Fluid Power (CTFPOW) Certificate Program Effective Term: Fall 2017

High Skill Occupation High Wage Occupation

This program prepares students for entry level positions as a hydraulic technician. The program gives students an understanding of hydraulic and pneumatic system design including motion control, using electro-hydraulic proportional and servo valves. Students who complete the program may choose to take the Hydraulic Specialist or Technician Certification Examination through the Fluid Power Society.

Articulation:

Eastern Michigan University, BS degree.

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.

Major/Area I	Requirements	(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
Core Courses		(11 credits)
MEC 100	Materials and Processes	3
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 r	nust be taken before Major/Area Requirements.	
Minimum Cre	dits Required for the Program:	23

Notes:

This certificate can also lead to an associate degree in Mechatronics.

PROGRAM CHANGE OR DISCONTINUATION FORM

WASHTENAW COMMUNITY COL

Nin Data in f

Program Code: CTFPOW	Program Name: Fluid Power	Effective T	erm: Fall 2016	
Division Code: ATP	Division Code: ATP Department: Industrial Technology			
Directions:			6	
1. Attach the current prog	ram listing from the WCC catalog or Web	site and indicate any changes to be mad	e. /	
2. Draw lines through any a separate sheet.	text that should be deleted and write in ac	ditions. Extensive narrative changes ca	n be included on	
3. Check the boxes below new courses as part of t should be submitted at t	he proposed program change, must be applied to the same time as the program change form	proved separately using a Master Syllabu	s form, but	
Requested Changes:				
Review Program admission requirements Add course(s): Program title (title was) Program title (title was) Accreditation information Description Discontinuation (attach program discontinuation plan that includes transition of students and timetable for phasing out courses) Articulation information XIOther Control				
Show all changes on the attached page from the catalog.				
Rationale for proposed changes or discontinuation: BMG 241 is being inactivated by the Business Department and can no longer be used in the program.				
Financial/staffing/equi	ipment/space implications:			
None				
List departments that have been consulted regarding their use of this program. None				
Signatures:			- \$1 (k)	
Reviewer	Print Name	Signature	Date	
Initiator	Jim Popovicu	Just by	3/6/16	
Department Chair	Tom Penird	The Aw	3/12/2016	
Division Dean/Administr	ator Brandon Tucker	AC	3/30/16	
Vice President for Instruct	tion Michael Nealon	limine he	5/2/16	
Do not write in shaded area.	Entered in: Banner 9119116&A Database 9	19116 Board Approval	AN A	

Please submit completed form to the Office of Curriculum and Assessment (SC 257).

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Fluid Power (CTFPOW) Certificate

Description

This program prepares students for entry level positions as a hydraulic technician. The program gives students an understanding of hydraulic and pneumatic system design including motion control, using electro-hydraulic proportional and servo valves. Students will be prepared to take the Hydraulic Specialist or Technician Certification Examination through the Fluid Power Society.

Contact Information

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

James Popovich Gary Schultz

Requirements

Major/Area Requirements

Class	Title	Credi	ts
<u>FLP 110</u>	Fluid Power Fundamentals - II	2	
<u>FLP 214</u>	Hydraulic Circuits and Controls	4	8
<u>FLP 225</u>	Fluid Power Motion Control	3	
<u>FLP 226</u>	Pneumatics	3	2
Total		12	

Core Courses

Class .	Title	Credi	ts
<u>MEC 100</u>	Materials and Processes	3	1
<u>BMG-241</u>	Innovation: Process and Application	4	
<u>FLP 101</u>	Fluid Power Fundamentals - I	2	•
<u>MTT 102</u>	Machining for Auto Applications	2	
<u>NCT 101</u>	CT 101 Introduction to Computerized Machining (CNC) - I		
<u>ROB 101</u>	Robotics I - I	2	÷
	Core courses must be taken before Major/Area Requirements.	. 0	
Total		12 11	:
Total Credits Required 24			
This certificate can also lead to an associate degree in Automation Technology.			

(who complete the program may

CTFPOW

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

Fluid Power (CTFPOW) Certificate Program Effective Term: Fall 2015

High Skill Occupation High Wage Occupation

This program prepares students for entry level positions as a hydraulic technician. The program gives students an understanding of hydraulic and pneumatic system design including motion control, using electro-hydraulic proportional and servo valves. Students will be prepared to take the Hydraulic Specialist or Technician Certification Examination through the Fluid Power Society.

Articulation:

Eastern Michigan University, BS degree.

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.

Majon/Area E	BUILDEMINE A STATE AND A ST	1
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
Core Courses		
MEC 100	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 m	ust be taken before Major/Area Requirements.	
Minimum Cred	its Required for the Program:	24
Notes:		

This certificate can also lead to an associate degree in Automation Technology.

