

PhD Physics course at Bari University (Cycle)

Title	Gas Detectors
Proponent	1. Ranieri/Tessarotto/Verwilligen
# CFU (1 CFU = 8 hours)	2 CFU
Schedule	See lessons calendar
Brief Summary of the course	This lectures gives a comprehensive description of modern gaseous detectors of photons and charges particles, a technology and devices widely used in physics experiments and industrial applications. Micro Pattern Gas Detectors (MPGDs) represent a new generation of position-sensitive gaseous detectors, which are inspiring and stimulating new directions in all the fields where imaging techniques are exploited
Programme	<p>Topics covered:</p> <ul style="list-style-type: none"> • Gaseous electron multipliers • Microstrip gas counters • Microdot detectors • MICROMEAS • Parallel-plate chambers • Photon visualization • Traditional gaseous detectors • A brief overview of simulation tools will also be given with some exercise sessions performed on PCs made by using Garfield++, MagBoltz, ANSYS programs with a few example of case of study. • Finally a Laboratory session will be performed illustrating the operations of planar and Time Projection chamber by using GEM together with related instrumentation and software tools for operating with them.
Recommended texts	<p>1. Gaseous Radiation Detectors: Fundamentals and Applications. Author: F. Sauli, http://www.cambridge.org/F4GASEOUS</p> <p>2. The gas electron multiplier (GEM): Operating principles and applications. Nucl. Instr. and Meth. In Press (7 Aug. 2015)</p> <p>3. Innovative Applications and Developments of Micro-Pattern Gaseous Detectors Author(s): Tom Francke and Vladimir Peskov</p>
Assessment methods	Dissertation on related assigned arguments