Program Information Report

Advanced Manufacturing

Mechatronics - Robotics and Automated Systems (APMRAS)

Associate in Applied Science Degree

Program Effective Term: **Fall 2024**

High Skill Occupation

This technology-driven program prepares students for entry-level positions within the mechatronics field as an automated equipment technicians. These technicians assemble, install, program, troubleshoot and maintain robotic systems and other automated equipment. This evolving field is suited towards people who enjoy working with technology to solve problems. Students will gain understanding of all systems involved with automation including: Digital and electromechanical systems and programming them (PLC), control of mechanical systems, computer aided design (CAD), robotics with vision and other systems. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor for assistance in planning your path.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, 3D printing are suited for this line of work.

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: https://www.wccnet.edu/learn/transfer-wcc-credits/articulation-agreements.php.

First Semester		**(17 credits)**
ELE 111	Electrical Fundamentals	4
MEC 101	Blueprint Reading for Manufacturing	2
MEC 105	Pneumatics and Hydraulics in Fluid Power	4
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3

Second Semester		**(14 credits)**
ELE 211	Basic Electronics	4
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
ROB 212	Robotics II	4
Elective	Writing Elective(s)	3

Third Semester		**(16 credits)**
ELE 224	Programmable Controllers (PLCs) I	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
ROB 221	Robotics III	4
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Fourth Semester		**(16 credits)**
ELE 254	Programmable Controllers (PLCs) II	4
MEC 101	Blueprint Reading for Manufacturing	2
MEC 224	Mechatronics Capstone	4
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: **63**

Notes:

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Program Information Report

Science, Computer Technology, Engineering & Math

Mechatronics - Robotics and Automated Systems (APMRAS)

Associate in Applied Science Degree

Program Effective Term: **Fall 2024**

High Skill Occupation

This technology-driven program prepares students for entry-level positions within the mechatronics field as an automated equipment technicians. These technicians assemble, install, program, troubleshoot and maintain robotic systems and other automated equipment. This evolving field is suited towards people who enjoy working with technology to solve problems. Students will gain understanding of all systems involved with automation including: Digital and electromechanical systems and programming them (PLC), control of mechanical systems, computer aided design (CAD), robotics with vision and other systems. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor for assistance in planning your path.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, 3D printing are suited for this line of work.

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: https://www.wccnet.edu/learn/transfer-wcc-credits/articulation-agreements.php.

First Semester		**(17 credits)**
ELE 111	Electrical Fundamentals	4
MEC 101	Blueprint Reading for Manufacturing	2
MEC 105	Pneumatics and Hydraulics in Fluid Power	4
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3

Second Semester		**(14 credits)**
ELE 211	Basic Electronics	4
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
ROB 212	Robotics II	4
Elective	Writing Elective(s)	3

Third Semester		**(16 credits)**
ELE 224	Programmable Controllers (PLCs) I	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
ROB 221	Robotics III	4
Elective	Speech/Comp. Elective(s)	3
Elective	Arts/Human. Elective(s)	3

Fourth Semester		**(16 credits)**
ELE 254	Programmable Controllers (PLCs) II	4
MEC 101	Blueprint Reading for Manufacturing	2
MEC 224	Mechatronics Capstone	4
Elective	Nat. Sci. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Minimum Credits Required for the Program: **63**

Notes:

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Received by C&A 1/8/24

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE FORM

Program Code: APMRAS	**Current Program Name: Mechatronics - Robotics and Automated Systems**	**Effective Term: Fall 2024**
Division Code: ATP	**Department:** AMTD	

Directions:

1. Attach the current program listing from the WCC catalog or website and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using CurricUNET, but should be submitted at the same time as the program change form.
4. If changes affect the program assessment plan or if program outcomes are updated, please submit a Program Assessment Plan Change form. These changes must be approved separately from the program change form and should be submitted at the same time. Current program assessment plans can be found on the Curriculum and Assessment Program Information page.

Requested Changes:

- ☐ Remove course(s): _____
- ☐ Add course(s): _____
- ☐ Program title (new title is _____)
- ☐ Description
- ☐ Advisors
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements

Show all changes on the catalog page you attach.

* Please submit a Program Assessment Plan Change form.

- ☐ Program outcomes (may also result from removing or adding a course)*
- ☐ Program assessment plan*
- ☐ Accreditation information
- ☒ Other Layout changes

Note: A change to the Award Type requires the submission of a new program proposal form and a separate program inactivation form. Contact the Director of Curriculum & Assessment for more information.

Rationale for proposed changes:

Division is updating layouts to align with forthcoming part-time layouts

Financial/staffing/equipment/space implications:

List departments that have been consulted regarding their use of this program.

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Allan Coleman		1/8/24
Department Chair	Allan Coleman		1/8/24
Division Dean/Administrator	Jimmie Baber		1/8/24

Please return completed form to the Office of Curriculum & Assessment, SC 257
or by e-mail to curriculum.assessment@wccnet.edu
Once reviewed by the appropriate faculty committees we will secure the signature of the VPI.

Reviewer	Print Name	Signature	Date

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE FORM

Curriculum Committee Chair	Randy Van Wagnen		2-12-24
Assessment Committee Chair	Jessica Hale		2/16/24
Interim Vice President for Instruction	Dr. Brandon Tucker		2/19/24

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Reviewed by C&A committees 2/1/24

Program Information Report

Manufacturing & Automotive

Mechatronics - Robotics and Automated Systems (APMRAS)

Associate in Applied Science Degree

Program Effective Term: **Fall 2022**

High Skill Occupation

This technology-driven program prepares students for entry-level positions within the mechatronics field as an automated equipment technicians. These technicians assemble, install, program, troubleshoot and maintain robotic systems and other automated equipment. This evolving field is suited towards people who enjoy working with technology to solve problems. Students will gain understanding of all systems involved with automation including: Digital and electromechanical systems and programming them (PLC), control of mechanical systems, computer aided design (CAD), robotics with vision and other systems. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor for assistance in planning your path.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, 3D printing are suited for this line of work.

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: https://www.wccnet.edu/learn/transfer-wcc-credits/articulation-agreements.php.

First Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
MEC 101	Blueprint Reading for Manufacturing	2
MEC 105	Pneumatics and Hydraulics in Fluid Power	4
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2

Second Semester		**(14 credits)**
ELE 211	Basic Electronics	4
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
ROB 212	Robotics II	4
Elective	Math Elective(s)	3

Third Summer Semester		**(8 credits)**
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
Elective	Writing Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Fourth Semester		**(14 credits)**
ELE 224	Programmable Controllers (PLCs) I	4
ROB 221	Robotics III	4
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fifth Semester		**(13 credits)**
ELE 254	Programmable Controllers (PLCs) II	4
MEC 201	Mechanisms	2
MEC 224	Mechatronics Capstone	4
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Program: **63**

Notes:

Program Information Report

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Program Information Report

Science, Computer Technology, Engineering & Math

Mechatronics - Robotics and Automated Systems (APMRAS)

Associate in Applied Science Degree

Program Effective Term: **Fall 2022**

High Skill Occupation

This technology-driven program prepares students for entry-level positions within the mechatronics field as an automated equipment technicians. These technicians assemble, install, program, troubleshoot and maintain robotic systems and other automated equipment. This evolving field is suited towards people who enjoy working with technology to solve problems. Students will gain understanding of all systems involved with automation including: Digital and electromechanical systems and programming them (PLC), control of mechanical systems, computer aided design (CAD), robotics with vision and other systems. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor for assistance in planning your path.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, 3D printing are suited for this line of work.

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: https://www.wccnet.edu/learn/transfer-wcc-credits/articulation-agreements.php.

First Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
MEC 101	Blueprint Reading for Manufacturing	2
MEC 105	Pneumatics and Hydraulics in Fluid Power	4
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2

Second Semester		**(14 credits)**
ELE 211	Basic Electronics	4
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
ROB 212	Robotics II	4
Elective	Math Elective(s)	3

Third Summer Semester		**(8 credits)**
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
Elective	Writing Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Fourth Semester		**(14 credits)**
ELE 224	Programmable Controllers (PLCs) I	4
ROB 221	Robotics III	4
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3

Fifth Semester		**(13 credits)**
ELE 254	Programmable Controllers (PLCs) II	4
MEC 201	Mechanisms	2
MEC 224	Mechatronics Capstone	4
Elective	Arts/Human. Elective(s)	3

Minimum Credits Required for the Program: **63**

Notes:

Program Information Report

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Received by C&A 1/21/22

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE FORM

Program Code: APMETR	**Current Program Name: Mechatronics**	**Effective Term: Fall 2022**
Division Code: ATP	**Department:** Advanced Manufacturing	

Directions:

1. Attach the current program listing from the WCC catalog or website and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using CurricUNET, but should be submitted at the same time as the program change form.
4. If changes affect the program assessment plan or if program outcomes are updated, please submit a Program Assessment Plan Change form. These changes must be approved separately from the program change form and should be submitted at the same time. Current program assessment plans can be found on the Curriculum and Assessment Program Information page.

Requested Changes:

☒ Remove course(s): All FLP, NCT 110,121,123,221
☒ Add course(s): NCT100, MEC105,
☒ Program title (new title is: Mechatronics – Robotics and Automated Systems)
☒ Description (attached)
☐ Advisors
☐ Program admission requirements
☐ Continuing eligibility requirements

Show all changes on the catalog page you attach.

* Please submit a Program Assessment Plan Change form.

☐ Program outcomes (may also result from removing or adding a course)*
☐ Program assessment plan*
☐ Accreditation information
☐ Other Replace ROB 222 & 223 with 221. Removing all concentrations.

Note: A change to the Award Type requires the submission of a new program proposal form and a separate program inactivation form. Contact the Director of Curriculum & Assessment for more information.

Rationale for proposed changes: Student completion is low due to finding careers and not returning. This degree had three concentrations for specialization at max credits of 69-71. This revision will allow standard completion closer to 60 credit threshold with two embedded certificates. NCT 100 is a course replacing MTT102 updated to current technology. MEC 105 combines FLP101/110/and 226. Existing outcomes and assessment are appropriate for this program change.

Financial/staffing/equipment/space implications:
None

List departments that have been consulted regarding their use of this program.
Not required.

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Allan Coleman	Allan Coleman	12/15/2021
Department Chair	Allan Coleman	Allan Coleman	01/17/2022
Division Dean/Administrator	Jimmie Baber	Jimmie Baber	1/21/2022

Please return completed form to the Office of Curriculum & Assessment, SC 257

PROGRAM CHANGE FORM

or by e-mail to curriculum.assessment@wccnet.edu Once reviewed by the appropriate faculty committees we will secure the signature of the VPI and President.			
Reviewer	**Print Name**	**Signature**	**Date**
Curriculum Committee Chair	Randy Van Wagnen		2-15-22
Assessment Committee Chair	Shawn Deron		3/03/2022
Vice President for Instruction	Kimberly Hurns		

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Reviewed by C&A Committees 2/3/22

Program Information Report

Science, Computer Technology, Engineering & Math

Mechatronics (APMETR)

Associate in Applied Science Degree

Program Effective Term: Fall 2019

High Skill Occupation

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots and maintains robotic and automated equipment. Students have a choice to follow any of three different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 120 2D CAD CAM for Shape Cutting
NCT 121 Manual Programming and NC Tool Operation
NCT 123 2D CAD CAM CNC Programming for Mills and Lathes
NCT 221 Advanced Manual Programming and NC Tool Operation

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Minimum Concentration Credits Required for the Program: **69**
Select a concentration for requirements and total credits required for the program.

Mechatronics Concentrations

Fluid Power Specialty (FPWR)		(69 credits)
First Fall Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3
First Winter Semester		**(16 credits)**
ELE 111	Electrical Fundamentals	4
ROB 212	Robotics II	4
MEC 100	Materials and Processes	3

Program Information Report

MTT 102	Machining for the Technologies	2
Elective	Writing Elective(s)	3
First Spring/Summer Semester		**(11 credits)**
FLP 226	Pneumatics	3
MEC 101	3D Modeling and Blueprint Reading	2
Elective	Speech/Comp. Elective(s)	3
Elective	Soc. Sci Elective(s)	3
Second Fall Semester		**(14 credits)**
ELE 224	Programmable Controllers (PLCs) I	4
FLP 214	Hydraulic Circuits and Controls	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
MEC 201	Mechanisms	2
Second Winter Semester		**(13 credits)**
FLP 225	Fluid Power Motion Control	3
MEC 224	Robotics IV	4
Elective	Arts/Human. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 69

Industrial Electronics Specialty (IELC)		**(70 credits)**
First Fall Semester		**(15 credits)**
ELE 111	Electrical Fundamentals	4
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s)	3
First Winter Semester		**(14 credits)**
ELE 211	Basic Electronics	4
ROB 212	Robotics II	4
MEC 100	Materials and Processes	3
Elective	Writing Elective(s)	3
First Spring/Summer Semester		**(11 credits)**
FLP 226	Pneumatics	3
MEC 101	3D Modeling and Blueprint Reading	2
Elective	Arts/Human. Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Second Fall Semester		**(16 credits)**
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
ELE 224	Programmable Controllers (PLCs) I	4
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
MEC 201	Mechanisms	2
MTT 102	Machining for the Technologies	2
Second Winter Semester		**(14 credits)**
MEC 224	Robotics IV	4
ELE 254	Programmable Controllers (PLCs) II	4
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 70