PROGRAM CHANGE OR DISCONTINUATION FORM

Program Code: CTF LPW	Program Name: Fluid Power Certificate	Effective Term: Fall 2008
Pow 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	Program admission requirements
Remove course(s): <u>FLP 111</u>	Continuing eligibility requirements
🛛 Add course(s): <u>AMS103, BMG241, FLP101, FLP110</u> ,	Program outcomes
MTT102, NCT101, ROB101,	Accreditation information
Program title (title was)	Discontinuation (attach program discontinuation
Description	plan that includes transition of students and timetable
Type of award	for phasing out courses)
Advisors	Other <u>Required Core Courses (12 credits)</u> :
Articulation information	• <u>AMS 103 3 credits</u>
	• <u>BMG 241 1 credit</u>
Show all changes on the <u>attached page from the catalog</u> .	• <u>FLP 101 2 credits</u>
	• <u>MTT 102 2 credits</u>
	• <u>NCT 101 2 credits</u>
	• <u>ROB 101 2 credits</u>

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	A Signature	Date
Initiator	Tom Penird/ Gary Schultz	Jary L Schuth	3/4/08
Department Chair	Tom Penird/ Gary Schultz	Theifer	3/4/20
Division Dean/Administrator	Granville Lee	All. a	2/26/08
Vice President for Instruction	Roger Palay	Meer M. Pales.	3/13/08
President	Larry Whitworth		

Do not write in shaded area. Entered in: Banner_____ C&A Database 4/10 Log File 3 Board Approval 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.

Program Information Report

School of Advanced Manufacturing Systems

Automation

Fluid Power (CTFLPW)

Certificate

Program Effective Term: Fall 2008

This program prepares students for entry level positions as a hydraulic technician. The program gives students an understanding of hydraulic and pneumatic system design including motion control, using electro-hydraulic proportional and servo valves. Students will be prepared to take the Hydraulic Specialist or Technician Certification Examination through the Fluid Power Society.

Articulation:

Eastern Michigan University, BS degree

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.

Core Courses	(12 credit	:s:) ~
AMS 103	Materials and Processes	1
BMG 241	Innovation: Process and Application	5
FLP 101	Fluid Power Fundamentals - I	2
MTT 102	Machining for Auto Applications	2
NCT 101	Introduction to Computerized Machining (CNC) - 1	2
ROB 101	Robotics I - I	
*Core courses m	ust be taken before Major/Area Requirements.	
Maine / Ares De	autrements (12 credit	(5)
FID 110	Fluid Power Fundamentals - II	2
FIP 214	Hydraulic Circuits and Controls	4
FLP 225	Fluid Power Motion Control	່ າ
FLP 226	Pneumatics	2
Minimum Credi	ts Required for the Program:	24

Notes:

This certificate can also lead to an associate degree in Automation Technology.

	WASHTENAW COMMUNITY COLLEGE
PROGRAM CHANGE FORM	
Program Code: Program Name: <u>CVFLPA</u> CTFLPW <u>Fluid Power Certificate</u>	Effective Term: Fall 2004
 Directions: 1. Attach the current program listing from the WCC cata 2. Draw lines through any text that should be deleted an a separate sheet. 3. Check the boxes below for each type of change being new courses as part of the proposed program change, should be submitted at the same time as the program 	alog and indicate any changes to be made. Id write in additions. Extensive narrative changes can be included on g proposed. Changes to courses, discontinuing a course, or adding , must be approved separately using a Course Syllabus Form, but change form.
Requested Changes:	
 Remove _FLP 213: Hydraulic Controls course(s) Add _FLP 111: Fluid Power Fundamentals course of the control credits: Current credits _12 After changes Total credits: Current credits _12 After changes Title (title was Fluid Power Advanced Certificate Description <u>Attached</u> Show all changes on the attached page from the catalog. Rationale for proposed changes: Align with the restructure of the Robotics Technology 	Advisors Articulation information Articulation information Articulation information Continuing eligibility requirements Program outcomes Other to Automation Technology Degree Program
Financial/staffing/equipment/space implications. None	:
List departments that have been consulted regardi	ing the use of this program.
Signatures:	

Reviewer	Print Name	A Signature	Date	
Program Change Initiator	Gary Schultz	Jan Hefult	3/14/04	ę
Department Chair	Gary Schultz	Jan Leful	3/19/04	
Division Dean/Administrator	Granville Lee	1 U. hu	28/09/	Z
Vice President for Instruction	Roger Palay	Mages M. Callang	115/07	
Please submit completed form	to the Office of Curriculum	and Articulation Services.		

