



Description of the SAGRIS module

Code Module 4	Title of the module Transdisciplinary research methods for sustainable agriculture
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1. Learning Objectives of the Module

<p>Qualification objectives</p> <p>This module's overall objective is to educate PhD students in innovative ways to tackle complex agricultural and food systems, collaborate with community stakeholders, and use a transdisciplinary research approach. This module's primary focus is on methods and understanding of the concept of transdisciplinary research, which includes knowledge of the theoretical foundations of the systems approach and practical skills in implementing practices of participation and stakeholder engagement.</p> <p>Competencies (C1): PhD students are able to conduct transdisciplinary research to improve the sustainability of agriculture and food systems.</p> <p>Knowledge (C1K1): theories and concepts underlying transdisciplinary research; and methods and tools for the integration and co-creation of knowledge.</p> <p>Skills (C1S1): be able to select and apply various concepts and methods for planning, implementing and evaluating transdisciplinary research tasks.</p>
<p>Summary of the Content</p> <p>Which professional, methodological, practical and interdisciplinary contents will be delivered?</p> <p>From a <i>methodological point</i> of view, the module focuses on a system approach in agricultural sociology, particularly concerning understanding the importance of human behaviour and fundamental knowledge for the functioning and change of agricultural and food systems.</p> <p>The module's <i>theoretical content</i> is determined by the concepts and models of sustainable development of agriculture, the patterns and specifics of rural communities, and the socio-ecological component of human activity. The module's <i>practical aspects</i> are to carry out research to sustain agriculture and food systems, with increased farmer participation and peer learning.</p> <p>The general <i>professional/interdisciplinary approach</i> is revealed in the content through the complex interaction of research's subject-activity orientation. Stakeholder orientation in the research process requires the triangulation of information and the exploration of different points of view and understanding through qualitative methods.</p> <p><i>Professional content</i> is reflected through the research object's characteristics as the countryside, agrosphere, agriculture, rural population, socio-territorial organisation systems, rural social infrastructure, agricultural production, processing of farm products, etc.</p>
<p>Teaching/learning forms (summary)</p> <p>The module includes a combination of teaching methods, including lecture-visualization, lecture-discussion, business games, brainstorming, case studies, self-study, and student presentations.</p>

2. Preconditions for participation

Knowledge, skills, competences	PhD students are familiar with sustainable development terminology, have research skills, and identify stakeholder groups in agricultural and food systems.
Preparation for the module	A preliminary study of literature, gaining knowledge about electronic databases and resources.

3. Module references to sustainable development

<p>Which aspects of sustainable development (economic, ecological, and social) will be treated?</p> <p>The content of the module is aimed at the use of effective methods for finding and making balanced environmental and economic decisions in agricultural and food systems. The module also includes fostering partnerships for sustainable development research.</p> <p>The theoretical aspects of sustainable development are most revealed in the content of the first part of the module, the content of which is aimed at mastering various concepts of sustainable development. Environmental aspects the relationship between natural systems and human activity is presented in the second part of the module. And finally, the third part of the module is aimed at studying various systems of knowledge of the real world (cultural, sectoral, institutional, etc.), which allow studying the social aspects of sustainable development.</p>
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4. Exam performances (preconditions for allocation of credit points)



Type and duration (min)	Share %
e.g., written exam: seminar work	60%:40%

5. Organisation (set by the University independently)

Responsible for the module Prof. Dr. please insert the name		
Type of the module Compulsory or elective	Regular cycle Each semester or annually	Duration 1 Semester or longer
Admission requirements e.g. none	ECTS-points 4 ECTS	Presence on semester week hours e.g. 4
Workload 4 ECTS-Points x 30 hours = 120 hours – total workload, with the following allocation		
Presence/Contacts 48-60 hours. / 40-50%	Preparation/ follow up/ self-study 24-30 hours. / 20-25%	Tasks/Group work 24-30 hours. / 20-25%

6. Module design

Subtopics	
Subtopic 1	Introduction to the concept of sustainable development in agriculture and food systems.
Subtopic 2	Systems approach: conceptual and theoretical foundations of the socio-ecological system and human activity systems.
Subtopic 3	Participatory and qualitative methods of transdisciplinary research.

