

Syllabus of CTIS 165 - Fundamentals of Information Systems
Department of Information Systems and Technologies
2026-2027 Fall

Credits: Bilkent 3, ECTS 5

Contact Hours: 3 hours of lecture per week

Prerequisite(s): None

Course Coordinator: Erkan Uçar

Instructors:

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Required Textbook: *Management Information Systems: Managing The Digital Firm*, Kenneth C. Laudon, Jane P. Laudon, Carol G. Traver, 18th Global Edition, © 2026 Pearson. (ISBN-13: 9 978-1292482590/ ISBN-10: 1292482591)

Catalog Description

The fundamental concepts of information systems with historical and evolutionary perspectives. Systems, organizational and strategic role and added value of information systems, decision support systems, data mining, Management information systems (MIS), information systems planning, data management, computer networking, internet, analysis, design, development, and maintenance of information systems, competitive edge of information systems.

Assessment Methods:

Method	Count	%	
Lecture Quiz	2	20	In-class written exam, closed notes.
Midterm Exam	1	20	In-class written exam, closed notes.
Project	1	20	Interim reports, presentation, Q&A.
Final Exam	1	35	In-class written exam, closed notes.
Performance	1	5	Attendance, in-class + Moodle participation – related to course content.

Minimum Requirements to Qualify for the Final Exam:

Do not miss more than 10 hrs of lecture AND collect minimum 20% of total points of the course.

Course Learning Outcomes:

Outcome	Assessment	Program Outcome
Identify concepts, theories and principles about information systems.	Quizzes, Midterm	(a)
Use information technologies to characterize the use of information systems for business.	Project	(a)
Design a simple information system as part of a team by using information systems principles.	Project	(b) (c) (e)
Use learned concepts, theories and principles to identify and outline the relationships between them.	Midterm, Final	(a)

Weekly Syllabus:

Week	Lect.Date	Lecture Content	Book Chapter
1	Sep 17	Syllabus & introduction.	
2	Sep 21,22	Data, information, knowledge. Information system. Strategic role of IS.	Ch1
	Sep 24	Organizational, management, technology dimensions. IoT, big data, cloud computing, and AI.	Ch1
3	Sep 28,29	Business processes. Transaction processing systems.	Ch2
		Management information systems. Decision support systems.	Ch2
		Enterprise systems. Supply chain management systems. Customer relationship management systems.	Ch2
4	Oct 01	Five moral dimensions. Key IT trends that raise ethical issues. Project Team Formation	Ch4
	Oct 05,06	Ethical principles. Real-world ethical dilemmas. Challenges to privacy.	Ch4
		Intellectual property. System quality. Quality of life.	Ch4
5	Oct 08	Evolution of IT infrastructure. Quiz1 (Oct.10.Sat.10:00)	Ch5
	Oct 12,13	Components of IT infrastructure.	Ch5
		Mobile, quantum, virtualization, cloud computing.	Ch5
6	Oct 15	Open source, web services, outsourcing, AI. Project Deliverable #1	Ch5
	Oct 19,20	File organization. Problems with traditional file environments. Relational DBMS.	Ch6
		Data definition, data dictionary, data manipulation. SQL. Normalization.	Ch6
7	Oct 22	Referential integrity. E-R diagrams. SQL Tutorial	Ch6
	Oct 26,27	Big data, data warehouses, Hadoop, in-memory computing.	Ch6
		Data mining, text mining, web mining.	Ch6
8	Oct 29	Project Deliverable #2	
	Nov 02,03	Computer networks.Client-server architecture.	Ch7
		Packet switching. TCP/IP.	Ch7
9	Nov 05	Bandwidth. Physical transmission media. Midterm (Nov.07.Sat.10:00)	Ch7
	Nov 09,10		
	Nov 12	The Internet. DNS. Architecture. IPv6. VoIP. VPN.	Ch7
10	Nov 16,17	The web, HTML, HTTP.	Ch7
		Cellular systems, bluetooth, Wi-Fi, RFID, WSN.	Ch7
	Nov 19	IS vulnerability. Malware. Project Deliverable #3	Ch8
11	Nov 23,24	Spoofing. DoS, DDoS. Internal threats. Software vulnerability. Computer forensics.	Ch8
		General controls. Application controls. Risk assessment. Security policy. Disaster recovery. IS audit.	Ch8
	Nov 26	Encryption. Public key infrastructure. Quiz2 (Nov.28.Sat.10:00)	Ch8
12	Nov 30, Dec 01	Introduction. Machine learning (ML). PowerBI Tutorial	Ch11
		Neural networks. Deep learning.	Ch11
	Dec 03	Generative AI. Large language models (LLM).	Ch11
13	Dec 07,08	Agentic AI. Natural language processing (NLP).	Ch11
		Computer Vision. Genetic algorithms. Expert systems. Fuzzy logic systems.	Ch11
	Dec 10	AI challenges. Responsible AI. Project Deliverable #4	Ch11
14	Dec 14,15	Organizational change. Business process management.	Ch13
		Systems development life cycle.	Ch13
	Dec 17	Traditional method (waterfall model).	Ch13
15	Dec 21,22	Prototyping. Outsourcing.	Ch13
		Rapid development methods. Low-code / no-code / vibe coding.	Ch13
	Dec 24	Project Presentations (schedule t.b.a.)	
Dec 26 - Jan 10		Final Exams (exact date t.b.a.)	