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

Office of Curriculum & Articulation Services

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Program Change Form 8-2003

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Fluid Power (CTFLPW)

Certificate

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Program Effective Term: Fall 2004

This program prepares you for entry level positions as a hydraulic technician. The program gives you an understanding of hydraulic and pneumatic system design including motion control, using electro-hydraulic proportional and servo valves. You will be prepared to take the Hydraulic Specialist or Technician certification examination through the Fluid Power Society.

Major/Area Requirements		(14 credits)	
FLP 111	Fluid Power Fundamentals	4	
FLP 214	Hydraulic Circuits and Controls	4	
FLP 225	Fluid Power Motion Control	3	
FLP 226	Pneumatics	3	

14 Minimum Credits Required for the Program:

Notes:

This certificate can also lead to an associate degree in Automation Technology.

'UNDER CONSTRUCTION'

Program Approval Document In FLUID POWER

Prepared by

Washtenaw Community College DATE

WASHTENAW COMMUNITY COLLEGE PROGRAM AUTHORIZATION FORM					
1. Program Title: FLUIA 2. Division: TFCH NOLOG Y	<u>POWER</u> 3 Department:		Program Code FLPA		
4. Type of Program: A.A	. <u> </u>	A.A.S.	A.T.S.		
X Advanced Certificate	Mastery Certificate	Achievement C	Certificate Certificate of Completion		
5. Will this program be Perkins fu	inded? 🛛 🕅 yes	🔲 no	6. Effective Year: F 2000		
7. Program Description (for Catal IN FLUID POWER" PROBRAM OF SYSTEM DESIGN INCLUO SERVO VALUES. STUDENTS WIL THROUGH THE FLUID PO 8. Advisors: GARY SCHULTZ,	OG, brochures, etc.: TH STUDENTS COMPLET NO- MOTTON CONTROL ALSO BE PREPAR WER SOCIETY.	HS PROOPAN IS AN TING THIS COLTIFI C. USING ELECTRO- ED TO TAKE THE "H	N EKTENSON OF THE "EEFTIFICATE" ICATE WILL HAVE AN UNSEKSTANDWC HYDRAULI & PROPORTIONAL AND YDRAULI & SECIAUST" EXAM		
9. Admissions Criteria:		10. Criteria for (Continuing Program Eligibility:		
SUCCESSFUL COMPLE FLUID POWER CERTIN	TON OF THE	-			
 Attach a Program Approval Docume A. Program Description B. Program Goals C. Needs Assessment 	ent [PAD], which includes the D. Enrollment F E. Program Co F. Course Des	following: Projections st Analysis criptions	G. Analysis of Affected Instructional Units H. Articulations I. Licensure/Accreditation		
Approval Recommended:	Print Name	Signature	Date		
Program Initiator:					
Dept. Chair/Dir.: GARY SCHULT	2				
Dean/Admin .: ROBEL BURTOI	R				
VP, Instr/Stud Ser: GUY ALT	ERI				
President: LARRY WHITWO	RTH				
Date of Board Approval:		_			

...

COURSE REQUIREMENTS FOR PROGRAM

Course	Title	Credit	Pre-requisites/Co-requisites
	Minimum Credits Required:		

A. PROGRAM DESCRIPTION

B. PROGRAM GOALS

C. NEEDS ASSESSMENT

- 1. Employment Outlook
- 2. Expected Earnings/Wages
- 3.

