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# MUH334E

## Data Processing Algorithms

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### Overview

An algorithm is a procedure for solving a mathematical problem in a finite number of steps that frequently involves repetition of an operation [Webster]. This course considers algorithmic paradigms and focuses on designing and analyzing computer algorithms as well as critical thinking and problem solving.

During this accelerated summer course, each week's topics will be examined at the beginning of the following week.

### Goals

1. To give the the ability to use in C language, almost all the basic algorithms that are used in data processing and of calculations.
2. Lead to gain the culture of, selecting the better suitable algorithm, considering the type and number of data, and to evaluate the alternative algorithms.

### Tentative Schedule

1. Introduction, Stable matching
2. Gale-Shapley algorithm and its analysis
3. Graphs
4. Graphs
5. Greedy algorithms
6. Greedy algorithms
7. Divide and conquer
8. Divide and conquer
9. Dynamic programming
10. Dynamic programming
11. Network flow
12. Network flow
13. NP and computational intractability
14. NP and computational intractability

### Rules of Conduct

[ITU Academic Word of Honor](#)

Summer 2018

W 8.30-11.30, 13.30-16.30

Instructor:

Assist. Prof. Dr. İzzet Göksel

E-Mail: [gokseli@itu.edu.tr](mailto:gokseli@itu.edu.tr)

Phone: 0538 923 60 97

Office: FEB B1-310

Office Hours: R 13.30-15.30

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### Materials

\* J. Kleinberg & E. Tardos, **Algorithm Design**, Addison Wesley, 2006.

\* G. Brassard & P. Bratley, **Fundamentals of Algorithmics**, Prentice Hall, 1996.

\* R. Sedgewick, **Algorithms in C**, Addison Wesley, 1990.

\* ITU E-Learning System: [Ninova](#)

### Evaluation

Midterm exams ( <i>open book</i> )	60%
Final exam ( <i>open book</i> )	40%

AA: [90,100]	DC: [40,50]
BA: [80,90]	DD: [30,40]
BB: [70,80]	FF: [20,30]
CB: [60,70]	VF: [0,20]
CC: [50,60]	

### Important Dates

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June 19, 2018

End of withdrawal period

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June 27, 2018

July 4, 2018

July 11, 2018

July 18, 2018

July 25, 2018

August 1, 2018

Midterm exams

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August 6 - 10, 2018

Final exam

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