

<b>General Information</b>	Subject name, code and number of credits	<b>DSN 345 Material Technology, 3 KU/ 6 ECTS</b>
	Department	<b>Architecture and design department</b>
	Program (bachelor's degree, master's degree)	Bachelor
	Academic semester	Fall semester of the 2024/25 academic year
	Instructor(s)	Ilaha Tahmazli
	E-mail:	ilaha.tahmazli@khazar.org
	Lecture Room/Schedule	Neftchilar campus, room 402N Wed. 11:50 – 13:20 13:40 – 15:10
	Office hours	At times agreed upon with students
<b>Prerequisites</b>	-	
<b>Language of instruction</b>	English	
<b>Type of subject (compulsory, elective)</b>	Selective	
<b>Textbooks and additional literature</b>	<ol style="list-style-type: none"> <li>Allen, E. (1985). <i>Fundamentals of building Construction: Materials and methods</i>.</li> <li>Berge, B. (2009). <i>The ecology of building materials</i>. Routledge.</li> <li>Brostow, W., &amp; Lobland, H. E. H. (2016). <i>Materials: Introduction and Applications</i>. John Wiley &amp; Sons.</li> <li>Fernandez, J. (2012). <i>Material architecture</i>. Routledge.</li> <li>Lyons, A. (2019). <i>Materials for architects and builders</i>. Routledge.</li> </ol>	
<b>Course outline</b>	The study of the subject by the student is the improvement of knowledge about the existing materials and technologies in design, understanding the impact of modern technologies and materials on the development of modern architecture and design, correct, appropriate, sustainable, environmentally friendly, etc. to understand the importance of using materials and acquire research skills.	
<b>Course objectives</b>	It is intended for students to master the basic and purposeful use of traditional materials and modern materials by examining the role of technology and material technology in modern life, the impact on modern architecture and design development, the properties of materials and production processes. Considering the properties of materials such as corrosion, durability, thermodynamics, eco-friendliness, etc., it is intended to acquire scientific and practical knowledge and, thanks to these studies and scientific knowledge, to acquire correct, independent, analytical solving skills and grasp the correct, complete, appropriate design of the given task.	
<b>Results of teaching (learning)</b>	<p>As a result of the educational process, the student will learn:</p> <ul style="list-style-type: none"> <li>the importance of choosing the right material by examining the properties of materials;</li> <li>ways and reasons for using traditional and modern materials;</li> </ul>	

	<ul style="list-style-type: none"> <li>• material technology and its role in design;</li> <li>• material characteristics such as durability, eco-friendly indicator, etc. and its' importance;</li> <li>• conceptualization and implication of the ideas and thoughts based on obtained scientific and theoretical knowledge.</li> </ul>		
<b>Teaching methods</b>	Lecture		x
	Practical tasks		x
	Analysis of practical issues		x
<b>Evaluation</b>	<b>Components</b>	<b>Date/Deadline</b>	<b>Percentage (%)</b>
	<b>Presentation</b>		10
	<b>Attendance</b>		5
	<b>Activity</b>		15
	<b>Midterm exam</b>		30
	<b>Final exam</b>		40
	<b>Total</b>		100
<b>Rules</b> <b>(Education policy and conduct)</b>	<p><b>Presentation</b> A choice should be made by the student based on the topics covered in the subject and the chosen topic should be analyzed in depth. A presentation should be prepared based on the conducted research. The sources cited during the analysis should be listed in the reference list accordingly. The reliability and number of the referenced resource, the completeness of the general information are taken as the main factors during the evaluation. For each presentation, the student is given a minimum of 10 and a maximum of 15 minutes, and it is required not to exceed this time frame of the presentation. The purpose of the assignment is to develop the student's short-term research and presentation skills. All the presentations should be submitted through assignment section created by the instructor in the Teams application before deadline.</p> <p><b>Deadline:</b> Presentation should be prepared and submitted till the time of the midterm exam.</p> <p><b>Attendance:</b> The maximum score for attending classes is 5 points. The number of points is based on: if the student attends all classes on the subject during the semester, he is given 5 points, 1 point is deducted for every 2 classes not attended. If the total number of lessons missed during the semester for the subject is more than 25% of the norm (illness, family situation, etc.), the student is not admitted to the exam session, and a certain decision is made about it.</p> <p><b>Activity:</b> The activity is designed to monitor the progress of the project that the student has to work on during the semester. Each student must come prepared to class every week during the 15-week semester and present the current status of the project to the teacher. If there is sufficient progress in the project, the activity is evaluated with 1 point for the current week. It encourages the student to constantly work on the project during the semester, and the parallel application of the learned knowledge on the project ensures the consolidation of this knowledge.</p>		

