

**Wintersemester 2024/25**

<b>Course</b>	<b>Control Engineering (2L, 1E, 1P)</b>
<b>Target group</b>	ISE Bachelor Mechanical Engineering
<b>URL of the course</b>	<a href="https://moodle.uni-due.de/course/view.php?id=23823">https://moodle.uni-due.de/course/view.php?id=23823</a>
<b>Lecturer</b>	Univ.-Prof. Dr.-Ing. Dirk Söffker
<b>Assistant</b>	Mazen Zeno, M.Sc.
<b>About course</b>	<p>In WiSe 24/25, the course will be realized in person at the university.</p> <p>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>
<b>Material</b>	Moodle: Control Engineering - CE ( <a href="https://moodle.uni-due.de/course/view.php?id=23823">https://moodle.uni-due.de/course/view.php?id=23823</a> )
<b>Registration in Moodle</b>	The password can be requested via the e-mail address <a href="mailto:srs-pw@uni-due.de">srs-pw@uni-due.de</a> . The subject must contain only the word <b>CE</b> .
<b>Day</b>	Monday
<b>Time</b>	8:30 – 11:00 am
<b>First course</b>	October 7th
<b>Last course</b>	December 9th
<b>Room</b>	MB 144
<b>Consulting hours</b>	Thursday, 10.00 am - 11.30 am, Registration via Moodle

<b>Literature</b>	<p>Textbook:</p> <p>Lunze, J.: Regelungstechnik 1, Springer, 3. Auflage, 2001. (available in the library) &gt; L</p> <p>Recommended additional reading:</p> <p>Ogata, K.: Modern Control Engineering, 4<sup>th</sup> Edition, 2002. (available in the library) &gt; O</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>																					
<b>Content</b>	<table border="1"> <thead> <tr> <th>Module</th> <th>Topic:</th> <th>Literature:</th> </tr> </thead> <tbody> <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,O8.7-08.9</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> </tbody> </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,O8.7-08.9	5	Control Design	L 9.1-11.2 O7, O10	6	Modern Control methods	Material
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<b>Practical Exercise</b>	<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>																					
<b>Exam</b>	<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>																					