COURSE AND SYLLABUS FORM

WASHTENAW COMMUNITY COLLEGE

Syllabus Cover Sheet

Course Discipline Code & No: FLP 214 **Title:** Hydraulic Circuits and Controls **Effective Term** Fall '04

Division Code: HAT **Department Code:** INDT **Org #:** 14400

Don't publish: ☐ College Catalog ☐ Time Schedule ☐ Web Page

Reason for Submission. Check all that apply.

- ☐ New course approval
- ☐ Five-year syllabus review (Attach assessment results.)
- ☒ Major change
- ☒ Minor change (Corrections, editing, clarification)
- ☐ Reactivation of inactive course
- ☐ Inactivation (Submit this page only.)

Change information:

Minor changes

- ☐ Course discipline code & number (was _____) (when changing course number, select "inactivation" to discontinue the old course.)
- ☒ Course title (was Basic Hydraulic Circuits)
- ☒ Course description
- ☒ Course objectives (minor changes)

For major changes, consultation with all departments affected by this course is required. Attach "course use in programs" report from Curriculum Database for Faculty.

Major changes (reviewed by Curriculum Committee.)

- ☒ Credit hours (credits were: 3)
- ☒ Total Contact Hours (total contact hours were: 60)
- ☐ Distribution of contact hours (contact hours were: lecture: _____ lab _____ clinical _____ other _____)
- ☒ Pre or co-requisites
- ☐ Distance Learning section approval
- ☐ General Education Distribution Course: Add☐ Remove☐
- ☐ Honors section approval
- ☐ Change in Grading Method
- ☐ Objectives
- ☐ Other _____

Rationale for course or course change

1. **Assessment-based:**

2. **Non-assessment-based:** To streamline the Fluid Power Certificate and better align with the changes in the Automation Technology Associate degree program. FLP 213 and FLP 214 were co-requisites, 3 credits each and 60 contact hours each. FLP 213 is being discontinued and the content condensed and merged with that of FLP 214.

Approvals Department and divisional signatures indicate that all departments affected by the course have been consulted.

Department Review by Chairperson ☐ New resources needed ☒ All relevant departments consulted

Print: Jim Popovich (Faculty/Preparer) Signature _____ Date: 3/22/2004

Print: Gary Schultz (Department Chair) Signature _____ Date: 3/22/2004

Division Review by Dean ☐ Request for conditional approval

Recommendation ☒ Yes ☐ No _____ (Dean's/Administrator's Signature) 3/25/04 (Date)

Curriculum Committee Review

Recommendation _____

☐ Tabled ☒ Yes ☐ No Ruth A. Hartelius (Curriculum Committee Chair's Signature) 4.1.04 (Date)

Vice President of Instruction Approval

Approval ☒ Yes ☐ No Roger M. Poland (Vice President's Signature) 4/14/04 (Date)

Do not write in shaded area.

ACS Code _____ **Entered in: Banner** 4/19 **C&A Database** 4/19 **Log File** 4/19

Approved for General Education Area/Group _____ **Syllabus Date** _____ Processed MAY 05 2004 **Basic skills table updated** ☐ **Contact fee** ☒

COURSE AND SYLLABUS FORM

WASHTENAW COMMUNITY COLLEGE

Course Discipline & No.: FLP 214 **Title:** Hydraulic Circuits and Controls

Credit hours: 4
If variable credit, give range:
____ to ____ credits

Instructor contact hours per semester:
Lecture: 30
Lab: 60
Clinical:
Practicum
Other:
Total contact hours: 90

Class capacity: 24
Standard capacity is 30 students unless otherwise specified in the Master Agreement.

Grading options:
☐ P/NP (limited to clinical & practica)
☐ S/U (for courses numbered below 100)
☒ Letter grades

Prerequisites. Select one:
☐ College-level Reading & Writing
☐ Reduced Reading/Writing Scores
COMPASS Reading ____
COMPASS Writing ____
☐ No Basic Skills Prerequisite
(College-level Reading and Writing is not required.)

