

Computer Integrated Machining

A50210 (Associate) D50210 (Diploma) C50210C, C50210D, C50210M (Certificates)

This curriculum prepares students with the analytical, creative and innovative skills necessary to take a production idea from an initial concept through design development and production, resulting in a finished product.

Coursework may include manual machining, computer applications, engineering design, computer-aided drafting (CAD), computer-aided machining (CAM), blueprint interpretation, advanced computerized numeric control (CNC) equipment, basic and advanced machining operations, precision measurement and high-speed multi-axis machining.

Graduates should qualify for employment as machining technicians in high-tech manufacturing, rapid-prototyping and rapid-manufacturing industries, specialty machine shops, fabrication industries, and high-tech or emerging industries such as aerospace, aviation, medical, and renewable energy and to sit for machining certification examinations.

In addition to the courses listed below, students may be required to take transition/co-requisite classes based on RISE criteria. These classes do not count toward hours required for graduation.

Associate Degree Program

Title		Class/Lab/Credit			
<i>I. General Education Courses</i>					
COM	120	Interpersonal Communications	3	0	3
		or			
COM	231	Public Speaking	3	0	3
ENG	111	Writing and Inquiry	3	0	3
MAT	121	Algebra/Trigonometry	2	2	3
Select one course each from page 79:					
		Humanities/Fine Arts	3	0	3
		Social and Behavioral Science	3	0	3
<i>II. Major Courses</i>					
BPR	111	Print Reading	1	2	2
MAC	121	Introduction to CNC	2	0	2
MAC	141	Machining Applications I	2	6	4
MAC	142	Machining Applications II	2	6	4
<i>III. Other Major Requirements</i>					
<i>Take 8 credits</i>					
ISC 112		Industrial Safety	2	0	2
MEC	142	Physical Metallurgy	1	2	2
PLA	110	Introduction to Plastics	2	0	2
WLD	112	Basic Welding Processes	1	3	2
WBL	111	Work-Based Learning I	0	10	1
WBL	112	Work-Based Learning I	0	20	2
WBL	113	Work-Based Learning I	0	30	3

WBL	114	Work-Based Learning I	0	40	4
WBL	121	Work-Based Learning II	0	10	1
WBL	122	Work-Based Learning II	0	20	2
WBL	123	Work-Based Learning II	0	30	3
WBL	124	Work-Based Learning II	0	40	4
WBL	131	Work-Based Learning III	0	10	1
WBL	132	Work-Based Learning III	0	20	2
WBL	133	Work-Based Learning III	0	30	3
WBL	134	Work-Based Learning III	0	40	4
WBL	211	Work-Based Learning IV	0	10	1
WBL	212	Work-Based Learning IV	0	20	2
WBL	213	Work-Based Learning IV	0	30	3
WBL	214	Work-Based Learning IV	0	40	4

Take 29 credits

CIS 110	Introduction to Computers	2	2	3
DFT	119 Basic CAD	1	2	2
MAC	114 Intro to Metrology	2	0	2
MAC	122 CNC Turning	1	3	2
MAC	124 CNC Milling	1	3	2
MAC	143 Machining Applications III	2	6	4
MAC	151 Machining Calculations	1	2	2
MAC	152 Advanced Machining Calculations	1	2	2
MAC	222 Advanced CNC Turning	1	3	2
MAC	224 Advanced CNC Milling	1	3	2
MAC	231 CNC Graphics Prog: Turning	1	4	3
MAC	232 CNC Graphics Prog: Milling	1	4	3
MAC	241 Jigs & Fixtures I	2	6	4

IV. Other Required Courses

ACA	115 Study Skills	0	2	1
ACA	220 <i>Professional Transition</i>	1	0	1

Total Credits: 66

Recommended Semester Schedule

First Year-Fall

ACA	115 Study Skills	0	2	1
BPR	111 Print Reading	1	2	2
MAC	121 Introduction to CNC	2	0	2
MAC	141 Machining Applications I	2	6	4
MAC	151 Machining Calculations	1	2	2
MAC	114 Intro to Metallurgy	2	0	2

First Year-Spring

CIS 110	Introduction to Computers	2	2	3
DFT	119 Basic CAD	1	2	2

MAC	122	CNC Turning	1	3	2
MAC	124	CNC Milling	1	3	2
MAC	142	Machining Applications II	2	6	4
PLA	110	Introduction to Plastics	2	0	2

First Year-Summer

ENG	111	Writing and Inquiry	3	0	3
MAT	121	Algebra/Trigonometry	2	2	3
Humanities/Fine Arts Elective- see list on page 79			3	0	3

Second Year-Fall

ISC 112	Industrial Safety		2	0	2
MAC	143	Machining Applications III	2	6	4
MAC	222	Advanced CNC Turning	1	3	2
MAC	231	CNC Graphics Prog.: Turning	1	4	3
MEC	142	Physical Metallurgy	1	2	2
WLD	112	Basic Welding Processes	1	3	2

Second Year-Spring

<i>ACA</i>	<i>220</i>	<i>Professional Transition</i>	<i>1</i>	<i>0</i>	<i>1</i>
COM	120	Interpersonal Communications	3	0	3
MAC	152	Advanced Machining Calculations	1	2	2
MAC	224	Advanced CNC Milling	1	3	2
MAC	232	CNC Graphics Prog.: Milling	1	4	3
Social/Behavioral Science Elective-see list on page 79			3	0	3