Program Information Report

Numerical Control Specialty (NCTL)		(71 credits)
First Fall Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s) Academic Math Level 4 or higher	3
First Winter Semester		**(15 credits)**
ELE 111	Electrical Fundamentals	4
ROB 212	Robotics II	4
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
MEC 100	Materials and Processes	3
MTT 102	Machining for the Technologies	2
First Spring/Summer Semester		**(13 credits)**
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
MEC 101	3D Modeling and Blueprint Reading	2
Elective	Arts/Human Elective(s)	3
Elective	Writing Elective(s)	3
Elective	Soc. Sci. Elective(s)	3
Second Fall Semester		**(14 credits)**
ELE 224	Programmable Controllers (PLCs) I	4
NCT 121	Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
MEC 201	Mechanisms	2
Second Winter Semester		**(14 credits)**
MEC 224	Robotics IV	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
Elective	Speech/Comp. Elective(s)	3
Elective	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 71

Minimum Credits Required for the Program: 69

Notes:

**Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

***Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

APMETR

WCC General Education Requirements
Effective Fall 2018

Associate degree programs were updated to meet the revised WCC general education requirements below.

Course Distribution Requirements

Associate degree students must complete courses from each of six General Education content areas. The requirements vary, depending on which degree is being earned. The number of general education credit hours required for each degree is as follows.

	AA	AS	AAS
Writing/Composition	3-4 credits	3-4 credits	3-4 credits
2nd Writing/Composition or Communication	3-4 credits	3 credits	3 credits
Mathematics	3-4 credits	3-4 credits	3-4 credits
Natural Sciences [1]	7-8 credits	7-8 credits	3-4 credits
Social & Behavioral Science [2]	6 credits	6 credits	3 credits
Arts and Humanities [3]	6 credits	6 credits	3 credits
General Education Electives to reach 30 credits	0-2 credits	0-2 credits	N/A
Minimum	30 credits	30 credits	18 credits

[1] Two courses in Natural Science including one with laboratory experience (from two disciplines)
[2] From two disciplines
[3] From two disciplines

Program Information Report

Mechatronics (APMETR)

Associate in Applied Science Degree

Program Effective Term: Fall 2018

High Skill Occupation

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots and maintains robotic and automated equipment. Students have a choice to follow any of three different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 120 2D CAD CAM for Shape Cutting
NCT 121 Manual Programming and NC Tool Operation
NCT 123 2D CAD CAM CNC Programming for Mills and Lathes
NCT 221 Advanced Manual Programming and NC Tool Operation

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/curriculum/articulation/levelone/colleges/.

Minimum Concentration Credits Required for the Program: **69**
Select a concentration for requirements and total credits required for the program.

Mechatronics Concentrations

Fluid Power Specialty (FPWR)		(69 credits)
First Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3
Second Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2
	Writing Elective(s)	3
Third Semester		**(13 credits)**
FLP 214	Hydraulic Circuits and Controls	4

Program Information Report

MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Speech/Comp. Elective(s)	3

Fourth Semester		(14 credits)
ELE 224	Programmable Controllers (PLCs) I	4
FLP 225	Fluid Power Motion Control	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(13 credits)
FLP 226	Pneumatics	3
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 69

Industrial Electronics Specialty (IELC) (70 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3

Second Semester		(15 credits)
ELE 111	Electrical Fundamentals	4
ELE 211	Basic Electronics	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2

Third Semester		(16 credits)
ELE 224	Programmable Controllers (PLCs) I	4
MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Arts/Human. Elective(s)	3
	Writing Elective(s)	3

Fourth Semester		(14 credits)
ELE 254	Programmable Controllers (PLCs) II	4
FLP 226	Pneumatics	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(10 credits)
MEC 224	Robotics IV	4
	Speech/Comp. Elective(s)	3
	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 70

Numerical Control Specialty (NCTL) (71 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2

Program Information Report

ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s) Academic Math Level 4 or Higher	3
Second Semester		**(13 credits)**
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for the Technologies	2
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
Third Semester		**(16 credits)**
MEC 201	Mechanisms	2
NCT 121	Manual Programming and NC Tool Operation	4
ROB 212	Robotics II	4
	Arts/Human. Elective(s)	3
	Writing Elective(s)	3
Fourth Semester		**(15 credits)**
ELE 224	Programmable Controllers (PLCs) I	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3
Fifth Semester		**(12 credits)**
NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
MEC 224	Robotics IV	4
	Speech/Comp. Elective(s)	3
	Nat. Sci. Elective(s)	3

Minimum Credits Required for the Concentration or Option: 71

Minimum Credits Required for the Program: 69

Notes:

**Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

***Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Done 1/24/18
NW

WASHTENAW COMMUNITY COLLEGE
GENERAL EDUCATION REVISION AAS PROGRAM CHANGE FORM 2018-2019

Program Code: APMETR	Program Name: Mechatronics
Division Code: ATP	Department: ITD

This form is to be used only for General Education Revision Program Changes for Associate in Applied Science (AAS) programs. Any other program changes should be submitted separately using a standard Program Change Form.

Directions:

1. Review each general education area under **Requested Changes** below and respond as needed.
2. Attach the semester program layout showing the current program listing from the WCC catalog.
   a. Indicate any changes to be made on the semester layout.
   b. Draw a line through any courses that should be removed on the semester layout.
   c. Write in any courses that need to be added on the semester layout.
3. Submit this form and semester program layout to the Office of Curriculum and Assessment (SC 257).

Current General Education Requirements AAS	
Writing	3-4 credits
Speech	3 credits
Mathematics	3 - 4 credits
Natural Sciences	3 - 4 credits
Social & Behavioral Sciences	3 credits
Arts & Humanities	3 credits
Critical Thinking	0 credits
Computer & Information Literacy	3 credits
Total	21-24 credits

Revised General Education Requirements 2018-2019 AAS	
English Composition	3 - 4 credits
2nd Course in English Composition or one course in Communication	3 - 4 credits
Mathematics	3 - 4 credits
Natural Sciences	3 - 5 credits
Social & Behavioral Sciences	3 credits
Arts & Humanities from	3 credits
Total	18 credits

Please review each General Education Area in the chart below, and record the needed changes in the chart and on the attached semester program layout.