In addition to Basic Skills in Reading/Writing:

Level I (enforced in Banner)

	Course/Test	Grade/Score	Concurrent Enrollment
	FLP 111	C-	☐
☐ and ☐ or			☐
☐ and ☐ or			☐
☐ and ☐ or			☐

Corequisites (must be enrolled in this class also during the same semester):
____
____

Level II (enforced by instructor on first day of class)

	Course	Grade/Score
☐ and ☐ or		
☐ and ☐ or		
☐ and ☐ or		
☐ and ☐ or		

Enrollment restrictions (In addition to prerequisites, if applicable.)
☐ and ☐ or ☐ Instructor consent required
☐ and ☐ or ☐ Admission to program required
Program ____
☐ and ☐ or ☐ Other (please specify):
____

Please send syllabus for transfer evaluation to:
☐ EMU
☐ UM
☐ ____
☐ ____
☐ ____
☐ ____

Instructional mode
☒ On campus
☐ Online
☐ Blended (online and on-campus combined)
☐ ITV
☐ Other

Course Options
General Education Group I
(Select one area)
☐ Writing ☐ Nat. Sci.
☐ Speech ☐ Soc./Behav/ Sci.
☐ Math ☐ Arts/Hum.

Courses must meet all criteria.
☐ 1. Is a standard introductory course in the discipline
☐ 2. Has a verified transfer acceptance
☐ 3. Meets the critical thinking requirement
☐ 4. Assesses academic achievement
☐ 5. Covers minimum knowledge/skills

Honors section. Not all criteria are required. Check relevant items.
☐ 1. Emphasis on primary source materials
☐ 2. Emphasis on independent study/research
☐ 3. Greater rigor of course materials
☐ 4. Interdisciplinary approach
☐ 5. Development of critical thinking skills
☐ 6. Additional course objectives
☐ 7. Additional instructional methods
☐ 8. Satisfaction of the service component

List all new resources needed for course, including library materials.

COURSE AND SYLLABUS FORM

WASHTENAW COMMUNITY COLLEGE

Syllabus

Course discipline code & number	Course title	Credit hours
FLP 214	Hydraulic Circuits and Controls	4

Course description Brief statement of the purpose and content of the course	This course further develops the concepts of directional, pressure and flow controls covered in FLP 111. Troubleshooting and reading of hydraulic blueprints is emphasized. Circuits will include conventional valving, modualr sandwich, screw in, and slip in cartridge valves. An introduction to proportional valves, servo valves, and electrial ladder control diagrams is included. Lab exercises play an important roll in this class.	
Course outcomes List brief statements that indicate what students will know and be able to accomplish as a result of taking the course. Indicate how these outcomes will be assessed for NCA assessment of student achievement.	**Outcomes**	**Assessment Method**
	Students completing this class will be able to build a hydraulic circuit on the fluid power trainer.Capstone lab project.	Capstone lab project.
	Students completing this class will be able to identify symbols in hydraulic circuits given timing diagram or truth tables, describe purpose of the components in that circuit and describe component failure modes.	Department pre/post exams
	Students completing this class will be able describe approaches to identify faulty components through logical troubleshooting methods.	Department print reading exam.
Content outline List in sequence the instructional units/modules/clusters of related topics that will be taught, and indicate the major instructional objectives for each unit. Indicate methods that will be used in each unit to evaluate student work for grading.	**Unit and Unit Objectives**	**Evaluation Method**
	Student will recognize safety risks associated with equipment having hydraulic components.	Safety test
	The student will be able to identify symbols of hydraulic components used in circuits.	Capstone circuit exam
	The student will be able to convert measurements for speed/force/pressure/area into other equivalent units of measurement, and calculate results of formulated problems using these conversions.	Quizzes and department exam
	The student will be able to identify and build regenerative circuits and describe the advantages/disadvantages of regenerative circuits as compared with conventional cylinder circuits.	Lab exercises and department written exam.
	The student will be able to describe the operation of both direct-acting and pilot-operated relief valves, with applications of using the vent connection of the two-stage relief.	Lab exercise and department written exam.
	The student will be able to identify the symbols, describe component application for: pressure reducing valves, sequence valves, unloading valves, counterbalance valves.	Lab exercises and department written exam.
	The student will be able to identify and build meter-in, meter-out and bleed-off flow control circuits and the characteristics of each.	Lab exercises and department written exam.

Student Materials

List examples of types Texts Supplemental reading Supplies Uniforms Equipment Tools Software	Vickers Industrial Hydraulics Manual Fluid Power Designers Lightening Reference Handbook	**Estimated costs.** $ 100.00

Equipment/Facilities: Check all that apply. (All classrooms have overhead projectors and permanent screens.)

Check level only if the specified equipment is needed for all sections of a course.

☐ Level I classroom
Permanent screen & overhead projector

☐ Level II classroom
Level I equipment plus TV/VCR

☒ Level III classroom
Level II equipment plus data projector, computer, faculty workstation

☐ Off-Campus Sites
☐ Testing Center
☐ Computer workstations/lab
☐ ITV
☐ TV/VCR
☐ Data projector/computer
☒ Other Hydraulic equipment in T&I lab