I	3

Total Automotive Manufacturing Technology Option Credit Hours.....15

Total Credit Hours in the Associate in Applied Science - Manufacturing Technology (Automotive Manufacturing Technology Option)65

*Refer to pages 93, 94 & 95 for general education electives

** Introductory foreign language courses cannot be utilized as the only Humanities and Fine Arts elective

MANUFACTURING TECHNOLOGY – Associate in Applied Science

Industrial Maintenance Option

GENERAL EDUCATION & ELECTIVE COURSES		SEMESTER HOURS
CIS 146	Microcomputer Applications	3
ENG 101	English Composition I	3
MTH 100	Intermediate College Algebra	3
	Math/Science Elective*	3
	Humanities and Fine Arts Elective**	3
PSY 200	General Psychology	3
SPH 106	Fundamentals of Oral Communication.....	3
ORI 105	Orientation and Student Success.....	3
Total General Education Credit Hours		24

MANUFACTURING TECHNOLOGY TECHNICAL CORE		SEMESTER HOURS
AUT 130	Fundamentals of Industrial Hydraulics and Pneumatics (ILT 169) .3	.3
AUT 102	Manufacturing Fundamentals (Lean Manufacturing & OSHA)	3
AUT 104	Blueprint Reading for Manufacturing (DDT 114, MSP 121)	3
AUT 114	Intro to Programmable Logic Controllers (ILT 194, INT 184)	3
AUT 116	Introduction to Robotics	3
AUT 197	Special Topics (Machining)	2
ILT 160	DC Fundamentals (AUT 110, INT 101)	3
ILT 161	AC Fundamentals (AUT 111, INT 103)	3
MSP 125	Introduction to Machining Technology.....	3
Total Manufacturing Technology Core Credit Hours		26

INDUSTRIAL MAINTENANCE OPTION COURSES		SEMESTER HOURS
AUT 136	Principles of Refrigeration (ASC 111)	3
AUT 138	Principles of Industrial Mechanics (INT 117)	3
AUT 219	PLC Application	3
AUT 230	Preventive and Predictive Maintenance (INT 126)	3
AUT 250	Introduction to Process Control (ILT 108, INT 105).....	3
ILT 166	Motor and Transformers I.....	3
WDT 108	SMAW Fillet/OFC.....	3
WDT 122	SMAW Fillet/OFC Lab	3
Total Industrial Maintenance Option Credit Hours		24

Total Credit in the Associate in Applied Science – Manufacturing Technology (Industrial Maintenance Option).....74

*Refer to pages 93, 94 & 95 for general education electives

** Introductory foreign language courses cannot be utilized as the only Humanities and Fine Arts elective

MACHINE SHOP – Certificate

GENERAL EDUCATION COURSES		SEMESTER HOURS
CIS 146	Microcomputer Applications	3
ENG 131	Applied Writing I.....	3
MTH 116	Mathematical Applications	3
SPH 106	Fundamentals of Oral Communication.....	3
WKO 110	NCCER Workplace Skills.....	3
Total General Education Credit Hours		15

TECHNICAL CONCENTRATION COURSES		SEMESTER HOURS	CONTACT HOURS
MSP 125	Introduction to Machining Technology	3	7
MSP 102	Intermediate Machining Technology.....	5	11
MSP 103	Advanced Machining Technology.....	5	8
MSP 104	Basic Machining Calculations	2	3
MSP 105	Lathes.....	3	5
MSP 107	Milling Machines.....	3	5
MSP 111	Introduction to Computer Numerical Control (CNC 111).....	2	3
MSP 112	Basic Computer Numerical Control Turning (CNC 112).....	3	5
MSP 121	Basic Blueprint Reading for Machinists (CNC121).....	2	3
MSP 132	Grinding Machines.....	3	5
MSP 142	Advanced Machining Calculation (CNC 142).....	2	3
MSP 171	Intermediate Blueprint Reading	2	3
Please choose CNC Electives from list below		6	
CNC 113	Computer Numeric Control Milling	3	5
CNC 115	Basic Math for Computerized Numerical Control.....	3	3
CNC 143	Applied Trigonometry for CNC Machining	3	3
CNC 181	Special Topics in CNC (Form Grinding).....	3	5
CNC 213	Advanced Computer Numerical Control Milling	3	5
CNC 215	Quality Control and Assurance.....	3	4
CNC 218	Programming and Set-up Electrical Discharge Machine	6	9
CNC 221	Advanced Blueprint Reading for Machinists.....	3	4
CNC 223	Computer Numerical Control Graphics Programming: Milling.....	3	5
CNC 230	Computer Numerical Control Special Projects.....	3	5
CNC 232	Basic Tool and Die.....	4	6
CNC 235	Basic Die Construction	5	9
CNC 281	Special Topics CNC (Heat Treatment).....	3	5
Total Technical Concentration Credit Hours		41	

