



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Ingegneria
<b>ACADEMIC YEAR</b>	2017/2018
<b>MASTER'S DEGREE (MSC)</b>	ENGINEERING AND INNOVATIVE TECHNOLOGIES FOR THE ENVIRONMENT
<b>SUBJECT</b>	ENVIRONMENTAL ECONOMICS
<b>TYPE OF EDUCATIONAL ACTIVITY</b>	C
<b>AMBIT</b>	20937-Attività formative affini o integrative
<b>CODE</b>	02720
<b>SCIENTIFIC SECTOR(S)</b>	ICAR/02
<b>HEAD PROFESSOR(S)</b>	MAZZOLA MARIO      Cultore della Materia      Univ. di PALERMO ROSARIO
<b>OTHER PROFESSOR(S)</b>	
<b>CREDITS</b>	6
<b>INDIVIDUAL STUDY (Hrs)</b>	96
<b>COURSE ACTIVITY (Hrs)</b>	54
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	1
<b>TERM (SEMESTER)</b>	2° semester
<b>ATTENDANCE</b>	Not mandatory
<b>EVALUATION</b>	Out of 30
<b>TEACHER OFFICE HOURS</b>	<b>MAZZOLA MARIO ROSARIO</b> Monday    12:00   13:00   Stanza del docente 1° Piano DICAM sezione Idraulica Tuesday   12:00   13:00   Stanza del docente 1° Piano DICAM sezione Idraulica

DOCENTE: Prof. MARIO ROSARIO MAZZOLA

<b>PREREQUISITES</b>	None
<b>LEARNING OUTCOMES</b>	<p>Knowledge and capacities of understanding: The student at the end of the course will have knowledge of the issues concerning the economic impact of the use of natural resources and environment. The student will acquire the knowledge of evaluation principles of the environmental benefits and costs connected to the use of the resources.</p> <p>Capacity to apply knowledge and understanding: The student will be able to apply the methodologies of the evaluation of environmental benefits and costs and to set up a cost-benefits analysis.</p> <p>Judgment evaluation: The student will acquire the procedures in order to develop the analyses of the environmental problems and to estimate the environmental benefits and damages connected to the measures.</p> <p>Communication skills: the student will acquire the ability to draft a report and a communication about the iter followed for the application of methodologies of assesment and evaluation acquired, with graphics, figures and charts.</p> <p>Learning skills: The student will be able to identify the best design alternative considering all the positive and negative environmental impacts.</p>
<b>ASSESSMENT METHODS</b>	<p>The student will be tested orally by three or more questions on the subjects of the course as treated in the textbooks. The final exam aims at testing the student knowledge and subject comprehension and his . skill of understanding and solving autonomously real simple cases. The student will be reach the pass mark when he proves his knowdedge and comprehension of the course subjects at least in general terms. He has also to show enough practical capacity in solving real cases and furthermore expository capacity in order to transfer his knowledge to the examiner. Under this pass mark, the exam will be considered failed. On the contrary more the student will be able to interact with the examiner by his reasoning and expository capacity, showing to be able to go into details of the subjects of the course , more the valuation will be positive . The minimum score of the exam will be 18 out of 30 , while the maximum score will be 30 out of 30.</p>
<b>EDUCATIONAL OBJECTIVES</b>	<p>The course has the purpose to provide the knowledge of the issues connected to the environmental degrade and to the use of natural resources. For this purpose the base concepts of economic engineering and cost-benefits analysis are also necessary. The applications will focus on the evaluation methods of environmental benefits and damages.</p>
<b>TEACHING METHODS</b>	Lectures and classroom exercises.
<b>SUGGESTED BIBLIOGRAPHY</b>	<p>Libri di testo consigliati</p> <p>1)Tom Tietenberg; Economia dell'ambiente, McGraw-Hill</p> <p>2)R.K.Turner, D. W. Pearce, I. Bateman ; Economia dell'Ambiente, Il mulino.</p> <p>3)Gerard J. Thuesen e Wolter J Fabrycky, Economia per Ingegneri, Il Mulino,</p> <p>Lecture consigliate da:</p> <p>a)A.E. Boaedam, D.H.Greenberg, A.R.Vining, D.L.Weimer; Cost Benefit Analysis. Concepts and Pratctice, Pearson Prentice Hall.(*)</p> <p>b)Ronald C. Griffin; Water resources economics, The MIT Press</p> <p>c)D.E.Pearce, R.K. Turner; Economics of Natural Resources and the Environment, Harvester Wheatsheaf.</p> <p>d)William J. Baumol and Wallace E. Oates; The theory of environmental policy; Cambridge University Press.</p> <p>e)Leonard Ortolano: Environmental Regulation and Imapct Assessment; John Wiley and Sons</p>

## SYLLABUS

Hrs	Frontal teaching
5	Principles of economic engineering. Investments evaluation methods. Depreciation, taxes and cost of the capital. Comparison among design alternatives. Renovations analysis. Risks analysis models. Capital rationing. Costs - benefits financial analysis.
5	Choice of design alternatives. Public projects evaluation. Accounting and amortization. Assesments, evaluations of the risk and uncertainty. Economic analysis of the operational management.
5	Economy and environment. Sustainable development and future scenerios. Evaluation of the environment: concepts. Evaluation of the environment: methods.
5	Causes of the environmental degrade. The functioning of markets and the causes of their failure. Ownership rights, environmental externalities and problems. The failure of public intervention. Economic cost-benefits analysis and the evaluation of interest for the nature.
5	Natural resources economy. Renewable resources. Non-Renewable resources. Energy. Water. Biodiversity economic analysis.
10	Enviromental economy. Atmospheric pollution by local pollutant. Atmospheric pollution by acid rain and environmental changes. Hydric pollution. Solid waste and recycling.
5	Economic development, poverty and environment. Environmental economic control: environmental charges, environmental permits and definition environmental standard. Environmental risk evaluation.

<b>Hrs</b>	<b>Practice</b>
5	Examples and applications of economic engineering.
10	Examples and applications of environmental evaluation methods and cost-benefits analysis related to environmental issues.
5	Examples and applications of environmental damages evaluation.