

İZMİR INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING
ME573 DEPLOYABLE STRUCTURES
SPRING 2023-2024

INSTRUCTOR

Prof. Dr. Gökhan Kiper (Room Z14, gokhankiper@iyte.edu.tr, 750 6777)

ASSISTANT

Mr. Murat Demirel (Room: Z31 – Mechatronics Laboratory, muratdemirel@iyte.edu.tr, 750 6752)

SCHEDULE

Thursday 09:45 – 12:30 @D5

STRONGLY RECOMMENDED PREREQUISITE

ME331 Theory of Machines I or equivalent

REFERENCES

C. J. Gantes, Deployable Structures: Analysis and Design, WIT Press, Boston, 2001.

E. Söylemez, Mechanisms, METU Press, 5th Ed., Ankara, 2018.

G. Kiper, New Design Methods for Polyhedral Linkages, MSc Thesis, Middle East Technical University, Ankara, 2006.

G. Kiper, Design Methods for Planar and Spatial Deployable Structures, PhD Thesis, Middle East Technical University, Ankara, 2011.

Z. You, Y. Chen, Motion Structures, Spon Press, London, 2012.

COURSE CONTENT

- Introduction
- Scissor mechanisms
- Polygonal and polyhedral linkages
- Polyhedral linkages with planar link groups
- Overconstrained linkages
- Purely spatial deployable structures (PSDSs) composed of single dof loops
- Purely spatial deployable structures (PSDSs) composed of multi dof loops
- Jitterbug like linkages

TENTATIVE GRADING

Homeworks (%20) + Project (%40) + Midterm examination (%20) + Final Examination (%20)