Total Credit Hours in the Certificate – Machine Shop56

Replacing pages 135 and 136 of General Catalog 2016-2017
 *Addition of Natural Science Elective (4 CH) that was omitted
 *MSP 125 (3 CH) replaced MSP 101 (5CH)

WELDING – Associate in Occupational Technology

GENERAL EDUCATION COURSES		SEMESTER HOURS
CIS 146	Microcomputer Applications	3
ENG 101	English Composition I OR ENG 131 Applied Writing I	3
	Social and Behavioral Science Elective*	3
	Humanities and Fine Arts Elective**	3
MTH 116	Mathematical Applications or Higher Math	3
	Natural Science Elective*	4
SPH 106	Fund of Oral Comm. OR SPH 107 Fund of Public Speaking	3
Total General Education Credit Hours		22

TECHNICAL MAJOR CONCENTRATION & ELECTIVE COURSES		SEMESTER HOURS	CONTACT HOURS
WDT 108	SMAW Fillet/OFC	3	4
WDT 109	SMAW Fillet PAC/CAC	3	4
WDT 110	Industrial Blueprint Reading	3	3
WDT 119	Gas Metal Arc/Flux Cored Arc Welding Theory	3	4
WDT 120	Shielded Metal Arc Welding Groove	3	4
WDT 122	SMAW Fillet/ OFC Lab	3	6
WDT 123	SMAW Fillet PAC/CAC Lab	3	6
WDT 124	Gas Metal Arc/Flux Cored Arc Welding Lab	3	6
WDT 125	Shielded Metal Arc Welding Groove Lab	3	6
WKO 110	Orientation/NCCER Core	3	4
WDT Electives (Choose from below)		6	
	WDT 115/155 GTAW Carbon Pipe/Lab OR	6	10
	WDT 217/257 SMAW Carbon Pipe/Lab OR	6	10
	WDT 228/268 GAS Tungsten Arc Welding/Lab	6	10
Total Technical Concentration Major Credit Hours		36	

TECHNICAL MINOR CONCENTRATION & ELECTIVE COURSES (Choose One Option Below)		SEMESTER HOURS	CONTACT HOURS
Minor Option 12 Semester Hours			
DDT 104	Basic Computer Aided Drafting	3	5
DDT 111	Fundamentals of Drafting & Design Technology	3	5
DDT 144	Basic 3-D Modeling	3	5
DDT 127	Intermediate CAD	3	5
Minor Option 13 Semester Hours			
MSP 104	Basic Machining Calculations	2	3
MSP 105	Lathes	3	5
MSP 107	Milling Machines	3	5
MSP 121	Basic Blueprint Reading for Machinists (CNC121)	2	3
MSP 125	Introduction to Machining Technology	3	7

