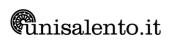
## **MATERIALS ENGINEERING AND NANOTECHNOLOGY (LM56)**

(Lecce - Università degli Studi)

Teaching SEMICONDUCTOR PHYSICS AND TECHNOLOGY GenCod A003116		Teaching in italian SEMICONDUCTOR PHYSICS AND TECHNOLOGY	<b>Course year</b> 2
		Teaching SEMICONDUCTOR PHYSICS AND TECHNOLOGY	Language ENGLISH
		SSD code FIS/03	Curriculum MATERIALS FOR ELECTRONIC APPLICATIONS
Owner professor Nicola LOVERGINE		<b>Reference course</b> MATERIALS ENGINEERING AND	
		Course type Laurea Magistrale	Location Lecce
		Credits 9.0	Semester Second Semester
		Teaching hours Front activity hours:	Exam type Oral
		81.0 For enrolled in 2019/2020	Assessment Final grade
			Course timetable
		Taught in 2020/2021	https://easyroom.unisalento.it/Orario
REQUIREMENTS	Knowledge and (LM56)	d understanding of the concepts tought	in PHYSICS OF MATTER MOD. I & MOD. II
TEACHING METHODOLOGY	hours) and prac	ctical Laboratory sessions (about 10% of t is of MOVPE and MBE technology to th	lectures (about 90% of the total teaching he teaching hours) , the latter focussing on he synthesis of compound semiconductor

ASSESSMENT TYPE 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.

**FULL SYLLABUS** 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.



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## REFERENCE TEXT BOOKS

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"

