

## SYLLABUS OF A SUBJECT OF DOCTORAL STUDIES

Title of the subject	Science Category (Code)	Faculty
Digitization Technologies	Communication and Information S 008	Communication

Study method	Number of credits ECTS	Study method	Number of credits ECTS
Lectures		Consultations	2 ECTS
Individual work	5 ECTS	Seminars	

### Course abstract

**The aim of the subject** is to analyze the aspects of application and use of digital technologies in the fields of the research of the heritage, social sciences, and the humanities; to relate the application-directed knowledge with the broader theoretical and cultural contexts. Doctoral students are encouraged to apply innovative methods based on digital technologies in their doctoral research.

### Content of the subject

The history and trends of the development of digital technologies. Explication of the significance of digital technologies and their relationship with other forms/manifestations of media and technologies. Theoretical contexts of the application of digital technologies in the humanities and social sciences; the scope and objectives of the application of digital technologies. The impact of digital technologies. The impact of digital technologies on HSM paradigms and their objectives.

The technologies, hardware and software of registering, accrual and non-invasive research of the sources of empirical data (internet data semi-automatic accumulation technologies, infrared and ultraviolet photography, application of X-rays, GeoRadar, 3-D scanning, tacheometry, 360-degree photography, ultrafast cameras, etc.). Megadata. Application of crowdsourcing for the accumulation of data.

Specific aspects of the storage of data of the humanities and social sciences in the digital environment. Issues of data structuration, standardization, recoding, interpretation, historical geography, chronology and storage of personal data in the digital environment. Metadata and paradata. Means of data storage in the digital environment (information systems, search engines and their networks). Development of digital collections, their management and information services. Archiving and storage in digital libraries and digital storage facilities. Management of digital information and the rights of intellectual property. Standards for digital archiving, the formats in use and general requirements. Methods of assessment of the quality of digital storage facilities. Data saving, copying and conversion.

Digital means, methods and software applications of data research in the fields of the humanities and social sciences (view and sound filtering, 3-D data analysis, quantitative analysis of the content, mathematical statistics, data modeling, etc.). Megadata analysis. Application of artificial intelligence in the research of the humanities and social sciences.

Experience of running and implementing digitization projects in Lithuania and worldwide. The fundamentals, key principles and trends in the projects on work digitization.

### Study methods

1. Individual consultations with the lecturers supervising the subject.
2. Individual research of academic literature and the preparation of an academic paper. The doctoral student selects the topic of the academic paper and bases its topic on the questions outlined by the Professor supervising the subject and the scientific advisor of the thesis.

**Methods of assessment**

1. Academic paper (from 30 000 to 40 000 symbols including spaces) covering the connection between the topic and the thematic area of the student's doctoral thesis focusing on the questions posed by the Professor supervising the subject and the scientific advisor of the thesis.
2. Academic discussion on the basis of the academic paper of the student during the exam.

**Course literature**

ARTIOLI, Gilberto. *Scientific Methods and Cultural Heritage: An introduction to the application of materials science to archaeometry and conservation science*. Oxford University Press, 2010. ISBN 9780199548262.

*Digital Research in the Study of Classical Antiquity (Digital Research in the Arts and Humanities)* / Gabriel Bodard, Simon Mahony (eds.). Ashgate, 2010. 204 p. ISBN 9780754677734.

FOSTER, Ian, GHANI, Rayid, JARMIN, Ron S., KREUTER, Frauke, LANE, Julia. *Big Data and Social Science. Data Science Methods and Tools for Research and Practice*. Chapman and Hall/CRC, 2020. ISBN 9780367568597.

GREENGRASS, Mark; HUDGES, Lorna. *The Virtual Representation of the Past (Digital Research in the Arts and Humanities)*. Ashgate, 2008. 276 p. ISBN 9780754672883.

*Museum Informatics: People, Information, and Technology in Museums* / edited by Paul F. Marty, Jones Katherine Burton. Routledge, 2009. 356 p. ISBN 9780415802185.

ROBERTS, S., SNEE, H., HINE, C., MOREY, Y., WATSON, H. (Eds.). *Digital Methods for Social Science. An Interdisciplinary Guide to Research Innovation*. Palgrave Macmillan UK, 2016. ISBN 978-1-137-45366-2.

