MATERIALS ENGINEERING AND NANOTECHNOLOGY (LM76)

(Lecce - Università degli Studi)

Insegnamento PHYSICS OF MATTER MOD. II

GenCod A003098

Docente titolare Nicola LOVERGINE

Insegnamento PHYSICS OF MATTER MOD. II

Insegnamento in inglese PHYSICS OF MATTER MOD. II

Settore disciplinare FIS/03

Corso di studi di riferimento MATERIALS ENGINEERING AND

Tipo corso di studi Laurea Magistrale

Crediti 6.0

Ripartizione oraria Ore Attività frontale: 54.0

Per immatricolati nel 2022/2023

Erogato nel 2022/2023

Anno di corso 1

Lingua

Percorso PERCORSO COMUNE

Sede Lecce

Periodo Primo Semestre

Tipo esame Orale

Valutazione

Orario dell'insegnamento https://easyroom.unisalento.it/Orario

PREREQUISITI

Knowledge and understanding of the concepts tought in PHYSICS OF MATTER MOD. I & MOD. II (LM56)

METODI DIDATTICI

The Course is carried on through classroom theoretical lectures (about 90% of the total teaching hours) and practical Laboratory sessions (about 10% of the teaching hours) , the latter focussing on the applications of MOVPE and MBE technology to the synthesis of compound semiconductor hetero- and nano-structures.

MODALITA' D'ESAME

The exam consists of an oral examination/colloquium aimed at determining to what extent the student has gained an overall knowledge of the topics treated within the course, and its ability to discriminate between different semiconductor technologies, their most relevant areas of applications and understand the fundamental physical-chemical principles behind these technologies.

PROGRAMMA ESTESO

Introduction to Semiconductors and their Applications, Crystallography of elemental and compound semiconductors, Electrons band structure of semiconductors, Point defects in semiconductors, Line and plane defects in semiconductors, Phase diagrams of semiconductor compounds, Production of Electronic Grade poly-Silicon, Bulk crystal growth technologies of c-Silicon, Bulk crystal growth technologies of III-V compound semiconductors, Fabrication of Semiconductor Wafers, Epitaxy and epitaxial heterostructures, Liquid Phase Epitaxy, Principles of VPE technology, VPE-chlorides and VPE-hydrides of Si and III-V compounds, VPE-hydrides of II-VI compounds, MOVPE technology of compound semiconductors, Laboratory I: VPE/MOVPE, MBE technology of compound semiconductors, Laboratory II: MBE.

TESTI DI RIFERIMENTO	*Fundamental University Physics Vol. 3 – Quantum and Statistical Physics* (M. Alonso & E.J. Finn), Addison Wesley (1968). *Introduction to Solid State Physics*(C. Kittel), Wiley (Chichester, 1991). *Handbook of Crystal Growth*, Edited by D.T.J. Hurle (North-Holland, Amsterdam-NL, 1993). Vol. 2: "*Bulk Crystal Growth*". Vol. 3: "*Thin Films and Epitaxy*"