Total Technical Concentration Minor Credit Hours 12-13

**Total Credit Hours in the Associate in Occupational Technology –
Welding 70-71**

*Refer to pages 93, 94 & 95 for general education electives

** Introductory foreign language courses cannot be utilized as the only Humanities and Fine Arts elective

Addendum 4

WELDING – Certificate

GENERAL EDUCATION COURSES		SEMESTER HOURS
CIS 146	Microcomputer Applications	3
ENG 101	English Composition or ENG 131 Applied Writing.....	3
MTH 116	Mathematical Applications or Higher Math	3
SPH 106	Fund of Oral Communication or SPH 107 Fund of Public Spkg	3
Total General Education Credit Hours		12

TECHNICAL MAJOR CONCENTRATION & ELECTIVE COURSES		SEMESTER HOURS	CONTACT HOURS
WDT 108	SMAW Fillet/OFC.....	3	4
WDT 109	SMAW Fillet PAC/CAC.....	3	4
WDT 110	Industrial Blueprint Reading.....	3	3
WDT 119	Gas Metal Arc/Flux Cored Arc Welding Theory	3	4
WDT 120	Shielded Metal Arc Welding Groove	3	4
WDT 122	SMAW Fillet/ OFC Lab.....	3	6
WDT 123	SMAW Fillet PAC/CAC Lab	3	6
WDT 124	Gas Metal Arc/Flux Cored Arc Welding Lab.....	3	6
WDT 125	Shielded Metal Arc Welding Groove Lab	3	6
WDT Electives (Choose from below).....		6	
	WDT 115/155 GTAW Carbon Pipe/Lab OR	6	10
	WDT 217/257 SMAW Carbon Pipe/Lab OR	6	10
	WDT 228/268 GAS Tungsten Arc Welding/Lab	6	10
WKO 110	Orientation/NCCER Core	3	4
Total Technical Concentration Major Credit Hours		36	

		SEMESTER HOURS	CONTACT HOURS
<i>(Choose one set of Technical Electives from below)</i>			
DDT 104	Basic Computer Aided Drafting	3	5
DDT 111	Fundamentals of Drafting & Design Technology.....	3	5
DDT 144	Basic 3-D Modeling.....	3	5
DDT 127	Intermediate CAD.....	3	5

OR

MSP 104	Basic Machining Calculations	2	3
MSP 107	Milling Machines	3	5
MSP 121	Basic Blueprint Reading for Machinists (CNC121).....	2	3
MSP 125	Introduction to Machining Technology	3	7

Total Technical Electives..... 10-12

Total General Education, Technical Concentration & Elective Courses Credit Hours 58-60

COMPUTER SCIENCE – Associate in Applied Science Degree

GENERAL EDUCATION	SEMESTER HOURS
ENG 101 English Composition I	3
CIS 146 Microcomputer Applications	3
MTH 100 Intermediate College Algebra	3
MTH 112 Pre-calculus Algebra	3
Natural Science Elective*	4
Humanities Electives	3
PSY 200 General Psychology or History, Social and Behavior Sciences Elective*	3
SPH 106 Fund. Oral Comm. OR SPH 107 Fund. of Public Spkg	3
ORI 105 Orientation and Student Success	3

Total General Education Credit Hours28

TECHNICAL CONCENTRATION & ELECTIVE COURSES	SEMESTER HOURS
CIS 130 Intro to Information Systems	3
CIS 150 Introduction to Computer Logic and Programming.....	3
CIS 199 Network Communications	3
CIS 268 Software Support	3
CIS 269 Hardware Support	3
Computer Science Electives (From CIS prefix listed in catalog).....	15
Electives***	6

Total General Education, Technical Concentration & Elective Courses Credit Hours 36

Total Credit Hours in the Associate in Applied Science – Computer Science64

*Refer to pages 93, 94 & 95 for general education electives

**A higher placement score may allow a student to exempt MTH 100 and proceed directly to MTH 112.

***Electives may come from any area

COMPUTER SCIENCE – Certificate

GENERAL EDUCATION COURSES		SEMESTER HOURS
CIS 146	Microcomputer Applications	3
ENG 101	English Composition I	3
MTH 100	Intermediate College Algebra	3
MTH 112	Pre-calculus Algebra	3
SPH 106	Fundamentals of Oral Communication	3
ORI 105	Orientation and Student Success	3

