

COURSE OUTLINE

BASIC PRINCIPLES OF BIOECONOMY AND THEIR APPLICATION IN CONTEMPORARY ENTREPRENEURSHIP

(1) GENERAL

SCHOOL	TECHNOLOGY		
DEPARTMENT	FORESTRY, WOOD SCIENCES & DESIGN		
LEVEL	POSTGRADUATE		
COURSE CODE	M130	SEMESTER	2 nd
COURSE TITLE	BASIC PRINCIPLES OF BIOECONOMY AND THEIR APPLICATION IN CONTEMPORARY ENTREPRENEURSHIP		
ACTIVITIES		WEEKLY HOURS	ECTS
	Lectures	2	6
	TOTAL	2	6
TYPE OF COURSE	COMPULSORY IN MANAGEMENT AND MARKETING SPECIALIZATION, ELECTIVE COURSE IN SPECIALTIES PRODUCT DESIGN & TECHNOLOGY AND MANUFACTURING		
PREREQUISITES:	NO		
LANGUAGE OF TEACHING AND EXAMINATION	GREEK		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO		
WEBPAGES COURSE (URL)	https://eclass.uth.gr/courses/FWSD_P_128/		

(2) LEARNING OUTCOMES

Learning Outcomes
<p>The course responds to the rapid development of the global bioeconomy by providing fundamental knowledge and skills required in today's competitive and fast-growing business and work environment with a focus on wood value chain businesses. The main purpose of the course is to train postgraduate students to be able to recognize innovation opportunities through the gathering of various sources of knowledge since our time tends towards the interdependence of business success and respect for the environment especially for the wood and furniture industries.</p> <p>The central objectives of the course are to acquire a dynamic set of knowledge and skills so that upon completion of the course, postgraduate students will be able to:</p> <ul style="list-style-type: none"> • gain an overall view and ability to assess the ways in which the bioeconomy has already begun to change production methods, industrial structures and sectors, market dynamics and strategic decision-making • become aware of the ethical and legal issues that people and society in general face and will face in the near future as a result of these changes • introduce the context of the bioeconomy that includes the state, users, citizens, and third parties and recognize the emerging socio-economic trends in the bioeconomy • to be able to understand and utilize the knowledge of the analysis of the life cycle of products and industrial sectors and to make use of this knowledge in the development of business strategies or even more specialized ones such as production strategy, coke marketing. in order to respond to modern competitive challenges • To acquire extensive, analytical and critical knowledge of different technologies and methods of various sub-disciplines and activities of the bioeconomy • To become effective communicators of critical issues of strategic management and strategic analysis of innovations of various forms (open innovation, knowledge market, coke knowledge management) including intellectual property issues business capital and new

required abilities and skills to create new products and services attractive to the market but also in accordance with the new imperatives of the circular bioeconomy

- To be able to quantitatively and qualitatively define the efficiency of resources

General Skills

(3) COURSE CONTENT

In the theoretical part of the course the student is taught and learns about:

- The concept of sustainability and the creation of sustainable value: ecological, economic and social dimensions.
- Introduction to the bioeconomy: definitions, international bioeconomy strategies and scenarios.
- The role of bioeconomy and global challenges. The circular bioeconomy. Sustainability, resource and material efficiency. Product / industry life cycle.
- The prioritization of the use of wood, the evaluation of the life cycle. Biomass, bio-refineries – related technologies.
- The cascading use of biomass.
- Energy performance of low-quality wood products (residues from processing) and by-products. Technology and opportunities in our country.
- Life cycle of wood products. European, global reality and profit possibilities from its application.
- Business network structures and sustainable development models in the context of the circular wood economy.
- Bioeconomy: purchase of resources and products, buying and selling, demand and supply curves).
- Sustainable development and management.
- The economics of the bioeconomy.
- The role of the EU: regulations, policies - business opportunities.
- Transition scenarios to the sustainable bioeconomy, innovation systems and good practices.

From the 1st lesson, a suggested list of assignments (individual or composite) is given that the student should undertake and prepare (individually) until the end of the semester of the MSc.

The final assignment includes, in addition to paper and electronic submission, a public oral presentation on the chosen topic, on a set date (usually the 12th or 13th week of classes). The presentation lasts 15 minutes and is followed by 5 minutes of questions from the students present. The teacher intervenes - if necessary - for comments, observations, corrections.

Students are graded on their overall performance in their final paper: 70% on content and editorial specifications and 30% on the preparation of the online presentation and its oral support.

These grades count for a total of 40% of the overall grade that students will receive after the final written theory exam.