	REQUESTED CHANGES
	General Education Area
	English Composition – The requirement for one writing/English composition course remains the same. No changes will be made unless specifically requested below. (Use Writing Elective or ENG 111)
	Optional Change:
	2nd Course in English Composition or one course in Communication WCC previously required both a second composition/writing course and a communication course. Your options are: 1. Allow students to select any course that meets composition/writing or communication (*recommended*). 2. Require students to take a specific composition course (identify course below and on semester layout). 3. Require students to take a specific communication course (identify course below and on semester layout).
	Requested Change:

	Mathematics – The requirement for one mathematics course remains the same. However, the courses that meet the MTA requirement have changed slightly. See the course listing for details
	Optional Change:
	Natural Sciences - The requirement for one natural science course remains the same. No changes will be made unless specifically requested below.
	Optional Change:
	Social & Behavioral Sciences – The requirement for one social and behavioral science course remains the same. No changes will be made unless specifically requested below.
	Optional Change:
	Arts & Humanities – The requirement for one arts and humanities course remains the same. No changes will be made unless specifically requested below. (Note: A department can designate a COM course as a requirement here. The same course cannot be counted in two areas.)
	Optional Change:
	Computer and Information Literacy The requirement for computer and information literacy has been removed. Your options are: 1. Continue to require a specific computer course. If a specific course is required in your program, we will leave it there. If you previously used "Computer and Information Literacy Course," you will need to specify either a specific course or a list of courses from which to choose. 2. Remove the computer and information literacy course if the program will still meet the minimum of 60 credit hours. 3. Remove the computer and information literacy course and replace the course with elective or other credits as needed to meet the minimum of 60 credit hours.
	Required Change: N/A Internal to program

Reviewer	Print Name	Signature	Date
Initiator	Tom Penico	Via Email	12/21/17
Department Chair			
Division Dean/ Administrator			
Vice President for Instruction	Kimberly Hurns		1/16/18

Office use only

Entered in: ☑ Banner 1/24/18 ☑ C&A Database 1/24/18 ☐ Log File

Program Information Report

School of Advanced Manufacturing Systems

Whether your interest is in manufacturing or automation, the programs in the School of Advanced Manufacturing Systems will fit your needs. Maintain and troubleshoot the machines that make commercial goods by specializing in one or more aspects of the machining industry. Develop entry level or advanced skills in electronics, automation hydraulics or numerical controls.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if one exists) and General Education requirements.

Automation

Are you looking for a career as a hydraulic technician or an introduction to manufacturing engineering? Consider the field of automation.

Program Information Report

Mechatronics (APMETR)

Associate in Applied Science Degree

Program Effective Term: Fall 2016

High Skill Occupation

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots and maintains robotic and automated equipment. Students have a choice to follow any of three different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 120 2D CAD CAM for Shape Cutting
NCT 121 Manual Programming and NC Tool Operation
NCT 123 2D CAD CAM CNC Programming for Mills and Lathes
NCT 221 Advanced Manual Programming and NC Tool Operation

Articulation:
Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Minimum Concentration Credits Required for the Program: **70**
Select a concentration for requirements and total credits required for the program.

Mechatronics Concentrations

Fluid Power Specialty (FPWR) **(70 credits)**

First Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3
Second Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2
	Writing Elective(s)	3
Third Semester		**(13 credits)**
FLP 214	Hydraulic Circuits and Controls	4

Program Information Report

MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Speech Elective(s)	3

Fourth Semester (14 credits)

ELE 224	Introduction to PLCs	4
FLP 225	Fluid Power Motion Control	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester (14 credits)

FLP 226	Pneumatics	3
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 70

Industrial Electronics Specialty (IELC) (71 credits)

First Semester (15 credits)

FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3

Second Semester (15 credits)

ELE 111	Electrical Fundamentals	4
ELE 211	Basic Electronics	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2

Third Semester (14 credits)

ELE 224	Introduction to PLCs	4
MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3

Fourth Semester (14 credits)

ELE 254	PLC Applications	4
FLP 226	Pneumatics	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester (13 credits)

MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 71

Numerical Control Specialty (NCTL) (72 credits)

First Semester (15 credits)

FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2

Program Information Report

ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective	Math Elective(s) Academic Math Level 4 or Higher	3-4

Second Semester (14 credits)

ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2

Third Semester (16 credits)

MEC 201	Mechanisms	2
NCT 121	Manual Programming and NC Tool Operation	4
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3

Fourth Semester (15 credits)

ELE 224	Introduction to PLCs	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester (12 credits)

NCT 123	2D CAD CAM CNC Programming for Mills and Lathes	2
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 72

Minimum Credits Required for the Program: 70

Notes:

**Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

***Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: APMETR **Program Name:** Mechatronics **Effective Term:** Fall 2016

Division Code: ATP **Department:** INTD Industrial Technology

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

- ☐ Review
- ☒ Remove course(s): NCT 249
- ☒ Add course(s): NCT 120 and NCT 123
- ☐ Program title (title was _____)
- ☐ Description
- ☐ Type of award
- ☐ Advisors
- ☐ Articulation information
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☐ Program outcomes
- ☐ Accreditation information
- ☐ Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
- ☐ Other _____

Show all changes on the attached page from the catalog.

Rationale for proposed changes or discontinuation:

Splitting NCT 249 into two courses, NCT 120 and NCT 123 to provide an opportunity for Welding students to take NCT 120.

Financial/staffing/equipment/space implications:

Increase lecture hours by 15 and increase lab hours by 15

List departments that have been consulted regarding their use of this program.

Welding

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Thomas Penird		10/22/2015
Department Chair	Thomas Penird		
Division Dean/Administrator	Brandon Tucker		11/10/15
Vice President for Instruction	Michael Nealon		11/25/15

Do not write in shaded area. Entered in: Banner 11/9/16 MO **C&A Database** 11/9/16 MO **Log File** 11/9/16 MO **Board Approval** NA

Please submit completed form to the Office of Curriculum and Assessment and email an electronic copy to sjohn@wccnet.edu for posting on the website.

MO/SJ logged 11/11/15 sj

Mechatronics (APMETR)

Associate in Applied Science Degree

Description

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots, and maintains robotic and automated equipment. Students have a choice to follow any of three different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 120 2D CAD CAM for Shape Cutting
NCT 121 Manual Programming and NC Tool Operation
NCT 123 2D CAD CAM CNC Programming for Mills and Lathes
NCT 221 Advanced Manual Programming and NC Tool Operation
~~NCT 249 CAD/CAM CNC Programming~~

Articulation

Eastern Michigan University, several BS degrees;
Wayne State University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Requirements

Select a concentration for requirements and total credits required for program.

Fluid Power Specialty (FPWR)

Industrial Electronics Specialty (IELC)

Numerical Control Specialty (NCTL)

First Semester

Class	Title	Credits
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II *	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II **	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective(s)	Math Academic Math Level 4 or higher	3 - 4
Total		15

Second Semester

Class	Title	Credits
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2
NCT 120	**2D CAD CAM for Shape Cutting**	**2**
Total		13

Third Semester

Class	Title	Credits
MEC 201	Mechanisms	2
NCT 121	Manual Programming and NC Tool Operation	4
ROB 212	Robotics II	4
Elective(s)	Speech	3
Elective(s)	Writing	3

Total		16

Fourth Semester

Class	Title	Credits
ELE 224	Introduction to PLCs	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
Elective(s)	Social and Behavioral Science	3
Total		15

Fifth Semester

Class	Title	Credits
~~NCT 249~~	~~CAD/CAM CNC Programming~~	~~4~~
NCT 123	**CAD CAM CNC Programming**	**2**
MEC 224	Robotics IV	4
Elective(s)	Arts and Humanities	3
Elective(s)	Natural Sciences	4
Total		13
Total Credits Required		72

Footnotes

*Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.

**Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Program Information Report

Mechatronics (APMETR)

Associate in Applied Science Degree

Program Effective Term: Fall 2014

High Skill Occupation

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots, and maintains robotic and automated equipment. Students have a choice to follow any of three different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 121 Manual Programming and NC Tool Operation
NCT 221 Advanced Manual Programming and NC Tool Operation
NCT 249 CAD/CAM CNC Programming

Articulation:
Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Minimum Concentration Credits Required for the Program: **70**
Select a concentration for requirements and total credits required for the program.

Mechatronics Concentrations

Fluid Power Specialty (FPWR) (70 credits)

First Semester		**(15 credits)**
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3
Second Semester		**(14 credits)**
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2
	Writing Elective(s)	3
Third Semester		**(13 credits)**
FLP 214	Hydraulic Circuits and Controls	4
MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Speech Elective(s)	3

Program Information Report

Fourth Semester		(14 credits)
ELE 224	Introduction to PLCs	4
FLP 225	Fluid Power Motion Control	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(14 credits)
FLP 226	Pneumatics	3
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 70

Industrial Electronics Specialty (IELC) (71 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3

Second Semester		(15 credits)
ELE 111	Electrical Fundamentals	4
ELE 211	Basic Electronics	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2

Third Semester		(16 credits)
ELE 224	Introduction to PLCs	4
MEC 201	Mechanisms	2
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3

Fourth Semester		(14 credits)
ELE 254	PLC Applications	4
FLP 226	Pneumatics	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3

Fifth Semester		(11 credits)
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 71

Numerical Control Specialty (NCTL) (72 credits)

First Semester		(15 credits)
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II*	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
	Math Elective(s)	3

Program Information Report

Second Semester		**(11 credits)**
ELE 111	Electrical Fundamentals	4
MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MTT 102	Machining for Auto Applications	2
Third Semester		**(16 credits)**
MEC 201	Mechanisms	2
NCT 121	Manual Programming and NC Tool Operation	4
ROB 212	Robotics II	4
	Speech Elective(s)	3
	Writing Elective(s)	3
Fourth Semester		**(15 credits)**
ELE 224	Introduction to PLCs	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
	Soc. Sci. Elective(s)	3
Fifth Semester		**(15 credits)**
NCT 249	CAD/CAM CNC Programming	4
MEC 224	Robotics IV	4
	Arts/Human. Elective(s)	3
	Nat. Sci. Elective(s)	4

Minimum Credits Required for the Concentration or Option: 72

Minimum Credits Required for the Program: 70

Notes:

**Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

***Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a semester requirement. Course can only be taken once for credit.*

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: APATEC
Program Name: Mechatronics (formerly Automation Technology)
Effective Term: Fall 2014
Division Code: ATP
Department: INDT

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

- ☐ Review
- ☒ Remove course(s): BMG241 CAD105
- ☒ Add course(s): MEC101, MEC201
- ☐ Program title (title was Automation Technology)
- ☒ Description
- ☐ Type of award
- ☒ Advisors
- ☐ Articulation information
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☒ Program outcomes
- ☐ Accreditation information
- ☐ Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
- ☐ Other ROB224 becomes MEC224 and AMS103 Becomes MEC100

Show all changes on the attached page from the catalog.

Are they removing MTTE concentration? yes

Rationale for proposed changes or discontinuation:

Renames Automation Technology program to a term now recognized by industry Mechatronic adds in (2) classes to meet needs for the new program name

Financial/staffing/equipment/space implications:

None

List departments that have been consulted regarding their use of this program.

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Thomas Penird		12/23/2013
Department Chair	Thomas Penird		12/23/2013
Division Dean/Administrator	Marilyn Donham	Marilyn Donham	1·7·14
Vice President for Instruction	William Abernethy		1/23/14

Do not write in shaded area. Entered in: Banner_____ **C&A Database** 3/21/14 **Log File** 3/21/14 **Board Approval** _____

Please submit completed form to the Office of Curriculum and Assessment and email an electronic copy to sjohn@wccnet.edu for posting on the website.

Redone
logged 1/13/14 sj

Assessment plan:

Program outcomes to be assessed	Assessment tool	When assessment will take place	Courses/other populations	Number students to be assessed
Use multiple processes and types of equipment in the creation of a capstone project.	Capstone Project	Winter 2016	MEC 224	All
Develop systems logic to automatically gather data, machine, assemble and create a capstone project	Capstone Project	Winter 2016	MEC 224	All

Scoring and analysis plan:

1. Indicate how the above assessment(s) will be scored and evaluated (e.g. departmentally-developed rubric, external evaluation, other). Attach the rubric.

   Departmentally-developed rubric

2. Indicate the standard of success to be used for this assessment.

   75% of the students will attain a minimum of 70% on their capstone project

3. Indicate who will score and analyze the data.

   Department Faculty

MECHATRONICS (########)

Associate in Applied Science Degree

Description

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots, and maintains robotic and automated equipment. Students have a choice to follow any of ~~four~~ three different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Students must select one of the concentrations to complete as a program requirement.

Program Concentrations
Fluid Power Specialty (FPWR)
FLP 110 Fluid Power Fundamentals - II
FLP 214 Hydraulic Circuits and Controls
FLP 225 Fluid Power Motion Control
FLP 226 Pneumatics

Industrial Electronics Specialty (IELC)
ELE 211 Basic Electronics
ELE 254 PLC Applications
FLP 226 Pneumatics

~~Machine Tool Technology Specialty (MTTE)~~ Certificate or Occupational Studies
~~CAD 105 Blueprint Reading and Analysis~~
~~MTT 111 Machine Shop Theory and Practice~~
~~MTT 203 Advanced Machine Tool Operations~~
~~NCT 110 Introduction to Computerized Machining (CNC) - II~~

Numerical Control Specialty (NCTL)
NCT 110 Introduction to Computerized Machining (CNC) - II
NCT 121 Manual Programming and NC Tool Operation
NCT 221 Advanced Manual Programming and NC Tool Operation
NCT 249 CAD/CAM CNC Programming

Articulation

Eastern Michigan University, several BS degrees.

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site:
www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

Contact Information

Division
Adv Tech/Public Serv Careers
Department
Industrial Technology Dept
Advisors
Tom Penird

Requirements

Select a concentration for requirements and total credits required for program.

