

Course Specifications

Valid in the academic year 2023-2024

Manufacturing Planning and Control (E076221)

Course size (nominal values; actual values may depend on programme)

Credits 6.0 Study time 180 h

Cours

se offerings and teachi	ng methods in academic	year 2023-2024		
A (semester 1)	English	Gent	lecture	
			practical	
			independent work	
			seminar	
B (semester 1)	Dutch	Gent	independent work	0.0h
			seminar	0.0h
			practical	0.0h

Lecturers in academic year 2023-2024

Raa, Birger	TW18	lecturer-in-charge	
Offered in the following programmes in 2023-2024		crdts	offering
Bridging Programme Master of Science in Electromechanical Engineering(maccontrol Engineering and Automation)	ain subject	6	Α
Bridging Programme Master of Science in Electromechanical Engineering(ma Electrical Power Engineering)		6	А
Bridging Programme Master of Science in Industrial Engineering and Operati Research(main subject Manufacturing and Supply Chain Engineering)		6	Α
Bridging Programme Master of Science in Electromechanical Engineering(ma Maritime Engineering)	•	6	A
Bridging Programme Master of Science in Electromechanical Engineering(ma Mechanical Construction)		6	A
Bridging Programme Master of Science in Electromechanical Engineering(ma Mechanical Energy Engineering)		6	A
Master of Science in Electrical Engineering (main subject Communication and Technology)		6	A
Master of Science in Electromechanical Engineering(main subject Control En Automation)	-		В
Master of Science in Electromechanical Engineering(main subject Control En Automation)	-	6	Α
Master of Science in Electromechanical Engineering(main subject Electrical F Engineering)	Power	6	В
Master of Science in Electromechanical Engineering(main subject Electrical F Engineering)	Power	6	А
Master of Science in Electrical Engineering (main subject Electronic Circuits a		6	Α
Master of Science in Industrial Engineering and Operations Research(main sometimes)		6	Α
Master of Science in Electromechanical Engineering(main subject Maritime E	ingineering)	6	В
Master of Science in Electromechanical Engineering(main subject Maritime E	ingineering)	6	Α
Master of Science in Electromechanical Engineering(main subject Mechanica Construction)	l	6	В
Master of Science in Electromechanical Engineering(main subject Mechanica Construction)	l	6	А
Master of Science in Electromechanical Engineering(main subject Mechanica Engineering)	l Energy	6	В
Master of Science in Electromechanical Engineering(main subject Mechanica Engineering)	l Energy	6	Α
Master of Science in Industrial Engineering and Operations Research(main so	ubject	6	Α

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Transport and Mobility Engineering)		Α
Master of Science in Biomedical Engineering	6	В
Master of Science in Biomedical Engineering	6	Α
Master of Science in Chemical Engineering	6	A, B
Master of Science in Chemical Engineering	6	Α
Master of Science in Civil Engineering	6	Α
Master of Science in Computer Science Engineering	6	Α
Master of Science in Industrial Design Engineering Technology	6	Α
Master of Science in Industrial Engineering and Operations Research	6	В
Master of Science in Materials Engineering	6	Α
Master of Science in Pharmaceutical Engineering	6	Α
Master of Science in Photonics Engineering	6	Α
Master of Science in Sustainable Materials Engineering	6	Α
Postgraduate Programme in Innovation and Entrepreneurship in Engineering	6	Α
Postgraduate Programme in Innovation and Entrepreneurship in Engineering – Advanced	6	Α
Postgraduate Programme in Innovation and Entrepreneurship in Engineering –	6	Α
Foundations		

Teaching languages

English, Dutch

Keywords

operations management, production planning and control

Position of the course

The most important manufacturing planning and control methods are discussed in detail . The course contains mainly lectures, supplemented with some seminars by speakers from industry.

Contents

Manufacturing planning:

- 'Master Production Scheduling' and 'Sales and Operations Panning'
- MRP, MRP-II, ERP
- Scheduling
- · Inventory management
- Forecasting

Shop floor control:

- Factory Physics
- Push vs. pull production activity control

Operations management:

- · Manufacturing strategy
- $\bullet \ \ \text{Theory of Constraints}$
- Lean Manufacturing and Six Sigma

Initial competences

No prerequisites.

Final competences

- 1 indicate the strategic importance of production planning and control for a company
- 2 analyse and control complex production systems by using mathematical models
- 3 quantify the impact of variability on the performance of a production system
- 4 distinguish and correctly apply methods and tools for planning production and inventory at strategic, tactical and operational level
- 5 assess the usefulness of the different methods and tools for shop floor control in varying situations

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

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Seminar, Lecture, Practical, Independent work

Learning materials and price

Lecture slides, exercises, case studies and background reading material are made available via the electronic learning environment.

References

- E.A. Silver, D.F. Pyke, D.J. Thomas (2017), "Inventory and Production Management in Supply Chains (4/e)", CRC Press, ISBN 978-1466558618 available online via UGent Net.
- F.R. Jacobs, W. Berry, D. Whybark, T. Vollmann (2011), "Manufacturing Planning and Control for Supply Chain Management (6/e)", McGraw-Hill, ISBN 978-0071313933
- W. Hopp, M. Spearman (2008), "Factory Physics (3/e)", McGraw-Hill, ISBN 978-0071232463.
- J.R.T. Arnold, S.N. Chapman, L.M. Clive (2014), "Introduction to Materials Management (7/e)", Pearson, ISBN: 978-1292021089.
- H. Lödding (2013), "Handbook of Manufacturing Control", Springer, ISBN: 978-3642244575.

Course content-related study coaching

Teacher and assistants are available upon request.

Course material is available on the electronic learning environment.

Assessment moments

end-of-term assessment

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

Written assessment

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

Written assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

Written exam with comprehensive questions and exercises

Calculation of the examination mark

50% of the final mark: comprehensive theory questions 50% of the final mark: exercises A minimum score of 40% for both theory and exercises must be obtained in order to pass.

Final score F is determined as follows (with T score for theory out of 10, E score voor exercises out of 10):

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if (T < 4 or E < 4) then F = min(T + E; 9) else F = T + E
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