

Methods Engineering and Work Measurement (E076380)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size	<i>(nominal values; actual values may depend on programme)</i>			
Credits 6.0	Study time 180 h	Contact hrs	60.0 h	
Course offerings and teaching methods in academic year 2020-2021				
A (semester 1)	English	Gent	lecture	25.0 h
			seminar: coached exercises	20.0 h
			project	15.0 h
B (semester 1)	Dutch		project	15.0 h
			seminar: coached exercises	20.0 h
			lecture	25.0 h

Lecturers in academic year 2020-2021

Claeys, Dieter TW18 lecturer-in-charge

Offered in the following programmes in 2020-2021	crdts	offering
Bridging Programme Master of Science in Industrial Engineering and Operations Research	6	B
Bridging Programme Master of Science in Industrial Engineering and Operations Research	6	A
Master of Science in Electromechanical Engineering (main subject Control Engineering and Automation)	6	A
Master of Science in Business Engineering (main subject Data Analytics)	6	A
Master of Science in Electromechanical Engineering (main subject Electrical Power Engineering)	6	A
Master of Science in Electromechanical Engineering (main subject Maritime Engineering)	6	A
Master of Science in Electromechanical Engineering (main subject Mechanical Construction)	6	A
Master of Science in Electromechanical Engineering (main subject Mechanical Energy Engineering)	6	A
Master of Science in Business Engineering (main subject Operations Management)	6	A
Master of Science in Industrial Engineering and Operations Research	6	B
Master of Science in Industrial Engineering and Operations Research	6	A
Master of Science in Sustainable Materials Engineering	6	A

Teaching languages

Dutch, English

Keywords

Work study, methods engineering, ergonomics, work measurement

Position of the course

This course aims to teach basic concepts and techniques to analyze and optimize the shop floor in production organizations. The course provides an introduction to the field work study, which encompasses methods engineering and work measurement. In line with the recent advances in the field, particular attention is paid to the human factor.

Contents

- Methods engineering:
 - Basic procedure
 - Introduction Lean manufacturing
 - Kipling questions

- Analysis of processes: flow process chart, string diagram, flow diagram, ...
- Line balancing
- Set-up time reduction (SMED)
- Worker and machine relationships
- Ergonomic work design
 - Manual work design
 - Workplace, equipment, and tool design
 - Work environment design
 - Risk analysis
- Work measurement:
 - Direct time study
 - Work sampling
 - Predetermined time systems
 - Standard data banks
 - Learning curves
 - Overall equipment effectiveness (OEE)

Initial competences

Final competences

- 1 Know and describe techniques for work study
- 2 Compare techniques for work study
- 3 Apply techniques for work study
- 4 Critically analyze work method and work place
- 5 Propose improvements
- 6 Write a clear and convincing report about a work study
- 7 Teamwork

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, lecture, project, seminar: coached exercises

Learning materials and price

Slides available on Ufora (free of charge); some costs may be associated with the project work: safety shoes and lunch

References

- Meyers, F.E., Stewart, J.R., 2002. Motion and Time study for Lean Manufacturing.
- Freivalds, A., 2014. Niebel's Methods, Standards, and Work Design.
- Groover, M.P., 2014. Work Systems: The Methods, Measurement and Management of Work.
- Kanawaty, G., 1992. Introduction to Work Study
- R.S. Bridger (2008). Introduction to Ergonomics, Third Edition. CRC Press
- Provinciaal Veiligheidsinstituut Antwerpen (2014). Welzijn op het Werk, Editie 12.

Course content-related study coaching

by appointment

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination

Examination methods in case of periodic evaluation during the second examination period

Written examination

Examination methods in case of permanent evaluation

Oral examination, peer assessment, report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Extra information on the examination methods

- Periodic evaluation: written examination (closed book).
- Permanent evaluation: graded project report and presentation. Individually adjusted score based on effort and peer review.

Calculation of the examination mark

A minimum score of 50% for both the project and the exam must be obtained in order to pass.

The final score F out of 20 is determined as follows (with E exam score out of 20 and P project score out of 20):

$$F = 3/4 E + 1/4 P \text{ if } E \geq 10 \text{ and } P \geq 10$$

$$F = \min(9, 3/4 E + 1/4 P) \text{ otherwise}$$