Fluid Power Specialty (FPWR)

First Semester

Class	Title	Credits
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II *	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II **	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective(s)	Math	3
Total		15

Second Semester

Class	Title	Credits	
~~Elective(s)~~	~~Computer and Information Literacy~~	~~3~~	
Elective(s)	Writing	3	
AMS 103	Materials and Processes	3	(CHANGE NAME MFC100)
~~BMG 241~~	~~Innovation: Process and Application~~	~~1~~	(REMOVE THIS CLASS)
MFC 101	3D Modeling and Blueprint Reading for Technologies	2	(ADD THIS CLASS REPLACES CAD 105)
ELE 111	Electrical Fundamentals	4	
MTT 102	Machining for Auto Applications	2	
Total		14	

Third Semester

Class	Title	Credits	
Elective(s)	Speech	3	
MFC 201	Mechanisms	2	(ADD THIS CLASS)
FLP 214	Hydraulic Circuits and Controls	4	
ROB 212	Robotics II	4	meets computer literacy requirement
Total		13	

Fourth Semester

Class	Title	Credits
ELE 224	Introduction to PLCs	4
FLP 225	Fluid Power Motion Control	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
Elective(s)	Social and Behavioral Science	3
Total		14

Fifth Semester

Class	Title	Credits	
FLP 226	Pneumatics	3	
ROB 224	Robotics IV	4	(CHANGE NAME TO MEC224)
(Elective(s)	Arts and Humanities	3	
Elective(s)	Natural Sciences	4	
Total		14	
Total Credits Required		70	

Industrial Electronics Specialty (IELC)

First Semester

Class	Title	Credits
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II *	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II **	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective(s)	Math	3
Total		15

Second Semester

Class	Title	Credits	
AMS 103	Materials and Processes	3	(CHANGE NAME MEC100)
~~BMG 241~~	~~Innovation: Process and Application~~	~~1~~	(REMOVE THIS CLASS)
MEC 101	3D Modeling and Blueprint Reading for Technologies	2	(ADD THIS CLASS REPLACES CAD 105)
ELE 111	Electrical Fundamentals	4	
ELE 211	Basic Electronics	4	
MTT 102	Machining for Auto Applications	2	
Total		15	

Third Semester

Class	Title	Credits
Elective(s)	Writing	3
Elective(s)	Speech	3
MEC 201	Mechanisms	2 (ADD THIS CLASS)
ELE 234	~~PLC Applications~~	4 Introduction to PLCs
ROB 212	Robotics II	4 - meets computer literacy requirement
Total		16

Fourth Semester

Class	Title	Credits
ELE 254	~~Introduction to~~ PLCs Applic.	4
FLP 226	Pneumatics	3
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
Elective(s)	Social and Behavioral Science	3
Total		14

Fifth Semester

Class	Title	Credits
ROB 224	Robotics IV	4 (CHANGE NAME TO MEC 224)
Elective(s)	Arts and Humanities	3
Elective(s)	Natural Sciences	4
Total		11
Total Credits Required		71

~~Machine Tool Technology Specialty (MTTE)~~
Numerical Control Specialty (NCTL)

First Semester

Class	Title	Credits
FLP 101	Fluid Power Fundamentals - I	2
FLP 110	Fluid Power Fundamentals - II *	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II **	2
ROB 101	Robotics I - I	2
ROB 110	Robotics I - II	2
Elective(s)	Math	3
Total		15

Second Semester

Class	Title	Credits	
~~Elective(s)~~	~~Computer and Information Literacy~~	~~3~~	
AMS 103	Materials and Processes	3	(CHANGE NAME MEC100)
~~BMG 241~~	~~Innovation: Process and Application~~	~~1~~	(REMOVE THIS CLASS)
MEC 101	3D Modeling and Blueprint Reading for Technologies	2	(ADD THIS CLASS REPLACES CAD 105)
ELE 111	Electrical Fundamentals	4	
MTT 102	Machining for Auto Applications	2	
Total		11	

Third Semester

Class	Title	Credits	
Elective(s)	Writing	3	
Elective(s)	Speech	3	
MEC 201	Mechanisms	2	(ADD THIS CLASS)
NCT 121	Manual Programming and NC Tool Operation	4	
ROB 212	Robotics II	4	
Total		16	

Fourth Semester

Class	Title	Credits
ELE 224	Introduction to PLCs	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
Elective(s)	Social and Behavioral Science	3
Total		15

Fifth Semester

Class	Title	Credits	
Elective(s)	Natural Sciences	4	
Elective(s)	Arts and Humanities	3	
NCT 249	CAD/CAM CNC Programming	4	- meets computer literacy requirement
ROB 224	Robotics IV	4	(CHANGE NAME TO MEC224)
Total		15	
Total Credits Required		72	

Footnotes

*Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a Major/Area requirement. Course can only be taken once for credit.

**Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a Major/Area requirement. Course can only be taken once for credit.

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: APATEC
Program Name: Automation Technology Associate in Applied Science Degree
Effective Term: Fall 2008
Division Code: HAT
Department: Industrial Technology (INTD)

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

- ☐ Review
- ☒ Remove course(s): FLP111, NCT 111, ROB 121
- ☒ Add course(s): FLP 110, NCT 110, ROB 110
- ☐ Program title (title was _____)
- ☐ Description
- ☐ Type of award
- ☐ Advisors
- ☐ Articulation information

Show all changes on the attached page from the catalog.

- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☐ Program outcomes
- ☐ Accreditation information
- ☐ Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
- ☒ Other Alternative (***Must Choose one***) Certificate Tracks:
  - Advanced Manufacturing (?????) 30 credits
  - Fluid Power (CTFLPW) 24 credits
  - Industrial Electronics (CFIET) 16 credits
  - ~~Industrial Electronics Technology (CVIET2) 12 Credits~~ Not done
  - Machine Tool (CTMTTC) 25 credits
  - ~~Manufacturing and Industrial Computing (CTMIC) 27 credits~~
  - Numerical Control Programming (CTNCPC) 26 credits

Rationale for proposed changes or discontinuation:
Provide students with core courses of basics skills common to all INTD certificate and degree programs.

Financial/staffing/equipment/space implications:
None

List departments that have been consulted regarding their use of this program.
Business and Computer Technologies Division – Rosemary Wilson, Dean
Vocational Technologies Division, - Bruce Greene, Dean

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Tom Penird/ Gary Schultz	Gary L Schultz	3/4/08
Department Chair	Tom Penird/ Gary Schultz		
Division Dean/Administrator	Granville Lee		2/27/08
Vice President for Instruction	Roger Palay	Roger M. Palay	3/13/08
President	Larry Whitworth		

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Please submit completed form to the Office of Curriculum and Assessment and email an electronic copy to sjohn@wccnet.edu for posting on the website.

