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Bioeconomy research design and methods
SYLLABUS

Study subject No: **5.1.**

Responsible Unit: **Latvia University of Life Sciences and Technologies (LBTU)**

Credits and distribution of academic hours*:

	Credits ECTS	Contact hours		Independent study hours	Total hours
		Lectures	Practical works or seminars		
LBTU	4	21	14	84	120
VMU	1	6	4	21	30
Total	**5**	**27**	**18**	**105**	**150**

** 1 ECTS = 30 hours (9 contact hours and 21 independent hours);*
1 academic hour = 40 minutes;
Theoretical lectures not less than 50% of contact hours.

Course developers:
Latvia University of Life Sciences and Technologies (LBTU), **Assoc. prof. Sandija Zēverte-Rivža**
Vytautas Magnus University (VMU), **Prof. Vlada Vitunskiene**

Notes: General study course for the master programme Bioeconomy.

Prior knowledge: Courses "Bioeconomy development and policy".

Annotation: Students acquire knowledge and skills in the basic stages of designing a research, knowledge about the role of science in modern society, get acquainted with scientific research methods used in bioeconomy studies. In this course attention is also paid to the basic principles of developing theoretical framework of the master's thesis and finding and using sources of information and data for research in the bioeconomy, as well as to the analysis of the structure and content of research results, which in general promotes understanding of what a qualitative master's thesis is and how such should be developed.

The aim is to enable students to acquire knowledge of research methodology and skills to apply it in scientific work or applied research when preparing the Master's thesis or other similar work in bioeconomy.

Description of the organization and tasks of students' independent work: The student has to complete an independent work about selection and application of research methods and use of scientific information and data.

Learning outcomes (knowledge, skills and competences)

Learning outcome	Assessment method	Level of achievement		
		Average	**High**	**Very high**
KNOWLEDGE				
Students will be able to: demonstrate the knowledge of the types and main stages of research	Independent work, discussions in practicals	Basic knowledge of the types and main stages of research	Knowledge of the types and main stages of research	In-depth knowledge of the types and main stages of research and an ability to identify regularities in the course of research
Demonstrate the knowledge of research methods used most commonly bioeconomy research – their types and selection conditions to achieve research goals	Independent work, discussions in practicals	Awareness of the methods used most commonly in research	Knowledge of the most frequently used methods, their types and how to select them	Close familiarity with research methods and how to apply them
Understand the basic principles for developing a theoretical framework of research	Independent work, discussions in practicals	Basic understanding of the basic principles for developing a theoretical framework of research	Understanding of the basic principles for developing a theoretical framework of research	In-depth understanding of the basic principles for developing a theoretical framework of research
SKILLS				
Professional skills				
Independently design the research according to the specifics of the research, define the research problem, aim and hypothesis	Presentation in a practical	Basic ability to design the research according to the specifics of the research, define the research problem, aim and hypothesis	Ability to design the research according to the specifics of the research, define the research problem, aim and hypothesis	Design the research according to the specifics of the research, define the research problem, aim and hypothesis
Create the theoretical part of the research, using various, high-quality content and relevant sources of information, including scientific research papers available in databases	Independent work	Can independently create the theoretical part of the research	Has good ability to create the theoretical part of the research, yet there is difficulty in interpreting and analysing information sources	Has excellent ability to completely describe and assess the content of information sources, the differences, problems, contradictions and factors and create a high-quality theoretical part of the research
Critically select and choose the ways of obtaining information and data and suitable	Independent work, presentation in the student	Can select and choose the ways of obtaining information and data and suitable	Can select and choose the ways of obtaining information and data and suitable	Has select and choose the ways of obtaining information and data and suitable methods