z

D. ENROLLMENT PROJECTIONS

- 1. Estimated Number of Students per Year
- 2. Longevity of Program

E. PROGRAM COST ANALYSIS

- 1. Start-up Costs
- 2. Ongoing Costs of Operation

F. COURSE DESCRIPTIONS

G. ANALYSIS OF AFFECTED INSTRUCTIONAL UNITS AND CORE CURRICULUM

H. ARTICULATIONS

I. LICENSURE/ACCREDITATION (IF APPLICABLE)

Washtenaw Community College

Program Code: F/PA Program Title: FULLA POWER Ffective Vear: F 2000									
1. Course Related Program Changes:									
Course		Course Title		Elective Group (if applicable)	Credit	Sem	Change(s)		
FLP 225	FLP MOT	TON CON	TROL		4		Remove Add X Change Credit Shift in Sequence	Change Title (was:) (was:)	
FLE 224	INTEDRUCTIC	N TO OL	n's		4		Remove Add 🔀	Change Title (was:) (was:)	
EIE 254	OIP AD		<u> </u>		4		Remove Add Add Change Credit	Change Title (was:) (was:)	
PHY 110	APPLIED	PHYSI	cs		4		Remove Add Add Change Credit	Change Title (was:) (was:)	
····							Remove Add C Change Credit Shift in Sequence	Change Title (was:) (was:)	
							Remove Add C Change Credit Shift in Sequence	Change Title (was:) (was:)	
		0. II., *-					Remove Add C Change Credit Shift in Sequence	Change Title (was:) (was:)	
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					Remove Add Change Credit	Change Title (was:) (was:)	
2. Total Credit Hours for Program: Before Proposed Changes: After Proposed Changes:									
Non-Course Related Program Changes: (description, advisors, admission criteria, title, etc.)									
4. Rationale fo	r Proposed Ch	anges:							
5. Financial/Staffing/Equipment/Space Implications:									
6. Has the department consulted with all departments that may be impacted? Yes No NA									
7. Signatures:									
Review	ver	F	Print Name		Si	gnatur	e	Date	
Program Change In	itiator:	GARY	SCHULT	2					
Department Chair:									
Division Dean:									

 VP. Instruction/Student Services:

 If significant changes are proposed, please attach a copy of the most recent program listing from the College Bulletin with changes marked on it.
 If courses are being changed as part of this proposal, course changes must be approved using the Course/Syllabus Approval Form.

Catalog._

Document Code: Program Change Form New Listing to: Counseling; Admissions

This program is a continuation of the Fluid Power Certificate program and prepares you for higher level positions as a hydraulic specialist. The program gives you an understanding of system design including motion control, using electro-hydraulic proportional and servo valves. You will also be prepared to take the "Hydraulic Specialist" certification examination through the Fluid Power Society.

Technology Division

Industrial Technology Department

Advisors: Jim Popovich, Gary Schultz

Program Admission Requirements:

Successful completion of the Fluid Power Certificate (CTFLPC)

Major/Area Requirements (11 Credits)

Minimum C	redits Required for the Program:	11
FLP 225	Fluid Power Motion Control	3
ELE 254	PLC Applications	4
ELE 224	Introduction to PLC's	4

H

Minimum Credits Required for the Program:

Footnotes:

Note: The following sequence of courses is recommended.

1 ELE 254 ELE 224 FLP 225



Fluid Power (CVFLPA) **Advanced Certificate**

This program is a continuation of the Fluid Power Certificate program and prepares you for higher level positions as a hydraulic specialist. The program gives you an understanding of system design including motion control, using electro-hydraulic proportional and servo valves. You will also be prepared to take the "Hydraulic Specialist" certification exam through the Fluid Power Society. Industrial Technology Department

Advisors: Gary Schultz, Jim Popovich

Program Admission Requirements:

Successful completion of the Fluid Power Certificate (FLPC)

Credits Course Number Course Name

Major/Area Requirements

•		due differentia Due sussimilia di	2
FLP	225	FLP Motion Control	4
ELE	254	PLC Applications	4
ELE	224	Introduction to PLC's	4

Credits Required for the Program:.....12

The following sequence of courses is recommended. See an advisor for assistance in determining a schedule for taking courses.

1	11
ELE 224	ELE 254
	ELP 225

Washtenaw Community College EEO / Title IX / Section 504 Statement

Effective Fall 2000 7/18/00

Washtenaw Community College does not discriminate on the basis of race, sex, color, religion, national origin, age, disability, height, weight, marital status, or veteran status in provision of its educational programs and services or in employment opportunities and benefits. WCC is committed to compliance in all of its activities and services with the requirements of Title IX of the Educational Amendments of 1972, Public Act 453, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964 as amended, Public Act 220, and the Americans with Disabilities Act of 1990.

Inquiries concerning programs and services under Title IX and Section 504, and the Americans with Disabilities Act should be directed to the Office of the Dean of Student Services; Room 225A, Student Center Building, 734- 973-3536. Inquiries regarding compliance in employment should be directed to the College Affirmative Action Officer in the Office of Human Resource Management, Room 120, Business Education Building, 934- 973-3497. Inquiries concerning access to facilities should be directed to the Director of Plant Operations, Plant Operations Building, 734- 677-5300.

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Fluid Power (FLPA) Advanced Certificate

This program is an extension of the "Certificate in Fluid Power" program. Students completing this certificate will have an understanding of system design including motion control using electro-hydraulic proportional and servo valves. Students will also be prepared to take the "Hydraulic Specialist" exam through the Fluid Power Society.

Advisors: Gary Schultz, Jim Popovich

Program Admission Requirements:

Successful completion of the Fluid Power Certificate.

Course Number Course Name Credits

Major/Area Requirements (16)

Minimum Credits Required: 16		
PHY 110	Applied Physics	. 4
ELE 254	PLC Applications	. 4
ELE 224	Introduction to PLC's	. 4
FLP 225	FLP Motion Control	. 4