Program Information Report

School of Advanced Manufacturing Systems

Automation

Automation Technology (APATEC)

Associate in Applied Science Degree

Program Effective Term: Fall 2008

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots, and maintains robotic and automated equipment. Students have a choice to follow any of five different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Articulation:
Eastern Michigan University, several BS degrees

Copies can be obtained from the Counseling Office, a program advisor, or from the Curriculum and Assessment Office Web site: http://www.wccnet.edu/departments/curriculum/articulation.php?levelone=colleges.

General Education Requirements		**(18 credits)**
Writing	Elective(s)	3-4
Speech	Elective(s)	3
Math	Elective(s)	3-4
Nat. Sci.	Elective(s)	3-4
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3

Core Courses		**(12 credits)**
AMS 103	Materials and Processes	3
BMG 241	Innovation: Process and Application	1
FLP 101	Fluid Power Fundamentals - I	2
MTT 102	Machining for Auto Applications	2
NCT 101	Introduction to Computerized Machining (CNC) - I	2
ROB 101	Robotics I - I	2

**Core courses must be taken before Major/Area Requirements.*

Major/Area Requirements		**(22 credits)**
ELE 111	Electrical Fundamentals	4
ELE 224	Introduction to PLCs	4
FLP 110	Fluid Power Fundamentals - II*	0-2
NCT 110	Introduction to Computerized Machining (CNC) - II**	0-2
ROB 110	Robotics I - II	2
ROB 212	Robotics II	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
ROB 224	Robotics IV	4

Minimum Option Credits Required for the Program: **12**
Certificates are made up of the core courses listed above and the following option courses with the following exception: Industrial Electronics Technology (CFIET).

Automation Technology Options

Advanced Manufacturing Specialty (ADVM)		**(14 credits)**
AMS 104	Rapid Prototyping and Methods	3
AMS 105	Lean Manufacturing Methods	3
AMS 204	Innovations Application	4
AMS 205	Build Concept Prototype	4

Fluid Power Specialty (FPWR)		**(12 credits)**
FLP 110	Fluid Power Fundamentals - II*	2
FLP 214	Hydraulic Circuits and Controls	4
FLP 225	Fluid Power Motion Control	3
FLP 226	Pneumatics	3

Program Information Report

Industrial Electronics Specialty (IELC)		(15 credits)
ELE 211	Basic Electronics	4
ELE 254	PLC Applications	4
FLP 226	Pneumatics	3
MTT 111	Machine Shop Theory and Practice	4

Machine Tool Technology Specialty (MTTE)		(13 credits)
CAD 105	Blueprint Reading and Analysis	3
MTT 111	Machine Shop Theory and Practice	4
MTT 203	Advanced Machine Tool Operations	4
NCT 110	Introduction to Computerized Machining (CNC) - II**	2

Numerical Control Specialty (NCTL)		(14 credits)
NCT 110	Introduction to Computerized Machining (CNC) - II**	2
NCT 121	Manual Programming and NC Tool Operation	4
NCT 221	Advanced Manual Programming and NC Tool Operation	4
NCT 249	CAD/CAM CNC Programming	4

Minimum Credits Required for the Program: **64**

Notes:

**Students who have successfully completed FLP 110 as part of their certificate do not need to take this course as a Major/Area requirement. Course can only be taken once for credit.*

***Students who have successfully completed NCT 110 as part of their certificate do not need to take this course as a Major/Area requirement. Course can only be taken once for credit.*

See an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Students must meet the Computer and Information Literacy Graduation Requirement. See General Education Graduation Requirements in the WCC Bulletin.

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: APATEC **Program Name:** Automation Technology degree **Effective Term:** __Fall '06

Division Code: _HAT **Department:** _Industrial Technology

Directions:

1. Attach the current program listing from the WCC catalog or Web site and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Master Syllabus form, but should be submitted at the same time as the program change form.

Requested Changes:

- ☐ Review
- ☒ Remove course(s): MTT-101
- ☒ Add course(s): CAD-105
- ☐ Program title (title was _____)
- ☐ Description
- ☐ Type of award
- ☐ Advisors
- ☐ Articulation information
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☐ Program outcomes
- ☐ Accreditation information
- ☐ Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses)
- ☐ Other _____

Show all changes on the attached page from the catalog.

Rationale for proposed changes or discontinuation:

MTT-101 and CAD-105 are both courses dealing with reading blueprints. We discovered we were competing for the same students in two deparments.

Financial/staffing/equipment/space implications:

None

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INSTRUCTION

List departments that have been consulted regarding their use of this program.

Industrial Tech., CAD/Drafting, and the Business and Industry office have been contacted.

Signatures:

Reviewer	Print Name	Signature	Date
Initiator	Gary Schultz	Gary T. Schultz	9/1/05
Department Chair	Gary Schultz	Gary T. Schultz	9/1/05
Division Dean/Administrator	Granville Lee		9/6/05
Vice President for Instruction	Roger Palay	Roger M. Palay	1/12/06

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Please submit completed form to the Office of Curriculum and Assessment.

APATEC

WASHTENAW COMMUNITY COLLEGE

PROGRAM CHANGE FORM

Program Code:	**Program Name:**	**Effective Term:**
~~APATEC~~	Automation Technology	F '04

Directions:

1. Attach the current program listing from the WCC catalog and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using a Course Syllabus Form, but should be submitted at the same time as the program change form.

Requested Changes:

- ☒ Remove See Attached course(s)
- ☒ Add _____ course(s)
- ☒ Total credits: Current credits 71 After changes 62
- ☒ Title (title was Robotic Technology)
- ☒ Description

- ☐ Advisors
- ☐ Articulation information
- ☐ Program admission requirements
- ☐ Continuing eligibility requirements
- ☐ Program outcomes
- Other _____

Show all changes on the attached page from the catalog.

Rationale for proposed changes:

The name "Automation Technology" better represents what the "Robotics Technology" program currently teaches. It is also more recognized in industry and more marketable. These changes will also allow the student to specialize in any of six areas while going through the associate degree program. Each of the specialty tracks has a certificate program as a part of the Associate degree. The six specialty tracks are Manufacturing and Industrial Computing, Fluid Power, Numerical Control, Machine Tool, Welding, and Industrial Electronics.

Financial/staffing/equipment/space implications:

none

List departments that have been consulted regarding the use of this program.

Electrical, Industrial Technology, Welding

Signatures:

Reviewer	Print Name	Signature	Date
Program Change Initiator	Gary Schultz	Gary Schultz	3/26/04 RA
Department Chair	Gary Schultz	Gary Schultz	3/26/04 4.1.04
Division Dean/Administrator	Granville Lee	G. W. Lee	3/26/04
Vice President for Instruction	Roger Palay	Roger M. Palay	4/5/04

Please submit completed form to the Office of Curriculum and Articulation Services.

