



Course Outline (Higher Education)

School:	School of Engineering, Information Technology and Physical Sciences
Course Title:	FLUID AND PNEUMATIC CONTROL
Course ID:	ENGIN2403
Credit Points:	15.00
Prerequisite(s):	(ENGIN1006) (ENCOR1000 or ENCOR1021 or ENGIN1002)
Co-requisite(s):	Nil
Exclusion(s):	(ENMTX2030)
ASCED:	030101

Description of the Course:

This course will provide the fundamental principles of PLC programming for control functions and industrial pneumatics. The course will encourage the student to acquire a practical working knowledge of the commonly encountered components for designing, installing and maintaining industrial and mobile pneumatic and fluid system.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

On successful completion of the course the students are expected to be able to:

Knowledge:

- K1.** Explain PLC programming language.
- K2.** Explain PLC AD/DA signal conversion and conversion precision.
- K3.** Interpret data shifting, data clearing and data movement in PLCs Arithmetic function programming applications.
- K4.** Explain the physical principles in hydraulics and pneumatics; valves, pumps and linear actuators.
- K5.** Express the flow and pressure controls principle and familiarity with the fluid and pneumatic control elements.

Skills:

- S1.** Use programming PLC
- S2.** Handle industrial data and programming applications for industrial process control.
- S3.** Design and selection of fluid and pneumatic control systems.

Application of knowledge and skills:

- A1.** Apply advanced mechatronics engineering techniques to control systems and processes using PLCs
- A2.** Design and analyse pneumatic and fluid circuit using valves and actuators to control an engineering system and/or process.

Course Content:

Topics may include:

- Physical principles in hydraulics and pneumatics.
- Valves, pumps and linear actuators.
- Fluid and pneumatic control elements.
- Flow and pressure control systems.
- Design and selection of fluid and pneumatic control system components.

Values:

- V1.** Appreciate the value of group discussion when working with pneumatic and fluid circuits in controlling an industrial process.
- V2.** Assess independently and appreciate the suitability of pneumatic circuit to control a specific process.
- V3.** Appreciate the value of using pneumatic and hydraulic control for controlling a product or a process.

Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the [Higher Education Graduate Attributes Policy](#) (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	S1-S3, A1-A2	1-3
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	K1-K5, S1-S3	1-3
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	A1-A2	1-3
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	K1-K5	1,3
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	A1-A2	1-3

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
S1-S3, A1-A2	Experimental work and / or projects to verify students ability to apply knowledge and skills acquired in the course	Reports, demonstrations	20 - 40%
K1-K5, S1-S3	Relevant tasks and problems to enforce understanding of the students and help in gradual development of knowledge and skills throughout the course	Assignments, quizzes	20 - 40%
K1-K5	Questions and problems related to the course contents	Exams / Tests	40 - 60%

Adopted Reference Style:

Other (IEEE: Refer to the library website for more information)

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)