(4) TEACHING AND LEARNING METHODS - EVALUATION

COURSE DELIVERY METHOD	In Class and remotely
USE OF INFORMATION AND	<ul style="list-style-type: none"> • Use of PC, ppt slides, projector

COMMUNICATION TECHNOLOGIES	<ul style="list-style-type: none"> Learning process support through the e-class electronic platform 	
MANAGEMENT OF TEACHING	Activity	Semester Workload
	Lectures	26
	Small individual practice tasks	20
	Final Subject	60
	Independent Study	44
	Course Total (25 workload hours per credit unit)	150
STUDENT EVALUATION	<p>I. Written final exam (60%) which includes:</p> <ul style="list-style-type: none"> Short answer questions from all the material in the book Solving exercises related to the subject of the course <p>II. Presentation of Individual Work (40%).</p>	

(5) RECOMMENDED-BIBLIOGRAPHY

- Suggested Bibliography:

- Arcese G, Lucchetti MC et al (2016) State of the art in S-LCA: integrating literature review and automatic text analysis. *Int J Life Cycle Assess.* <https://doi.org/10.1007/s11367-016-1082-0>
- Benoît Norris C, Traverso M et al (2009) The methodological sheets for subcategories in social life cycle assessment (s-lca). Available on: http://www.lifecycleinitiative.org/wp-content/uploads/2013/11/S-LCA_methodological_sheets_11.11.13.pdf
- Bioeconomy Summit (2015) Communiqué of the global bioeconomy summit 2015: making bioeconomy work for sustainable development, Berlin
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- Birch K, Levidow L, Papaioannou T (2010) Sustainable capital? The neoliberalization of nature and knowledge in the European “knowledge-based bio-economy”. *Sustainability* 2(9):2898–2918. <https://doi.org/10.3390/su2092898>
- Bonaiuti M (2014) Bio-economics. In: D’Alisa G, Dematia F, Kallis G (eds) *Degrowth: A vocabulary for a new era*. Routledge/Taylor & Francis Group, Abingdon/Oxon, pp 52–55
- Ellen MacArthur Foundation (2013) *Towards the circular economy*. http://www.mckinsey.com/~media/mckinsey/dotcom/client_service/sustainability/pdfs/towards_the_circular_economy.ashx
- Ghisellini P, Cialani C, Ulgiati S (2016) A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *J Clean Prod* 114:11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>
- Kovacs B (ed) (2015) *Sustainable agriculture, forestry and fisheries in the bioeconomy – a challenge for Europe*. Standing Committee on Agricultural Research – 4th Foresight Exercise. European Commission, Brussels
- Kuckertz A, Kollmann T et al (2017) Understanding, differentiating, and measuring opportunity recognition and opportunity exploitation. *Int J Entrep Behav Res* 23(1):78–97
- Kühnen M, Hahn R (2017) Indicators in social life cycle assessment: a review of frameworks, theories, and empirical experience. *J Ind Ecol.* <https://doi.org/10.1111/jiec.12663>
- Lewandowski I (2015) Securing a sustainable biomass supply in a growing bioeconomy. *Glob Food Sec* 6:34–42

- Nang’ole E, Mithöfer D, Franzel S (2011) Review of guidelines and manuals for value chain analysis for agricultural and forest products. Occasional Paper 17. World Agroforestry Centre, Nairobi
- Odegard I, Croeze H, Bergsma G (2012) Cascading of biomass: 13 solutions for a sustainable bio-based economy. CE Delft, Delft
- Sadhukhan J, Ng KS, Martinez E (2014) Biorefineries and chemical processes: design, integration and sustainability analysis. Wiley, Chichester. <https://doi.org/10.1002/9781118698129>
- Van den Born GJ, van Minnen, JG, Olivier JGJ, Ros JPM (2014) Integrated analysis of global biomass flows in search of the sustainable potential for bioenergy production, PBL report 1509, PBL Netherlands Environmental Assessment Agency
- Virchow D, Beuchelt TD, Kuhn A et al (2016) Biomassbased value webs: a novel perspective for emerging bioeconomies in Sub-Saharan Africa. In: Gatzweiler FW, von Braun J (eds) Technological and institutional innovations for marginalized smallholders in agricultural development. Springer, Berlin, pp 225–238
- Von Braun J (2014) Bioeconomy and sustainable development – dimensions. *Rural* 21(2):6–9
- Wield, D. (2013) Bioeconomy and the global economy: industrial policies and bio-innovation. *Technology Analysis & Strategic Management*, 25(10):1209-1221. [EJournal]
- Gottwald FT (2016) Bioeconomy – a challenge to integrity. In: Westra L, Gray J, D’Aloia A (eds) *The common good and ecological integrity: human rights and the support of life*. Earthscan/Routledge, London/New York, pp 22–35.