Note: WBL 111, 112, 113, 114, 121, 122, 123, 124, 131, 132, 133, 134, 211, 212, 213, 214 may count for any of the following: MAC 151, MAC 247, DFT 119, MAC 122, MAC 124, PLA 110, WLD 112, MAC 222, MAC 231, MAC 143, MEC 142, MAC 152, MAC 224, MAC 232

Computer Integrated Machining Diploma Program (D50210)

<u>Title</u>	<u>Class/Lab/Credit</u>
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I. General Education Courses

ENG	101	Applied Communications	3	0	3
MAT	110	Mathematical Measurement and Literacy	2	2	3

II. Major Courses

BPR	111	Print Reading	1	2	2
MAC	121	Introduction to CNC	2	0	2
MAC	141	Machining Applications I	2	6	4
MAC	142	Machining Applications II	2	6	4

III. Other Major Requirements

Take 19 credits

CIS 110	Introduction to Computers		2	2	3
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ISC 112	Industrial Safety	2	0	2
MAC 124	CNC Milling	1	3	2
MAC 151	Machining Calculations	1	2	2
MAC 231	CAM: CNC Turning	1	4	3
MAC 232	CNC Graphics Prog: Milling	1	4	3
MEC 142	Physical Metallurgy	1	2	2
PLA 110	Introduction to Plastics	2	0	2
WBL 111	Work-Based Learning I	0	10	1
WBL 112	Work-Based Learning I	0	20	2
WBL 121	Work-Based Learning II	0	10	1
WBL 122	Work-Based Learning II	0	20	2
WBL 131	Work-Based Learning III	0	10	1
WBL 132	Work-Based Learning III	0	20	2
WBL 211	Work-Based Learning IV	0	10	1
WBL 212	Work-Based Learning IV	0	20	2

IV. Other Required Courses

ACA 115	Success and Study Skills	0	2	1
ACA 220	Professional Transition	1	0	1

Total Credits: 39

Recommended Semester Schedule

First Year-Fall

BPR 111	Print Reading	1	2	2
MAC 121	Introduction to CNC	2	0	2
MAC 141	Machining Applications I	2	6	4
ACA 115	Success and Study Skills	0	2	1

First Year-Spring

MAC 124	CNC Milling	1	3	2
MAC 142	Machining Applications II	2	6	4
MAC 232	CNC Graphics Prog: Milling	1	4	3
PLA 110	Introduction to Plastics	2	0	2

First Year-Summer

CIS 110	Introduction to Computers	2	2	3
ENG 101	Applied Communications	3	0	3
MAT 110	Mathematical Measurement and Literacy	2	2	3

Second Year-Fall

ACA 220	Professional Transition	1	0	1
ISC 112	Industrial Safety	2	0	2
MAC 151	Machining Calculations	1	2	2
MAC 231	CAM: CNC Turning	1	4	3
MEC 142	Physical Metallurgy	1	2	2

CNC Machine Operator Certificate (C50210C)

Title	Class/Lab/Credit
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I. Major Courses

BPR	111	Print Reading	1	2	2
MAC	121	Introduction to CNC	2	0	2
MAC	122	CNC Turning	1	3	2
MAC	124	CNC Milling	1	3	2
MAC	141	Machine Applications I	2	6	4
MAC	142	Machine Applications II	2	6	4

Total Credits: 16

Recommended Semester Schedule

First Year-Fall

BPR	111	Print Reading	1	2	2
MAC	121	Introduction to CNC	2	0	2
MAC	141	Machine Applications I	2	6	4

First Year-Spring

MAC	122	CNC Turning	1	3	2
MAC	124	CNC Milling	1	3	2
MAC	142	Machine Applications II	2	6	4

CADCAM Certificate (C50210D)

Title	Class/Lab/Credit
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I. Major Courses

BPR	111	Print Reading	1	2	2
MAC	141	Machine Applications I	2	6	4
MAC	142	Machine Applications II	2	6	4

II. Other Major Courses

MAC	231	CNC Graphics Prog.: Turning	1	4	3
MAC	232	CNC Graphics Prog: Milling	1	4	3

Total Credits: 16

Recommended Semester Schedule

First Year-Fall

BPR	111	Print Reading	1	2	2
MAC	141	Machine Applications I	2	6	4
MAC	231	CNC Graphics Prog.: Turning	1	4	3

First Year-Spring

MAC	142	Machine Applications II	2	6	4
MAC	232	CNC Graphics Prog: Milling	1	4	3

Manual Machine Operator (C50210M)

Title	Class/Lab/Credit
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I. Major Courses

BPR	111	Print Reading	1	2	2
MAC	121	Introduction to CNC	2	0	2
MAC	141	Machine Applications I	2	6	4
MAC	142	Machine Applications II	2	6	4

II. Other Major Courses

MAC	151	Machine Calculations I	1	2	2
MAC	152	Machine Calculations II	1	2	2
MEC	142	Physical Metallurgy	1	2	2

Total Credits: 18

Recommended Semester Schedule

First Year-Fall

BPR	111	Print Reading	1	2	2
MAC	121	Introduction to CNC	2	0	2
MAC	141	Machine Applications I	2	6	4
MAC	151	Machine Calculations I	1	2	2

First Year-Spring

MAC	142	Machine Applications II	2	6	4
MAC	152	Machine Calculations II	1	2	2
MEC	142	Physical Metallurgy	1	2	2