Grading Method

- Cluster-based absolute scale: Grades in this course are absolute, not relative. You are not competing against your classmates, and there is no quota or "curve" that limits the number of high grades available. If every student demonstrates exceptional mastery, every student can earn an A. However, to ensure fairness against fluctuating exam difficulty, the final letter grade boundaries will not be locked into a rigid, fixed scale (such as a strict 90/80/70 rule) from day one. Instead, the final grade scales will be established at the end of the semester using a natural breaks (cluster) methodology. **How It Works:** At the end of the term, all final cumulative scores will be plotted chronologically from highest to lowest. The instructor will evaluate the data to find distinct gaps or clusters where student performance naturally shifts. Letter grade boundaries (A, A-, B+, B, etc.) will be drawn at these distinct gaps.

Guidelines for the Term Project

- Form your teams (of 3 students) by the end of week 3.
- Propose an information system to be used by any application domain your team will pick. Your proposal should include the following items which are not limited by this list:
 - * IDEA: system name, brief description, user profiles of the system.
 - * FUNCTIONS & BENEFITS of the system.
 - * ETHICAL/SOCIAL/SECURITY/SUSTAINABILITY ISSUES of the system.
 - * MANAGERIAL COMPONENTS: generating sample data, storing this data on MS Excel and constructing decision support interfaces based on this data in MS Excel and Power BI.
- These items will be 4 different deliverables with specific deadlines (prob. end of weeks 5, 7, 10, and 13).
- One of the team members (for each team) should submit these deliverables through Moodle.
- To the extent possible: APPLY what you have learned in class to your proposal.
- In the last week of the semester, you should also present your system in class.
- More details will be given in the Project Deliverables.

Online Course Evaluation

Course evaluation is a valuable source of feedback from the students to the department and the university which can greatly help improve teaching and learning. The greater the level of participation by the students, the more useful and statistically reliable observations and conclusions can be drawn from the evaluation results. Your honest and impartial comments about what works and what doesn't work in the course can help CTIS build on the parts of the course that are strong and improve those that are weak for the next group of students. The course evaluation also provides you the exclusive opportunity to make your opinion count on an important issue – the quality of teaching at CTIS. Please don't forget to complete the online course evaluation form for this course towards the end of the semester.

Academic Dishonesty

In light of its commitment to academic integrity, Bilkent University prohibits acts of misconduct and academic dishonesty. These include, but are not limited to, acts of cheating, plagiarism, and falsification of data, as defined below.

- *Cheating* occurs when an individual uses dishonesty or deception to receive or help others receive professional or academic credit for work she or he did not perform. Cheating includes, among other acts, misappropriation and / or development of the ideas, concepts, designs, or methodology of others without consent; use of materials or devices not permitted by the instructor during exams; taking an exam for another person; resubmitting work previously submitted elsewhere; copying previously published solutions to problems.
- *Plagiarism* is representing the work or ideas of another person as one's own. It frequently involves quoting, cutting / pasting or closely paraphrasing written language without appropriately citing the source of the material through the use of quotation marks, reference notes, or other methods of acknowledgement. An act of plagiarism may be unintentional, and to avoid unintentional plagiarism

standard practices of citation should be followed. For detailed instructions regarding standard citation practices, see <http://www.plagiarism.org>

- *Falsification* is a deliberate misrepresentation in which information, whether in the form of data, written language, images or other media, is either altered or fabricated.

Ref: <https://w3.bilkent.edu.tr/bilkent/policy-on-conflicts-of-interest-and-commitment-academic-integrity>

Students' Responsibilities

- Come to class on time and prepared.
- Attend lectures and participate in class discussions.
- Ask whatever you do not understand immediately (do not postpone) and make use of office hours.
- Submit all your work thru Moodle on time and with the required format.
- Do not be distracting in-class and keep your mobile devices in silent (no vibrating) mode.
- Read and apply the Academic Integrity Policy of the university.
- Study all course materials and instructor messages carefully.
- Do not use aliases in your emails, put your signature instead.

Instructor's Responsibilities:

- Come to class on time and prepared.
- Find effective ways to communicate course content to the students.
- Be responsive to student questions and encourage participation.
- Communicate all requirements to students very clearly and on time.
- Grade all exams as soon as possible and give clear feedback.
- Enforce the Academic Integrity Policy of the university.
- Treat all students respectfully and equally.