methods for processing the information and data	scientific conference	methods for processing the information and data	methods for processing the information and data	for processing the information and data
Soft skills				
Work fluently in a group, produce creative solutions and disseminate information about the work findings	Independent work, group work, a presentation	Can work in a group and accomplish the assignments sufficiently	Work very well in a group, produce creative solutions and disseminate information about the work findings	Works fluently in a group, produce creative solutions and disseminate information about the work findings, takes initiative where appropriate
Independently obtain, select, systematize necessary information	Independent work	Has sufficient ability to select and systemise the necessary information	Has good ability to obtain and select necessary information, yet there is difficulty in systemizing it	Has convincing ability to obtain, select, systematize necessary information
COMPETENCE				
Apply and adapt research methods according to the specifics of a particular research study	Independent work	Basic ability to select and apply proper research methods	Good ability to select and apply proper research methods	Excellent ability to apply and adapt research methods according to the specifics of a particular research study, reasonably explaining why the methods are applied
Interpret, structure and format the results of the research	Independent work, presentation in the student scientific conference	Basic ability in interpreting, structuring and formatting the results of the research	Sufficient ability to interpret, structure and format the results of the research well	Excellent ability to interpret, structure and format the results of the research well

Requirements for awarding credit points: The student has to pass an exam as well as to complete and submit practical assignments performed during practicals, and to complete the group and individual assignments.

Knowledge assessment and prerequisites for taking a test or examination
The final mark in the course is based on cumulative score: Activity during lectures and practicals/seminars (5 %), group work and a presentation (20 %), individual independent work and a presentation (40 %), Exam (35%).

** 10 percent are equal to one point on a 10-point marking scale (or 10 percent are equal to 0.5 point on a 5-point marking scale).*

Topic	Type of assessment	Percen-tage	Assessment deadline
Activity in lectures and practicals/seminar classes	Participation and activity in discussions	5	During the entire semester
Independent work from two tasks : 1) manuscripts of the introduction of master's thesis; and 2) manuscript of literature review with the statements that expresses the author's stance and opinion	Individual independent work	20	During the entire semester
Group work and presentation about research planning and design	Group work and presentation	20	Within the specified time for the presentation
Individual work and presentation about the use of information sources and research methods	Individual independent work	20	Within the specified time for the presentations
Exam	Exam with open questions	35	Within the specified time for the exam
Total		100	-

The course contents

1. Lectures

1. Introduction to bioeconomy related scientific and applied research.
2. Research problem, hypothesis, object, aim and objectives.
3. Theory, empirics, methods and argumentation in scientific work.
4. Scientific literature, language and tools of writing a scientific work.
5. Research planning, main stages of scientific research, research design.
6. Scientific research methods, classification of research methods, research methods for studies in bioeconomy.
7. Use of information sources for research in bioeconomy.

2. Practicals

1. Workshop on formulating a research problem and hypothesis: comparing of samples.
2. Workshop on formulating a research aim and objectives: comparing of samples.
3. Workshop on writing research papers: how to use academic literature for research and how to express the author's stance.
4. Group work about research planning and research design, presentation of results.
5. Workshop about selection and use of information sources and data for research in bioeconomy.
6. Workshop about selection and application of appropriate scientific research methods for studies in bioeconomy. The start of individual project work.

List of sources of training, methodological and scientific literature and information

Compulsory reading (books, scientific articles, online sources etc.):

1. Rienecker, L., Jørgensen, P. S. (2018). The good paper: a handbook for writing papers in higher education. 2nd edition 2018. With contributions by Skov S., Sonne-Ragans, V., Rasmussen L. T., Wien Ch., Remvig, K. and Klitgård, I. Samfundslitteratur.
2. Creswell, J. W., & Creswell, J. D. (2018). Research design: qualitative, quantitative, and mixed methods approach. Fifth edition. Los Angeles: SAGE, p.275.
3. Kumar, R. (2019). Research methodology: a step-by-step guide for beginners, 5th edition. SAGE

Further reading:

1. Wolf C., Joye D., Smith T.W., Fu Yang-chih. The Sage Handbook of Survey Methodology. Croydon: Sage Publications Ltd, 2016. P.716. ISBN : 978-1-4462-8266-3
2. Willoughby D. An Essential Quide to Business Statistics. UK : John Wiley $ Sons, 2015. 356 lpp. ISBN 978-1-118-71563-5
3. Toepoel V. Doing Surveys Online. Croydon : Sage Publications Ltd, 2016. 258 lpp. ISBN : 978-1-4462-4967-3

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