

Course Description Form	
Course Code and Name	BDA5110 Security and Privacy in Critical Infrastructures
Course Semester	Fall/Spring
Catalog Content	Critical infrastructures within the scope of cyber security.
Textbook	National Institute of Standards and Technology, “Framework for Improving Critical Infrastructure Cybersecurity ”, 2014
Supplementary Textbooks	<ol style="list-style-type: none"> <li>1. Eric D. Knapp, “Industrial Network Security: Securing Critical Infrastructure Networks for Smart Grid, SCADA, and Other Industrial Control Systems”, Syngress, 2011.</li> <li>2. Data Privacy: Encryption and Information Hiding, D Salomon, 0387003118, 480 pages, Springer-Verlag New York Inc., 2003.</li> </ol>
Credit	8
Prerequisites of the Course ( Attendance Requirements)	There is no prerequisite or co-requisite for this course. 80% attendance is required.
Type of the Course	Elective
Instruction Language	English
Course Objectives	To increase the knowledge about data security in critical infrastructures and to teach both theoretical and practical solutions to problems that may be encountered in these issues.
Course Learning Outcomes	<p>At the end of this course, the student will be able to</p> <ol style="list-style-type: none"> <li>1. Learn the concept of critical infrastructure</li> <li>2. Learn the basic components of critical infrastructures</li> <li>3. Have information about attacks against critical infrastructures and precautions against these attacks</li> </ol>
Instruction Methods	This course is carried out only in the form of face to face training.
Weekly Schedule	<ol style="list-style-type: none"> <li>1. Introduction to Critical Infrastructures</li> <li>2. Model Based Risk Analysis for Critical Infrastructures</li> <li>3. Physical vulnerability assessment</li> <li>4. Modeling and Simulation of Critical Infrastructures</li> <li>5. Graphic Formatting to Model Critical Infrastructures</li> <li>6. Game Theory in Critical Infrastructures</li> <li>7. Modeling and measuring information technology risks</li> <li>8. Reliability assessment of critical information infrastructures</li> <li>9. Network Durability</li> <li>10. Wireless sensor networks for critical infrastructure protection</li> <li>11. Monitoring and Surveillance technologies</li> <li>12. Security Systems design and integration</li> <li>13. Multi-source information fusion for Critical Infrastructures</li> <li>14. Frameworks and tools for emergency response and crisis management</li> </ol>

<b>Teaching and Learning Methods</b>  <i>(These are examples. Please fill which activities you use in the course)</i>	Weekly theoretical course hours: 3 Reading Activities: 3 Internet browsing, library work: 1 Report preparing: 4 Preparing a Presentation: 10 Presentations: 2 Preparation of Midterm and Midterm Exam: 20 Final Exam and Preparation for Final Exam: 30								
<b>Assessment Criteria</b>			<b>Numbers</b>	<b>Total Weighting (%)</b>					
	Midterm Exams		1	30					
	Assignment		4	10					
	Application		0	0					
	Projects		1	60					
	Practice		0	0					
	Quiz		0	0					
	Percent of In-term Studies (%)			60					
	Percentage of Final			40					
<b>Workload</b>									
	<b>Activity</b>		<b>Total Number of Weeks</b>	<b>Duration (weekly hour)</b>		<b>Total Period Work Load</b>			
	Weekly Theoretical Course Hours		14	3		42			
	Weekly Tutorial Hours		0	0		0			
	Reading Tasks		13	3		39			
	Studies		13	1		13			
	Material Design and Implementation		0	0		0			
	Report Preparing		8	4		32			
	Preparing a Presentation		2	10		20			
	Presentations		2	2		4			
	Midterm Exam and Preparation for Midterm Exam		1	20		20			
	Final Exam and Preparation for Final Exam		1	30		30			
	Other ( should be emphasized)		0	0		0			
	Total Workload					200			
	Total Workload / 25					8.0			
	Course Credit (ECTS)					8.0			
	<b>Contribution Level Between Course Learning Outcomes and Program Outcomes</b>	No	Program Outcomes			1	2	3	4
1		Reaches the expansion of knowledge by conducting scientific research in the field of engineering and evaluation, interpretation and application of information.							X

	2	Has extensive and in depth knowledge including the latest techniques, methods applied and their limitations in engineering.					X
	3	Completes and applies knowledge by using scientific methods by using limited or missing data and integrates information from different disciplines.				X	
	4	Be aware of new and developing practices of the profession, examines and learns when needed.					X
	5	Defines and formulates problems related to the field, develops methods to solve them and applies innovative methods in solutions.				X	
	6	Develops new and / or original ideas and methods, designs complex systems or processes and develops innovative / alternative solutions in their designs.				X	
	7	Designs and applies theoretical, experimental and modeling based researches, examines and solves the complex problems encountered in this process.					X
	8	Works effectively in disciplinary and multidisciplinary teams, leads such teams and develops solution approaches in complex situations, works independently and takes responsibility.			X		
	9	Communicates oral and written using a foreign language at least at the level of European Language Portfolio C1.		X			
	10	Conveys the process and results of the studies in written and oral form in a systematic and clear manner in national and international environments within or outside the field.					X

	11	Knows the social, environmental, health, security, legal aspects of engineering applications; project management, and business life applications and be aware of the constraints of these engineering applications.	X				
	12	Considers social, scientific and ethical values in the stages of data collection, interpretation and announcement and in all professional activities.		X			
The Course’s Lecturer(s) and Contact Information	Computer Engineering Department Chair bmabb@gazi.edu.tr						