Total General Education Credit Hours18

GENERAL EDUCATION, TECHNICAL CONCENTRATION & ELECTIVE COURSES		SEMESTER HOURS
BUS 241	Principles of Accounting I	3
CIS 130	Intro to Information Systems	3
CIS 150	Introduction to Computer Logic and Programming.....	3
CIS 191	Intro to Computer Programming Concept	3
CIS 199	Network Communications	3
CIS 207	Introduction to Web Development.....	3
CIS 268	Software Support	3
CIS 269	Hardware Support	3
CIS 281	Systems Analysis and Design	3
Computer Science Electives (From CIS prefix listed in catalog)		15

**Total General Education, Technical Concentration &
 Elective Courses Credit Hours42**

Total Credit Hours in the Certificate – Computer Science 60

MTH 098 Elementary Algebra: 3 Institutional credits

Prerequisite: MTH 090, with grade of “C” or higher, or appropriate mathematics placement score

This course is a review of the fundamental arithmetic and algebra operations. The topics include the numbers of ordinary arithmetic and their properties; integers and rational numbers; the solving of equations; polynomials and factoring; and an introduction to systems of equations and graphs.

MTH 100 Intermediate College Algebra: 3 credits

Prerequisite: MTH 098, with grade of “C” or higher, or appropriate mathematics placement score

This course provides a study of algebraic techniques such as linear equations and inequalities, quadratic equations, systems of equations, and operations with exponents and radicals. Functions and relations are introduced and graphed with special emphasis on linear and quadratic functions. This course does not apply toward the general core requirement for mathematics. Code B

MTH 103 Introduction to Technical Mathematics: 3 credits

Prerequisite: MTH 098, with grade of “C” or higher, or appropriate mathematics placement score

This course is designed for the student in technology who needs basic arithmetic and algebraic skills. Right triangle trigonometric skills and applications will also be a focus. Code C

MTH 110 Finite Mathematics: 3 credits

Prerequisite: Minimum ACT Math score of 21 or mathematics placement score of 25-45. An alternative to this is that the student should successfully pass with a C or higher (S if taken pass/fail) MTH 100, Intermediate College Algebra.

This course is intended to give an overview of topics in finite mathematics together with their application, and is taken primarily by students who are not majoring in science, engineering, commerce, or mathematics (i.e., students who are not required to take Calculus). This course will draw on and significantly enhance the student’s arithmetic and algebraic skills. This course includes sets, counting, permutations, combinations, basic probability (including Baye’s Theorem), and introduction to statistics (including work with Binomial Distributions and Normal Distributions), matrices and their applications to Markov chains and decision theory. Additional topics may include symbolic logic, linear models, linear programming, the simplex method and applications. Code A

MTH 116 Mathematical Applications: 3 credits

Prerequisite: MTH 090, with grade of “C” or higher, or appropriate mathematics placement score

This course provides practical applications of mathematics and includes selected topics from consumer math and algebra. Some types included are integers, percent, interest, ratio and proportion, metric system, probability, linear equations, and problem solving. Code C

MTH 125 Calculus I: 4 credits

Prerequisite: A minimum ACT Math score of 24 or mathematics placement score of 46-100. An alternative to this is that the student should successfully pass with a C or higher MTH 113.

This is the first of three courses in the basic calculus sequence taken primarily by students in science, engineering, and mathematics. Topics include the limit of a function; the derivative of algebraic, trigonometric, exponential, and logarithmic functions; and the definite integral and its basic applications to area problems. Applications of the derivative are covered in detail, including approximations of error using differentials, maximum and minimum problems, and curve sketching using calculus. Code A

MANUFACTURING TECHNOLOGY – Certificate

AUTOMOTIVE MANUFACTURING - Certificate

GENERAL EDUCATION COURSES		SEMESTER HOURS
CIS 146	Microcomputer Applications	3
ENG 101	English Composition I	3
MTH 100	Intermediate College Algebra	3
SPH 106	Fundamentals of Oral Communication	3
ORI 105	Orientation and Student Success	3