**Midterm Exam:**

It is planned to review the project that the student will work on during the semester. For the review of the project, the area analysis of the project, idea solutions, interior planning, front and side facade solutions must have been completed.

**Note:**

Project design should be done by using any computer graphics programs (AutoCAD, ArchiCAD, SketchUp, Revit, 3ds Max, Rhino, Lumion, Photoshop, CorelDraw, etc.).

**Final exam:**

In the final exam, students are supposed to present projects that they will work on during the semester. The project should be finalized, all drawings should be demonstrated in detail.

**Completion of the course:**

The student's knowledge is evaluated with a maximum of 100 points. An overall success rate of 61% and above is considered to complete the course. A failed student can take this subject again in the next semester or the next year.

**Rules of conduct of the student:**

A student is not allowed to violate the University's internal disciplinary rules and use a mobile phone.

**Schedule (subject to change)**

<b>Week</b>	<b>Date</b>	<b>Topics of the subject</b>	<b>Textbook/Resource</b>
1	18.09.2024  18.09.2024	<b>Introduction to the subject. What is materials technology and what is it for? The role of material technology in architecture and design</b>  <b>Acquaintance with the syllabus and assignments. Discussion of the lecture topic.</b>	1. Berge, B. (2009). <i>The ecology of building materials</i> . Routledge. 2. Brostow, W., & Lobland, H. E. H. (2016). <i>Materials: Introduction and Applications</i> . John Wiley & Sons. 3. Fernandez, J. (2012). <i>Material architecture</i> . Routledge.
2	25.09.2024  25.09.2024	<b>Materials processing and design. Correct choice of materials in architecture and design. Properties of materials. Processing of materials</b>  <b>Initial idea solutions' discussion</b>	1. Berge, B. (2009). <i>The ecology of building materials</i> . Routledge. 2. Brostow, W., & Lobland, H. E. H. (2016). <i>Materials: Introduction and Applications</i> . John Wiley & Sons. 3. Fernandez, J. (2012). <i>Material architecture</i> . Routledge.