6.1. Subtopic description

Code Subtopic 1	Subtopic title: Introduction in to sustainability in agriculture and food systems
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6.2. Subtopic design

<p>Learning outcomes</p> <p>Competence 1 (C1): PhD students are able to participate in discourses on sustainable development based on a profound understanding of different concepts, their emergence and different directions, including normative aspects</p> <p>Knowledge 1 (C1K1): the origins of sustainable development and its connection with agriculture, food security and environment</p> <p>Knowledge 2 (C1K2): the basic terms, theories and concepts of sustainable development, including the basics and the current state</p> <p>Skill 1 (C1S1): analyze factors and problems of sustainable development of the modern world, for instance, how human activities affect the environmental, social and economic aspects of sustainability</p> <p>Skill 2 (C1S2): reflect on issues of implementing sustainable development on local or regional level</p> <p>Competence 2 (C2): PhD students base decision-making on systematic situation analysis and are able to apply indicators of sustainability and tools for its assessment</p> <p>Knowledge 1 (C2K1): approaches and tools for assessing the degree of sustainable development in agriculture and food systems, including the strengths and weaknesses of various sustainability assessment tools</p> <p>Skill 1 (C2S1): be able to systematically assess the state and the weaknesses of sustainable development and resilience for the description of problems and needs for action</p>
<p>Content</p> <p>What professional, methodological, practical and interdisciplinary content is covered by the sub-topic</p> <p><i>Methodological</i> content aims at understanding various concepts of sustainable development. It is assumed that learners already have basic knowledge, for example, they know one of the basic definitions of sustainable development.</p> <p><i>Theoretical</i> content is aimed at solving problems related to the triangulation of theoretical information. sustainable development theories that combine ecological, social and economic approaches, which are the subject of study in this sub-topic.</p> <p><i>Practical</i> content is to implement the principles of sustainable development concepts in the implementation of practical tasks</p> <p><i>Professional</i> content focuses on the ability to distinguish between sustainable development concepts and definitions from an agricultural and food security perspective, as well as building an understanding that concepts and approaches to describing, measuring and influencing sustainable development are in continuous development.</p> <p><i>Interdisciplinary</i> content is linked to historical elements of the emergence of the concept of sustainable agricultural development and food safety</p> <p>Content:</p> <p>Topic 1: Introduction. Evolvement of sustainable development concepts.</p> <p>Topic 2: Indices and indicators of sustainable development.</p> <p>Topic 3: Sustainable agricultural development and food safety.</p>
<p>Teaching/Learning forms</p> <p>Problem-Lecture, Seminar with practical elements</p>
<p>Teaching / learning methods</p> <p>Lecture, group work, presentations and role play</p>
<p>Literature/ learning materials</p> <p>Literature sources:</p> <ol style="list-style-type: none"> 1. Ващалова, Т. В. Устойчивое развитие/ Т. В. Ващалова. — 3-изд., испр. идоп. — М. : Издательство Юрайт, 2017. 2. Данилов-Данилян, В.И. Устойчивое развитие: Новые вызовы: Учебник / В.И. Данилов-Данилян, А.Н. Пискулова. – М.: Аспект Пресс, 2015. 336 с. 3. Dragovic B, Tselentis V, Papadimitriou S, Tzannatos E, Paladin Z. Environmental Management and Monitoring for Sustainable Development in Marinas. Fme Transactions. 2016; 44:304-12. 4. Kim KH. Implementation status and monitoring of an environmental health-related index in relation to Sustainable Development Goals. Journal of the Korean Medical Association. 2017;60:662-71. <p>Additional literature:</p>



<p>5. Бобылев, С.Н. Устойчивое развитие: методология и методики измерения: Учебное пособие / С.Н. Бобылев. - М.: Экономика, 2011. - 358 с.</p> <p>6. Андрей Бертонцель, Майя Мешко, Митя Бервар. Устойчивое развитие. Экономические, социальные и экологические аспекты. Издательство: Ад Маргинем. 2014. 320 стр. Подробнее на livelib.ru: https://www.livelib.ru/book/1001413504-ustojchivoe-razvitie-ekonomicheskie-sotsialnye-i-ekologicheskie-aspekty-aedrej-bertontsel</p> <p>7. Доклад о развитии человеческого потенциала в Российской Федерации 2006/2007, 2010 / под общей редакцией проф. С. Н. Бобылева. – М. : Весь Мир, 2007, 2010</p>
<p>Other Participation in the conference</p>

