Boğaziçi University
Kandilli Observatory and Earthquake Research Institute
Department of Geodesy

GED 535 Gravity Measurements (3+0+0) 3 ECTS 7
Fall 2019-2020

Instructor: Onur Yılmaz

COURSE DESCRIPTION

Actual gravity and other forces. Absolute, relative, sea surface and underwater, and airborne gravity measurements. Corrections and reductions of gravity measurements of gravity gradient. Gravity anomalies and unsurveyed areas. Variation of gravity and geodynamics.

REFERENCE BOOKS

- ✓ The Earth's Shape and Gravity by G. D. Garland, Pergamon
- ✓ Potential Theory and Static Gravity Field of the Earth by C. Jekeli, The Ohio State University
- ✓ Theory of the Earth's Gravity Field. Miloš Pick , Jan Picha , Vicenc Vyskočil, Elsevier
- ✓ Gravity Prospecting by N. Sazhina, N. Grushinsky, Mir Publishers
- ✓ Geodesy and Gravity by John Wahr, Samizdat Press
- ✓ Gravity and the Earth by A.H. Cook, Crane Russak & Co

COURSE OBJECTIVES

The purpose of this course is to introduce students to the basic concepts of gravity and geodesy related subjects to enhance their knowledge on gravity measurements. At the completion of this course, the students will be able to understand the principals of gravity and to calculate the gravity differences using parameters.

COURSE CONTENT

Definition of Gravity
Gravity Field
Curvature of Level Surfaces and Plumb Lines
The Anomalous Gravity Field, Geoid Undulations and Deflections of the Vertical
The Vertical Gradient of Gravity
Determination of Physical Constants of the Earth
Gravity Reduction
Isostatic Reductions
Spherical Effects
Practical Determination of the Geoid
Relative Gravity Measurements

GRADING

Homework	50%
Final exam	50%

ATTENDANCE

50 % attendance is compulsory.