Kinematics and Dynamics (E630085)

Course Specifications
Valid as from the academic year 2019-2020

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.

Lecturers in academic year 2019-2020
Vanwalleghem, Bart
Monte, Michael

Course offerings and teaching methods in academic year 2019-2020
A (semester 2) Dutch HoWest practice 12.0 h
lecture 12.0 h
seminar: coached 12.0 h
exercises

Offered in the following programmes in 2019-2020
Bachelor of Science in Engineering Technology (main subject Electromechanical Engineering Technology) 3 A
Linking Course Master of Science in Electromechanical Engineering Technology 3 A
Preparatory Course Master of Science in Electromechanical Engineering Technology 3 A

Teaching languages
Dutch

Keywords
Kinematics - Dynamics
Position-, speed-, acceleration analysis
Motion Simulations

Position of the course
Goal of this course to understand the kinematic and dynamic behavior of mechanical motion systems.

Contents
• fundamental concepts of kinematics and dynamics
• virtual work
• position analysis
• velocity analysis
• acceleration analysis
• static and dynamic force analysis
• kinematics and dynamics of rotating machines
NX Motion simulation as a tool to simulate and evaluate the motion of machines

Initial competences
The course builds further on certain competences that are achieved in following courses: Mechanics

Final competences
1 Calculate kinematic and dynamic problems analytically (position, speed, acceleration and force analysis).
2 Draw up virtual simulations of moving structures.

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

(Approved)
This course unit cannot be taken via an exam contract

Teaching methods
Lecture, practicum, seminar: coached exercises

Extra information on the teaching methods
Lectures and exercises: kinematics and dynamics
Practicum: Motion NX

Learning materials and price
Course material and presentations on the electronic learning environment
Siemens NX (+ Cast)
Tutorial Motions Simulations on the electronic learning environment

References
Mechanics of Machines: William L. Cleghorn, Nikolai Dechev
Machines & Mechanisms: Applied Kinematic Analysis: David H. Myszka
Theory Of Machines: R.S Khurmi
Dynamica: Hibbeler
Design Of Machinery - Robert Norton
Dynamics: Meriam

Course content-related study coaching

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Written examination with open questions, open book examination

Examination methods in case of periodic evaluation during the second examination period
Written examination with open questions, open book examination

Examination methods in case of permanent evaluation
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
written exam with open questions: exercises kinematics and dynamics
written open book exam: Motion with Siemens NX
report: Motion NX

Calculation of the examination mark

Calculation final score:
Final Score (20) = C1xP1 + C2xP2 + C3xP3
C1, C2 and C3 are weighing coefficients and P1, P2 and P3 are the scores (on 20)
P1: written exam with open questions: kinematics and dynamics
P2: open book exam: Motion NX
P3: report (NPE)
C1 = 70%
C2 = 15%
C3 = 15%

First examination period:
In order to pass for the course a score of at least 7/20 must be achieved for the written exam with open questions, the open book examen and the report. If this condition is not met, a deviation from the calculated score (if 10 or more) will be made and the score will be lowered to 9

Second examination period:
In order to pass for the course a score of at least 7/20 must be achieved for the written exam with open questions, the open book examen and the report. If this condition is not met, a deviation from the calculated score (if 10 or more) will be made and the score will be lowered to 9

(Approved)