6.3. Subtopic organization

ECTS-Points e.g. 3	Semester week hours e.g. 4	Grouping/ Yes/No	Recommended study semester e.g. 2	Language Russian or English
Workload 1ECTS-Pointx30hours = 30 hours, with the following allocation				
Presence 12-15 hours / 40-50%		Preparation/ follow up/ self-study 5-8 hours / 20-25%		Tasks/Group work 5-7 hours / 20-25%

6.1. Subtopic description

Code Subtopic 2	Subtopic title System approaches: conceptual and theoretical foundations of socio-ecological system and human activities
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6.2. Subtopic design

<p>Learning outcomes What knowledge and skills should be acquired to achieve the learning objectives of the module? To which competences will these contribute?</p> <p>Competence 1 (C1): PhD students are able to use system thinking to recognize the interconnected and multiscale nature of problems, and also to understand interactions between natural and human systems. Knowledge 1 (C1K1): Conceptual and theoretical foundations of system approaches and system thinking. Skills 1 (C1S1): apply system thinking as a way of using different views on a complex problem.</p> <p>Competence 2 (C2): PhD students are able to clearly understand interrelation in the social-ecological system and to integrate ecological thinking with worldviews based on moral priorities of people and their culture. Knowledge 1 (C2K1): Ways and methods of axiological assessment of their research activities, as well as measures of cognitive responsibility when considering all aspects of the socio-ecological system. Skills 1 (C2S1): apply a holistic worldview in the study and to consider social and natural objects and phenomena, taking into account interests of all participants in social-ecological system.</p> <p>Competence 3 (C3): PhD students are able to critically analyze and apply methods for assessing human activity systems, various knowledges, values, cultures of stakeholders, in order to understand functioning in interactions in socio-ecological system. Knowledge 1 (C3K1): Modern methods of assessing human activity, various knowledge, values, culture of concerned parties. Skills 1 (C3S1): understand and take into account different knowledges, values, culture of concerned parties when analyzing specific situations.</p>
<p>Content What professional, methodological, practical and interdisciplinary content is covered by the subtopic?</p> <p>This part of subtopic 2 examines the conceptual and theoretical foundations of systems thinking and systems approaches. All topics are aimed at achieving the foundations of systems thinking and understanding situational, specific problems from different points of view. Systems thinking should become the main guiding paradigm and ideological basis of the research topics and tasks.</p> <p>The idea of the subtopic is the assimilation of the understanding of the trinity of the socio-biological system, which examines the interaction of the biological, intellectual and symbolic aspects. It is necessary to form a worldview position among students based on the interconnectedness of the socio-biological system, which includes the interests of both animate and inanimate nature, and the interests of society. On the basis of the topics presented, it is necessary to teach graduate students to make preventive management decisions taking into account all stakeholders in order to perform research and practical tasks.</p> <p>The main content of the subtopic: <i>Methodological:</i> knowledge of the theoretical and methodological foundations of the interrelation of all elements of the natural environment and the social environment in society's economic practice in all spheres of social interaction. <i>Theoretical:</i> knowledge of the theoretical foundations of the concept of universal determinism of the socio-ecological system and the role of anthropogenic impact in it. <i>Practical:</i> the development of moral foundations for the formation of environmental consciousness for the sustainable, practical implementation of ecological culture in the usual living conditions. <i>General professional:</i> possessing the skills to consider one's professional activity as part of a unified sociobiological interaction system. <i>Professional:</i> the ability to apply a systematic approach in setting and implementing goals, as well as solving real economic problems in their professional activities</p> <p>Content: Topic 1. Cognitive aspect of the system approach to the study of the socio-ecological system Topic 2. Formation of ecological consciousness and ecological culture. Topic 3. Conceptualization of the socio-ecological system in socio-economic relations.</p>
<p>Teaching / learning forms (summary) overview lecture, problem lecture, lecture-dialogue, binary lecture, seminar (- with exercise) etc.</p>
<p>Teaching / learning methods</p>



Lecture, group work, presentations and role play
Literature/ learning materials
<ol style="list-style-type: none"> 1. Booth Sweeney L. Games for the development of systems thinking; Binomial. Knowledge Laboratory, 2017, p. 846. 2. McDermott Ian. The art of systems thinking. Required knowledge of systems and creative problem-solving; Alpina Publisher, 2015, p. 256. 3. Theoretical Frameworks for the Analysis of Social-Ecological Systems https://www.researchgate.net/publication/266027764 Theoretical Frameworks for the Analysis of Social-Ecological Systems 4. Conceptualizing the built environment as a social-ecological system https://www.tandfonline.com/doi/pdf/10.1080/09613210801928131
Other
Colloquium

