

COURSE SYLLABUS	
<b>Course Name and Code</b>	CE254 SURVEYING
<b>Course Term</b>	4
<b>Course Catalog Description</b>	surveying, units of measurement, general information on measurement methods, scale, errors and types of errors, error calculation, simple horizontal measurements, determination of points and lines, linear measure, application of right angles, linear measure for shapes with obstacles, square measure, area calculation from ground measurements, theodolite and angle measurement, substructure and superstructure of theodolite, source of error for theodolite and debug, horizontal angle measurement and source of error, indication of point, coordinate systems, triangulation, exploration points and its construction, triangulation angle, base, district, small spot, side-point calculations, polygon calculations, connected polygon calculations, polygon errors, height measurement, levelling instrument, axis of levelling instruments, levelling applications and sources of error, land applications using levelling instruments
<b>Course Textbook</b>	Celal Songu, “Ölçme Bilgisi Cilt 1-2”, Birsen Yayınevi.
<b>Course Materials</b>	Prof. Dr. Erdoğan Özbenli, Prof. Dr. Türkay Tüdeş, “Ölçme Bilgisi”, KTÜ Basımevi, 2001.
<b>Course Credit (AKTS)</b>	3
<b>Prerequisites</b>	Prerequisite course: None. Compulsory attendance is minimum 70%.
<b>Course Type</b>	Compulsory
<b>Course Language</b>	English
<b>Course Objective</b>	The objective is to inform the students about surveying, get experienced on necessary calculations and field applications.
<b>Learning Outcomes</b>	<ol style="list-style-type: none"> <li>1. Get informed about surveying and gain the ability to make use of the information in field applications.</li> <li>2. Gain the ability to make area measurements.</li> <li>3. Gain the ability to make angle measurement.</li> <li>4. Gain the ability to determine points and be able to work on coordinate systems.</li> <li>5. Gain the ability to make polygon calculations.</li> <li>6. Gain the ability to make use of the measurement devices such as theodolite and levelling instruments.</li> <li>7. Get experienced on field applications.</li> </ol>
<b>Course Style</b>	This course contains lectures and field studies.
<b>Course Weekly Calendar</b>	<ol style="list-style-type: none"> <li>1. Introduction: general information on surveying, measurement units and measurement methods</li> <li>2. Surveying, errors and error types, calculation of error</li> <li>3. Simple horizontal measurements, determination of points and lines, linear measure, application of right angles, linear measure for shapes with obstacles</li> <li>4. Square measure, area calculation from ground measurements, area calculation from coordinates</li> <li>5. Theodolite and angle measurement, substructure and superstructure of theodolite, source of error for theodolite and debug, horizontal angle measurement and source of error</li> <li>6. Indication of point, coordinate systems, triangulation, exploration points and its construction, triangulation angle, base, district</li> <li>7. Small spot, side-point calculations</li> </ol>

	<b>8.</b> Midterm <b>9.</b> Open polygon calculations <b>10.</b> Closed polygon calculations <b>11.</b> Connected polygons <b>12.</b> Polygons, polygon calculations, polygon errors (general review) <b>13.</b> Measurement of height, levelling instrument, axes of levelling instrument, levelling and applications, source of error <b>14.</b> Midterm / Field applications with leveling instrument <b>15.</b> Field applications with leveling instrument								
<b>Learning Activity</b>	Lecture 2 hours/week (2+1) Recitation 1 hour/week Project report Midterm I and Midterm II Final								
<b>Evaluation Criteria</b>		Number	Total Contribution (%)						
	Midterm	2	40						
	Homework	3	5						
	Recitation	1	5						
	Project	-	-						
	Pratik	-	-						
	Quiz	3	10						
	Total contribution of the in-term work to the term grade(%)		60						
	Contribution of the final exam to the term grade (%)		40						
Attendance									
<b>Course Work Load</b>	<b>Activity</b>		<b>Number of Total Weeks</b>	<b>Duration (weekly hour)</b>	<b>Total Work Load</b>				
	Weekly Lecture		14	2	28				
	Weekly Recitation		14	1	14				
	Readings		14	0	0				
	Literature Review		14	0	0				
	Design of course materials and application		14	0	0				
	Report		14	1	14				
	Preparation of Presentation		14	0	0				
	Presentation		14	0	0				
	Midterm Examination and Preparation		2	6	12				
	Final Examination and Preparation		1	7	7				
	Other		0	0	0				
	Total Work Load				75				
	Total Work Load/25				3.00				
	Course Credit (AKTS)				3				
<b>Contribution of the Course Outcomes to the Program Outcomes</b>	No	Program Learning Outcomes			1	2	3	4	5
	1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.					X		

	2	Ability to identify, formulate, and solve complex civil engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.			X		
	3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.	X				
	4	Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in civil engineering practice; ability to employ information technologies and to use at least one computer programming language effectively.		X			
	5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex civil engineering problems or discipline specific research questions.		X			
	6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams.			X		
	7	Ability to work individually.			X		
	8	Ability to communicate effectively in Turkish, both orally and in writing; ability to write effective reports and comprehend written reports.	X				
	9	Knowledge of English of B1 level according to <u>Common European Framework of Reference</u> .			X		
	10	Prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.		X			
	11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.		X			
	12	Consciousness to behave according to ethical principles and professional and ethical responsibility.			X		
	13	Knowledge on standards used in civil engineering practice.				X	
	14	Knowledge about business life practices such as project management, risk management, and change management.			X		
	15	Awareness in entrepreneurship, innovation; knowledge about sustainable development.		X			
	16	Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering.		X			
	17	Awareness of the legal consequences of engineering solutions.		X			
<b>Course Instructor(s)</b>		Dr. Öğr. Üye. Mustafa Kürşat Çubuk, <a href="mailto:ckursat@gazi.edu.tr">ckursat@gazi.edu.tr</a> Öğr. Gör. Dr. Çağatay M. BELGİN, <a href="mailto:cmbelgin@gazi.edu.tr">cmbelgin@gazi.edu.tr</a>					