Total General Education Credit Hours15

MANUFACTURING TECHNOLOGY CORE COURSES		SEMESTER HOURS
AUT 102	Manufacturing Fundamentals (Lean Manufacturing & OSHA)	3
AUT 104	Blueprint Reading for Manufacturing (DDT 114, MSP 121)	3
AUT 114	Intro to Programmable Logic Controllers (ILT 194, INT 184)	3
AUT 116	Introduction to Robotics	3
ILT 160	DC Fundamentals (AUT 110, INT 101)	3
ILT 161	AC Fundamentals (AUT 111, INT 103)	3

Total Manufacturing Technology Core Credit Hours18

AUTOMOTIVE MANUFACTURING TECHNOLOGY COURSES

(Choose 12 hours from the list below)

		SEMESTER HOURS
AUT 106	Quality Control and Inspection Techniques	3
AUT 118	Introduction to Engineering Technology (ILT 100)	3
AUT 130	Fundamentals of Industrial Hydraulics and Pneumatics (ILT 169)	3
AUT 136	Principles of Refrigeration (ASC 111)	3
AUT 138	Principles of Industrial Mechanics (INT 117)	3
AUT 154	Metallurgy	3
AUT 158	Die Fundamentals	3
AUT 160	Die Construction and Tryout	3
AUT 161	Die Maintenance and Repair (CNC 161)	3
AUT 169	Basic CAD (DDT 104)	3
AUT 190	Special Topics (Welding)	1
AUT 191	Special Topics (Welding)	2
AUT 192	Special Topics (Welding)	3
AUT 193	Special Topics (Electrical/Electronic)	1
AUT 194	Special Topics (Electrical/Electronic)	2
AUT 195	Special Topics (Electrical/Electronic)	3
AUT 196	Special Topics (Machining)	1
AUT 198	Special Topics (Machining)	3
AUT 206	Quality Technician Fundamentals	2
AUT 212	Robot Operation and Programming	3

Replacing page 138 of General Catalog 2016 - 2017
 Total hours for STC Basic Gas Metal Arc Welding is 15

WELDING - Short Certificates

BASIC SHIELDED METAL ARC WELDING

TECHNICAL CONCENTRATION COURSES		SEMESTER HOURS	CONTACT HOURS
WDT 108	SMAW Fillet/OFC.....	3	4
WDT 109	SMAW Fillet/PAC/CAC	3	4
WDT 122	SMAW Fillet/OFC Lab.....	3	6
WDT 123	SMAW Fillet PAC/CAC Lab	3	6

**Total Credit Hours in the Short Certificate –
 Basic Shielded Metal Arc Welding.....12**

BASIC GAS METAL ARC WELDING – Short Certificate

TECHNICAL CONCENTRATION COURSES		SEMESTER HOURS	CONTACT HOURS
WDT 110	Industrial Blueprint Reading.....	3	3
WDT 119	Gas Metal Arc/Flux Cored Arc Welding Theory	3	4
WDT 124	Gas Metal Arc/Flux Cored Arc Welding Lab.....	3	6
WDT 120	Shielded Metal Arc Welding Groove	3	4
WDT 125	Shielded Metal Arc Welding Groove Lab	3	6

Total Credit Hours in the Short Certificate –Basic Gas Metal Arc Welding.15

BASIC GAS TUNGSTEN ARC WELDING

TECHNICAL CONCENTRATION COURSES		SEMESTER HOURS	CONTACT HOURS
WDT 120	Shielded Metal Arc Welding Groove	3	4
WDT 125	Shielded Metal Arc Welding Groove Lab	3	6
WDT 228	GAS Tungsten Arc Welding.....	3	4
WDT 268	GAS Tungsten Arc Welding Lab.....	3	6

**Total Credit Hours in the Short Certificate –
 Basic Tungsten Arc Welding.....12**