6.3. Subtopic organization

ECTS-Points	Semester week hours	Grouping	Reccommended study semester	Langrage/ Russian or English
1	4	Yes/ No	2	
Workload				
1 ECTS-Point x 30 hours = 30 hours, with the following allocation				
Presence		Preparation/ follow up/ self-study		Tasks/Group work
12 / 50%		9 hours / 25%		9 hours / 25%

6.1. Subtopic description

Code Subtopic 3	Subtopic title Participatory and qualitative methods of transdisciplinary research
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6.2. Subtopic design

Learning outcomes

Competence 1 (C1): PhD students can distinguish and characterise transdisciplinary research, and critically evaluate when it shall be applied. The students,

Knowledge 1 (C1K1): know the differences between disciplinary, interdisciplinary and transdisciplinary research, advantages and disadvantages of a participative approach

Knowledge 2 (C1K2): summarizes the European experience in the implementation of transdisciplinary research

Skills 1 (C1S1): assesses the roles of various stakeholders (participants) of transdisciplinary research

Skills 2 (C1S2): identifies the benefits of a participatory approach in transdisciplinary research, taking into account European experience

Competence 2 (C2): PhD students are able to work effectively in a team with members of other disciplines and societal stakeholders during transdisciplinary research. They

Knowledge 1 (C2K1): know the importance of collaboration, peer learning and citizen science in scientific research

Knowledge 2 (C2K2): know principles, criteria and methods of building effective teams

Skills 1 (C2S1): organizes collaboration between practitioners and other local actors

Skills 2 (C2S2): develops communication and mediation skills to engage concerned parties in co-production of knowledge

Competence 3 (C3): PhD students are able to select a method, plan and implement research with the participation of various stakeholders in society. They

Knowledge 1 (C3K1): know basic concepts, methods and methods of qualitative research and features of a participatory approach in agricultural research

Knowledge 2 (C3K2): know stages of transdisciplinary research

Knowledge 3 (C3K3): are familiar with tools of transdisciplinary research and peculiarities of their application in agricultural research

Skills 1 (C3S1): applies participatory research methodology

Skills 2 (C3S2): plans a full cycle of transdisciplinary research

Skills 3 (C3S3): develops tools for collecting, processing and analyzing data (questionnaires, surveys, mental maps, diagrams, photo reports, etc.)

Content

What professional, methodological, practical and interdisciplinary content is covered by the sub-theme?

Transdisciplinary approaches are designed to link science and (agricultural) policy to the diverse knowledge systems of the real world (cultural, sectoral, institutional, etc.). Therefore, from a *methodological* point of view, the subtopic is focused on the integration of real problems of agricultural practice and scientific knowledge bases. The focus is on methods that enable PhD students to expand their knowledge in participatory research, collaborative learning, and farming citizen science.

The theoretical content of the subtopic is related to the structuring of knowledge integration processes in interdisciplinary conditions, and is determined by such heterogeneous objects as scenarios (for example, scenarios for the development of renewable energy sources), models (for example, climate change models), interdisciplinary foundations and terminology (for example, within ecosystem services or biodiversity), territory (for example, research in a specific city or region).

The practical aspects of the subtopic are the implementation of research, which requires special input and active participation of all stakeholders, since non-academic or non-professional actors bring a wide range of necessary factual knowledge and experience. In the course of such joint work, real problems of farmers are solved, joint production of knowledge and communication practices are implemented.

The general professional / interdisciplinary approach is revealed in the content of the subtopic not only at the level of inclusion of various disciplines (agricultural sociology, management, agricultural disciplines, etc.), but also at the level of research and practical problems.

The professional content of the subtopic prepares PhD students to confidently deal with change, cover different aspects of agricultural and food systems, and interact with scientists, farmers, consumers, as well as various communities and organizations. Obtained skills will be translated into farmer-driven research such as researcher-led farm experiments and trials; advisory research conducted by researchers on farms; collaborative research between farmer and researcher with public participation; farmer-led participatory research.

