

Wintersemester 2025/26

Course	Control Engineering (2L, 1E, 1P)
Target group	ISE Bachelor Mechanical Engineering
URL of the course	<a href="https://lehre.moodle.uni-due.de/course/view.php?id=5882">https://lehre.moodle.uni-due.de/course/view.php?id=5882</a>
Lecturer	Univ.-Prof. Dr.-Ing. Dirk Söffker
Assistant	Mazen Zeno, M.Sc.
About course	<p>In WiSe 25/26, the course will be realized in person at the university. The course is based on the following material (downloadable via Moodle): Lecture and exercise material (pdf).</p> <p>The basis of the course is the specified textbook (&gt; available in the textbook collection). The central teaching materials are available as encrypted PDF documents in the Moodle course.</p> <p>For each lecture unit a raw manuscript is published which can be downloaded in the Moodle course <b>from the beginning of the course</b>. This serves to structure/individualize the personal notes.</p> <p>For preparation/postprocessing of the lecture it is strongly recommended</p> <ul style="list-style-type: none"> <li>➤ <b>the previous substance,</b></li> <li>➤ <b>attend the appointments (lecture and exercise)</b></li> <li>➤ <b>as well as reading the upcoming substance in the given chapters in advance (in the specified textbook/textbook) to work out.</b></li> </ul>
Material	<p>Moodle: Control Engineering - CE (<a href="https://lehre.moodle.uni-due.de/course/view.php?id=5882">https://lehre.moodle.uni-due.de/course/view.php?id=5882</a>)</p>
Registration in Moodle	<p>The password can be requested via the e-mail address <a href="mailto:srs-pw@uni-due.de">srs-pw@uni-due.de</a>.</p> <p>The subject must contain only the word <b>CE</b>.</p>
Day	Monday
Time	8:30 – 11:00 am
First course	October 13 <sup>th</sup> , 2025
Last course	December 15 <sup>th</sup> , 2025
Room	MB 144
Consulting hours	Wednesday, 8.00 am - 9.30 am, Registration via Moodle, MB 326

Literature	<p>Textbook:</p> <p>Lunze, J.: Regelungstechnik 1, Springer, 3. Auflage, 2001. (available in the library) &gt; <b>L</b></p> <p>Recommended additional reading:</p> <p>Ogata, K.: Modern Control Engineering, 4<sup>th</sup> Edition, 2002. (available in the library) &gt; <b>O</b></p> <p>Franklin, G.F.; Powell, J.D.; Emami-Naeini, A.: Feedback Control of Dynamic Systems, Prentice Hall 2002 (available in the library)</p> <p>Dorf, R.C.; Bishop, R.H.: Modern Control Systems, Pearson, 2005.</p> <p>Unbehauen, H.; Ley, F.: Das Ingenieurwissen: Regelungs- und Steuerungstechnik, Springer Vieweg, 2014</p>																					
Content	<table><tr><th>Module</th><th>Topic:</th><th>Literature:</th></tr><tr><td>1</td><td>Frequency behavior and Laplace transformation</td><td>L 6.1-6. O2,O8.1 + Material</td></tr><tr><td>2</td><td>Characteristics of elements and of loops in the frequency domain</td><td>L 6.7 O5.5,O5.9 O8.2,O8.4 + Material</td></tr><tr><td>3</td><td>Stability of dyn. systems</td><td>L 8.1-8.4 + Material</td></tr><tr><td>4</td><td>Stability of dyn. systems</td><td>L 8.5 O6,O8.7-O8.9</td></tr><tr><td>5</td><td>Control Design</td><td>L 9.1-11.2 O7, O10</td></tr><tr><td>6</td><td>Modern Control methods</td><td>Material</td></tr></table>	Module	Topic:	Literature:	1	Frequency behavior and Laplace transformation	L 6.1-6. O2,O8.1 + Material	2	Characteristics of elements and of loops in the frequency domain	L 6.7 O5.5,O5.9 O8.2,O8.4 + Material	3	Stability of dyn. systems	L 8.1-8.4 + Material	4	Stability of dyn. systems	L 8.5 O6,O8.7-O8.9	5	Control Design	L 9.1-11.2 O7, O10	6	Modern Control methods	Material
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Practical Exercise	<p>The related practical exercise System Dynamics and Control Engineering will be organized separately; it is necessary to pass an attestation to take part. The practical exercise is an additional requirement and will be graded separately.</p>																					
Exam	<p>Written exam in English or German language, 90 minutes, closed-book, registration at the examination office.</p> <p><b>Bitte beachten Sie die ab SoSe24 geänderten Hinweise zu den zugelassenen Hilfsmitteln bei der Klausur.</b></p> <p><b>Please note the changes to the permitted aids for the exam from SoSe24.</b></p>																					