



**Code and Name:**

**FİZ5780 EXPERIMENTAL TECHNIQUES IN HIGH ENERGY AND NUCLEAR PHYSICS**

**Unit:**

Graduate School of Natural and Applied Sciences

**Detail:**

**Period:** 2023-2024

**Status:** Optional

**Class:** 1

**Credits:** 3-0-0-3

**ECTS:** 6

**Language:** Turkish

### INSTRUCTOR

Title, Name and Surname:

Phone:

Email:

Social Account:

Student Day and Time:

### COURSE ASSISTANT

Title, Name and Surname:

Phone:

Email:

Social Account:

Student Day and Time:

**Lessons**

**Monday**

**Tuesday**

**Wednesday**

**Thursday**

**Friday**

**Saturday**

**Program:**

**Rendering:**  
**Place:**

Face-to-face lessons per week 3 It will be done on an hourly basis.

**YY:** -

**UE:** -

**Purpose:**

Used in nuclear and particle physics research Physical principles and providing information about detectors.

**Material:**

Experimental Techniques in Nuclear and Particle Physics, Stefan Tavernier, Springer Berlin Heidelberg, 2010.

**Student Responsibility:**

Attendance in Lectures and Exams..

### Weekly Lesson Plan

Week	Topic	Method
1	Fundamentals of Physics, Natural Radiation Sources	YY
2	Particle Accelerators, Electron Recombination, and Examination of Electron and Hole Movement in an Electric Field.	YY
3	Basic parameters in detector designs.	YY
4	Measurement of ionization, introduction of ionization chambers.	YY
5	Measurement of ionization, introduction of ionization chambers.	YY
6	Cylindrical ionization chambers, Time projection chambers	YY
7	Simulation of traces of particles with ultraviolet lasers, Nuclear emission	YY
8	Bubble chambers, Time measurement, Photomultiplier tubes	YY
9	Scintillations, Planar counters, Particle identification, Neutron detectors	YY
10	Measurement of the flight times of particles, Cherenkov Counters	YY
11	Hadron Calorimeters, Calibration of Calorimeters.	YY
12	Energy Measurement, Momentum Measurement, Fixed Target Measurements	YY
13	Detector system applications	YY
14	Applications in the field of medicine, applications in geophysics, applications in nuclear physics, applications in nuclear physics and particle physics	YY

### Assessment and Evaluation

Method		Number	Weight
Break Exam	Exam	Face	1 % 50
	Quiz	-	-
	Homework	-	-
	Project	-	-
General Exam	Face	1	% 50

### Course Outcomes:

1	Student's knowledge of nuclear and particle physics measurements
2	Student's knowledge of nuclear and particle physics
3	The student understands what information can be obtained by nuclear and particle physics measurements
4	To provide the student with information about radiation sources and measurements.
5	Student's interpretation of the results obtained as a result of nuclear and particle physics measurements

### Course-Specific Explanations:

**UE:** Distance Education; **YY:** Face-to-Face Education



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FIRAT UNIVERSITY  
**Course Syllabus Form**

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