Content:

Topic 1. Introduction to transdisciplinary research

Topic 2. Basics of communication with stakeholders Topic 3. Methods of transdisciplinary research in agriculture
Teaching / learning forms (summary) Lecture, practical lesson, preparation for lessons / independent work, group work
Teaching / learning methods Lecture-visualization, lecture-discussion, business game, training, case study, self-study and student presentations.
Literature/ learning materials Literary sources: <ol style="list-style-type: none"> Мокий, В. С. Методология научных исследований. Трансдисциплинарные подходы и методы: учеб. пособие для бакалавриата и магистратуры / В. С. Мокий, Т. А. Лукьянова. — М.: Издательство Юрайт, 2017. — 163 с. Мокий, В.С. Основы трансдисциплинарности / В.С. Мокий. — Нальчик.: ГП КБР Республиканский полиграфкомбинат им. Революции 1905 года, 2009. — 368 с. Matthias Bergmann, Thomas Jahn, Tobias Knobloch, Wolfgang Krohn, Christian Pohl, Engelbert Schramm, Methods for Transdisciplinary Research (2012), Campus Frankfurt / New York, 60486 Frankfurt/Main, ISBN: 9783593418360
Additional literature: <ol style="list-style-type: none"> Касабуцкая Маргарита Сергеевна, Социальная экология и исследования экологического сознания в социологии: теоретические аспекты // Общество. Среда. Развитие (Terra Humana). 2017. №4 (45). URL: https://cyberleninka.ru/article/n/sotsialnaya-ekologiya-i-issledovaniya-ekologicheskogo-soznaniya-v-sotsiologii-teoreticheskie-aspekty (дата обращения: 16.10.2020) Мокий В.С. Истина и справедливость с позиции трансдисциплинарности-4 / В.С. Мокий, Т.А. Лукьянова. — Нальчик.: АНОИТТ, 2015 / [Электронный ресурс]. — Режим доступа: URL: http://td-science.ru/images/kart/truth_and_justice1.PDF Мокий В.С. Методология трансдисциплинарности-4 / В.С. Мокий. — Нальчик.: АНОИТТ, 2011 / [Электронный ресурс]. — Режим доступа: URL: http://td-science.ru/images/kart/td_metod_2017.zip Geilfus, F. (2008) 80 tools for participatory development: appraisal, planning, follow-up and evaluation / Frans Geilfus. -- San Jose, C.R.: IICA, 2008. online: http://repiica.iica.int/docs/B10131/B10131.pdf Jahn/Bergmann/Keil (2012): Transdisciplinarity: Between mainstreaming and marginalization. Ecological Economics, Vol. 79, July 2012, 1–10 Lang/Wiek/Bergmann/Stauffacher/Martens/Moll/Swilling/ Thomas (2012): Transdisciplinary research in sustainability science – practice, principles, and challenges. Sustainability Science, 7 (Supplement 1), 25-43. Lelea, M.A., G.M. Roba, A. Christinck, B. Kaufmann (2014). Methodologies for stakeholder analysis – for application in transdisciplinary research projects focusing on actors in food supply chains. German Institute for Tropical and Subtropical Agriculture (DITSL). Witzenhausen, Germany. pp. 1-15. online: http://reload-globe.net/cms/index.php/resources/56-presentation-collaborative-learning-for-fostering-change-2 Scott, J.C., 1998. Seeing like a state: how certain schemes to improve the human condition have failed. Chapter 9. Thin simplifications and practical knowledge: Metis. pp 309-341. Yale agrarian studies. Yale University Press, New Haven. online: https://libcom.org/files/Seeing%20Like%20a%20State%20-%20James%20C.%20Scott.pdf Stokols, Hall, & Vogel (2013). Transdisciplinary Public Health: Definitions, Core Characteristics, and Strategies for Success. In Haire-Joshu, D., & McBride, T.D. (Eds). Transdisciplinary Public Health: Research, Methods, and Practice. Hoboken: Wiley Zimmermann, A., and C. Maennling. (2007): Mainstreaming Participation: Multi-stakeholder management: Tools for Stakeholder Analysis: 10 Building Blocks for Designing Participatory Systems of Cooperation. Part of the Series: Promoting Participatory Development in German Development Cooperation. Eschborn: Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ) GmbH, pp. 12 – 25.
Other practical visits

6.3. Subtopic organization

ECTS-Points 2	Semester week hours 4	Grouping Yes	Recommended study semester For example, 2 (determined by the university independently)	Language/ Russian or English
Workload 1 ECTS-Point x 30 hours = 30 hours, with the following allocation				
Presence 12 / 50%		Preparation/ follow up/ self-study 9 hours / 25%		Tasks/Group work 9 hours / 25%