Office of Curriculum & Articulation Services

Program Change Form 8-2003

Access Program File 4/8

Log 4/8

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Industrial, Manufacturing, & Automation Technology

Automation Technology (APATEC)
Associate in Applied Science Degree

Program Effective Term: Fall 2006

This program prepares students for entry-level positions as an automated equipment technician who assembles, installs, programs, troubleshoots, and maintains robotic and automated equipment. Students have a choice to follow any of six different specialty tracks which will prepare them for the various applications of automation. Each track features a variety of application level classes where the student performs lab-oriented practice for required skills. It is highly recommended that beginning students take at least one technical class during their first semester. See an advisor in the Industrial Technology department for assistance.

Continuing Eligibility Requirements:
Students must demonstrate basic computer literacy skills by successfully passing the Computer and Information Literacy Test. The test may be taken at any point during the program, but must be completed before graduating.

General Education Requirements		(18 credits)
Writing	Elective(s)	3-4
Speech	Elective(s)	3
Math	Elective(s)	3-4
Nat. Sci.	Elective(s)	3-4
Soc. Sci.	Elective(s)	3
Arts/Human.	Elective(s)	3

Core Courses		(28 credits)
ELE 111	Electrical Fundamentals	4
ELE 224	Introduction to PLCs	4
FLP 111	Fluid Power Fundamentals	4
ROB 121	Robotics I	4
ROB 212	Robotics II	4
ROB 222	Robotics Simulation	2
ROB 223	Robotics III	2
ROB 224	Robotics IV	4

Minimum Concentration/Option Credits Required for the Program: 16

Students need to complete the required courses in one of the following options.

Minimum Credits Required for the Program 62

Notes:
Students must see an advisor to assist in scheduling and planning for each semester as some classes have limited offering.

Automation Technology Options

Fluid Power Specialty (16 Credits)

FLP 214	Hydraulic Circuits and Controls	4
FLP 225	Fluid Power Motion Control	3
FLP 226	Pneumatics	3
MTT 111	Machine Shop Theory and Practice	4
WAF 105	Welding for Art and Engineering	2

Industrial Electronics Specialty (16 Credits)

ELE 211	Basic Electronics	4
ELE 254	PLC Applications	5
FLP 226	Pneumatics	3
MTT 111	Machine Shop Theory and Practice	4

Machine Tool Technology Specialty (18 Credits)

CAD 105	Blueprint Reading and Analysis	3
MTT 103	Introduction to Materials	3
MTT 111	Machine Shop Theory and Practice	4
MTT 203	Advanced Machine Tool Operations	4
NCT 112	Introduction to Computerized Machining (CNC)	4

Manufacturing/Industrial Computing Specialty (20 Credits)

CAD 105	Blueprint Reading and Analysis	3
FLP 214	Hydraulic Circuits and Controls	4
FLP 226	Pneumatics	3
MTT 111	Machine Shop Theory and Practice	4
NCT 112	Introduction to Computerized Machining (CNC)	4
WAF 105	Welding for Art and Engineering	2

Numerical Control Specialty (23 Credits)

CAD 105	Blueprint Reading and Analysis	3
MTT 111	Machine Shop Theory and Practice	4
NCT 112	Introduction to Computerized Machining (CNC)	4
NCT 121	Manual Programming and NC Tool Operation	4
NCT 221	Advanced Manual Programming and NC Tool Operatior	4
NCT 249	CAD/CAM CNC Programming	4

Welding Specialty (21 Credits)

WAF 105	Welding for Art and Engineering	2
WAF 106	Blueprint Reading for Welders	3
WAF 111	Welding I Oxy-Acetylene	4
WAF 112	Welding II Basic ARC	4
WAF 123	Welding III Advanced Oxy-Acetylene (OAW)	4
WAF 124	Welding IV Advanced ARC (SMAW)	4

WASHTENAW COMMUNITY COLLEGE
PROGRAM CHANGE REQUEST

(1) Program Title: ROBOTIC TECHNOLOGY Program Number: RoB Effective Term: F '93

(2) Change Information:

Current Program Course Requirements:			Proposed Program Course Requirements		
Course Number	Course Title	Credit Hours	Course Number	Course Title	Credit Hours
				change to	
ELE	123A	5			4
ELE	123B	5			4
ELE	137	3			4
	Current Total Credits:	68-69		Proposed Total Credits:	67-68
Non-Course Program Requirements:			Non-Course Program Requirements:		

(3) Rationale for Proposed Changes:

(4) Financial/Staffing/Resource Implications of Change

(5) Has this program change been reviewed by all affected instructional departments? yes _____ no _____

(6) Signatures	Comments	Signature	Date
Program Change Initiator			
Department Chair(s) or Area Director(s)			5/4/93
Dean(s)			5/5/93
VP for Instruction/Student Services			5/6

White - VP/ISS, Pink - Student Records, Yellow - Dean, Gold - Department Chairperson

CF 5-10/93

PC

Robotic Technology
Associate in Technical Studies
Degree Program: Code ROB

Advisors: George Agin and Gary Schultz

This program trains automated equipment technicians in robotics to assemble, install and maintain electrical and electronic, electro-mechanical, pneumatic and hydraulic components on computer-assisted multi-purpose machinery and equipment using hand tools, electronic testing instruments, diagrams and prints. Students who complete the program will be prepared to enter the field with job entry skills. A prerequisite for entry into this program is a math level ability of MTH 151 or higher.

Robotic Technology
Associate in Technical Studies
Degree Program: Code ROB

Course Number	Course Title	Credit Hours
First Semester		
ELE 123A	Fundamentals of Electricity (A)	4
FLP 111	Fluid Power Fundamentals	4
IND 100	Technical Drawing	4
INM 111	CIM Fundamentals or	
INM 121	Robotics I	3-4
		15-16
Second Semester		
ELE 123B	Fundamentals of Electricity (B)	4
FLP 213	Hydraulic Controls	3
FLP 214	Basic Hydraulic Circuits	3
FLP 226	Pneumatics	3
SCI 100	Intro to Natural Sciences	1
Elective	Restricted Humanities Elective *	1-3
		15-17
Spring Semester		
ELE 137	Switching Logic	4
INM 212	Robotics II	4
		8
Third Semester		
ELE 224	Introduction to PLC's	4
IND 107	Mechanisms	4
INM 223	Robotics III	4
PSY 150	Industrial Psychology	3
		15
Fourth Semester		
ELE 139	Microprocessors	4
ENG 100	Communication Skills	4
INM 224	Robotics IV	4
PLS 108	Government and Society	3
		15

Total credit hours for program: 68-71

* Choose from list of Humanities courses that meet elements 13 and 14.