3	02.10.2024  02.10.2024	<b>Architecture and design technology. Main structural elements of buildings and materials used. Traditional and modern materials. Fiber architecture.</b>  <b>Initial idea solutions' discussion</b>	<ol style="list-style-type: none"> <li>1. Berge, B. (2009). The ecology of building materials. Routledge.</li> <li>2. Brostow, W., &amp; Lobland, H. E. H. (2016). Materials: Introduction and Applications. John Wiley &amp; Sons.</li> <li>3. Fernandez, J. (2012). Material architecture. Routledge.</li> </ol>
4	09.10.2024  09.10.2024	<b>Sustainable and environmentally friendly materials. Biomaterials. Use of biomaterials in architecture and design. Hydrogel, Mycelium, Polycarbonate.</b>  <b>Selection of materials to be used in the project</b>	<ol style="list-style-type: none"> <li>1. Brostow, W., &amp; Lobland, H. E. H. (2016). Materials: Introduction and Applications. John Wiley &amp; Sons.</li> <li>2. Fernandez, J. (2012). Material architecture. Routledge.</li> <li>3. Lyons, A. (2019). <i>Materials for architects and builders</i>. Routledge.</li> </ol>
5	16.10.2024  16.10.2024	<b>Soft materials, their technology and use in architecture and design. Cork wall.</b>  <b>Selection of materials to be used in the project</b>	<ol style="list-style-type: none"> <li>1. Berge, B. (2009). The ecology of building materials. Routledge.</li> <li>2. Fernandez, J. (2012). Material architecture. Routledge.</li> </ol>
6	23.10.2024  23.10.2024	<b>Paints and coatings. Technology of coating materials.</b>  <b>Preparation of the plan drawings</b>	<ol style="list-style-type: none"> <li>1. Allen, E. (1985). <i>Fundamentals of building Construction: Materials and methods</i>.</li> <li>2. Berge, B. (2009). The ecology of building materials. Routledge.</li> <li>3. Brostow, W., &amp; Lobland, H. E. H. (2016). Materials: Introduction and Applications. John Wiley &amp; Sons.</li> <li>4. Lyons, A. (2019). <i>Materials for architects and builders</i>. Routledge.</li> </ol>
7	30.10.2024	<b>Corrosion in material technology. Corrosion resistant materials.</b>	<ol style="list-style-type: none"> <li>1. Allen, E. (1985). <i>Fundamentals of building Construction: Materials and methods</i>.</li> <li>2. Berge, B. (2009). The ecology of building materials. Routledge.</li> <li>3. Brostow, W., &amp; Lobland, H. E. H. (2016). Materials: Introduction and</li> </ol>

	30.10.2024	<b>Preparation of the section drawings</b>	Applications. John Wiley & Sons. 4. Lyons, A. (2019). <i>Materials for architects and builders</i> . Routledge.
8	06.11.2024 06.11.2024	<b>Midterm Exam</b>	
9	13.11.2024  13.11.2024	<b>Polymer materials, special polymers. Ways of using polymer materials in architectural design. Rubber technology.</b>  <b>Preparation of the elevation drawings</b>	1. Berge, B. (2009). <i>The ecology of building materials</i> . Routledge. 2. Lyons, A. (2019). <i>Materials for architects and builders</i> . Routledge.
10	20.11.2024  20.11.2024	<b>Smart materials, their usage and advantage in architecture and design.</b>  <b>Efficient interior design preparation</b>	1. Brostow, W., & Lobland, H. E. H. (2016). <i>Materials: Introduction and Applications</i> . John Wiley & Sons. 2. Lyons, A. (2019). <i>Materials for architects and builders. Reference Guide</i> . SDC Publications.
11	27.11.2024  27.11.2024	<b>Thermodynamics. Thermal materials, their properties and usage in architectural design.</b>  <b>Designing of exterior and interior design solutions of the project</b>	1. Brostow, W., & Lobland, H. E. H. (2016). <i>Materials: Introduction and Applications</i> . John Wiley & Sons.
12	04.12.2024  04.12.2024	<b>Production of materials and their impact on the environment. Waste management.</b>  <b>Interior Design (Practice)</b>	1. Berge, B. (2009). <i>The ecology of building materials</i> . Routledge. 2. Lyons, A. (2019). <i>Materials for architects and builders. Reference Guide</i> . SDC Publications.

13	11.12.2024	<b>Ceramic technology</b>	1. Fernandez, J. (2012). <i>Material architecture</i> . Routledge. 2. Lyons, A. (2019). <i>Materials for architects and builders</i> . Routledge.
	11.12.2024	<b>3D model preparation of the project</b>	
14	18.12.2024	<b>Related materials and their combination and use technologies. Adhesives, permanent and non-permanent fasteners, abrasives, fillers and finishing materials.</b>	1. Berge, B. (2009). <i>The ecology of building materials</i> . Routledge. 2. Fernandez, J. (2012). <i>Material architecture</i> . Routledge.
	18.12.2024	<b>Preparation of final visualizations of the project</b>	
15	25.12.2024	<b>Preparation of final visualizations and presentation board</b>	
	25.12.2024	<b>Preparation of final visualizations and presentation layout of the project</b>	
		<b>Final exam</b>	