

**Module Description Basic Elements of Feedback Control Technology**

Name of module:	Basic Elements of Feedback Control Technology
Keywords:	Modelling of transfer systems; Controller design and control loop synthesis
Module number:	Not compulsory
Target groups:	3- 7 semester exchange students
ECTS Credits:	4
Language of instructions:	English
Module owner:	Prof. Dr.-Ing. Joachim Berkemer
Last update	31 October 2024

## Extent of work (hours)

Workload	Contact hours	Self-Study	Exam Preparation
80	40	20	20

Prerequisites:	<ul style="list-style-type: none"> <li>• Mathematics</li> <li>• Applied Mechanics</li> <li>• Electric Circuits</li> </ul>
Total target:	The course should give the basic theoretical knowledge necessary for the use of modern applications of control technology.
Module contents:	<ul style="list-style-type: none"> <li>• Introduction to continuous-time control</li> <li>• Descriptions of control loop elements</li> <li>• Elementary transfer elements (P, I, D, dead time</li> <li>• Lag elements (PT1, IT1, DT1, PT2)</li> <li>• Composition of transfer elements for control equipment</li> <li>• Modelling of transfer systems</li> <li>• Nyquist plots, Bode diagrams, stability</li> <li>• Controller design and control loop synthesis</li> </ul>
Reference material:	Lecture notes
Offered:	Winter semester
Relevance for other study programmes:	Electrical Engineering, Mechatronics, Mechanical Engineering

## Submodules and assessments

Type of instruction/ form of learning:	Lectures, practices and exam preparation
Duration:	<b>12 weeks: September/October – December</b>
Hours per week:	4
Aims, learning outcomes:	See above
Estimated student workload:	40
Type of Assessment:	Written Midterm and Final exam (2x 90 min) graded
Number of participants:	<b>Due to the limited number of participants, please register in advance by email to:</b> <a href="mailto:kremena.daneva@hs-esslingen.de">kremena.daneva@hs-esslingen.de</a>