ROBILA, M., ROBILA, S. A. Applications of Artificial Intelligence Methodologies to Behavioral and Social Sciences. *J Child Fam Stud* 29, 2954–2966 (2020). <https://doi.org/10.1007/s10826-019-01689-x>

SIRKIN, R. M. *Statistics for the Social Sciences*. 3rd ed. Thousand Oaks, CA: SAGE Publications, Inc., 2006. *SAGE Research Methods*. doi: <http://www.doi.org/10.4135/9781412985987>.

*Theorizing Digital Cultural Heritage: A Critical Discourse (Media in Transition)* / edited by Fiona Cameron, Kenderdine Sarah. The MIT Press, 2007. 480 p. ISBN 9780262514118.

UHLIR, ZDENEK. Digitization is not only making images: manuscript studies and digital processing of manuscripts. *Knygotyra*. 2008, t. 51, p. 148–162.

Name of consulting lecturer	Academic rank	Major works published in the last 5 years
Arūnas Gudiniavičius	Assoc. Prof. Dr.	<p>GUDINAVIČIUS, Arūnas; GRIGAS, Vincas. Two decades of e-book publishing in a small language market: publishers lag behind pirates // <i>Publishing research quarterly</i>. New York : Springer. ISSN 1053-8801. eISSN 1936-4792. 2022, vol. 38, iss. 3, p. 490-502. DOI: 10.1007/s12109-022-09894-1.</p> <p>GRIGAS, Vincas; GUDINAVIČIUS, Arūnas. Stakeholders' perceptions of book piracy's benefits to society in Lithuania // <i>Global knowledge, memory and communication</i> : Emerald Publishing Limited. ISSN 2514-9342. 2022, vol. 71, no. 6-7, p. 605–618. DOI: 10.1108/GKMC-08-2020-0118.</p>

<p>GUDINAVIČIUS, Arūnas; GRIGAS, Vincas. Causes and consequences of unauthorized use of books: readers, authors, and publishers' perspective // <i>Online information review</i>. Bingley : Emerald Group Publishing Ltd. ISSN 1468-4527. eISSN 1468-4535. 2022, vol. 46, iss. 5, p. 886–903. DOI: 10.1108/OIR-03-2021-0133.</p>
<p>GRIGAS, Vincas; GUDINAVIČIUS, Arūnas; ČERNEVIČIŪTĖ, Emilija. Nelegaliai platinamų knygų naudojimas Lietuvoje = Use of illegally distributed books in Lithuania // <i>Informacijos mokslai</i>. Vilnius : Vilniaus universiteto leidykla. ISSN 1392-0561. eISSN 1392-1487. 2021, t. 91, p. 83–99. DOI: 10.15388/Im.2021.91.53.</p>
<p>GUDINAVIČIUS, Arūnas. Knygynai Lietuvoje 2013–2018 metais: mažiau fizinių knygynų, mažiau knygų pasirinkimo = Bookstores in Lithuania in 2013–2018: less physical bookstores, less choice of books // <i>Knygotyra</i>. Vilnius : Vilniaus universiteto leidykla. ISSN 0204-2061. eISSN 2345-0053. 2020, t. 75, p. 162–198. DOI: 10.15388/Knygotyra.2020.75.65.</p>
<p>KOVAČ, Miha; GUDINAVIČIUS, Arūnas. Publishing under COVID-19 in small book markets: an interim report = Leidyba COVID-19 pandemijos metu mažose knygų rinkose: tarpinė ataskaita // <i>Knygotyra</i>. Vilnius : Vilniaus universiteto leidykla. ISSN 0204-2061. eISSN 2345-0053. 2020, t. 75, p. 17–37. DOI: 10.15388/Knygotyra.2020.74.58.</p>
<p>GUDINAVIČIUS, Arūnas; ŠUMINAS, Andrius. Reading book covers // <i>The materiality of reading</i> / edited by Theresa Schilhab and Sue Walker. Aarhus : Aarhus University Press, 2020. ISBN 9788771849585. p. 114–126.</p>
<p>GUDINAVIČIUS, Arūnas. Changing taxpayers' beliefs with information that enables to make sense of taxes: the case of Lithuania // <i>Information research: vol. 25, no. 4: Proceedings of ISIC: the information behaviour conference, Pretoria, South Africa, 28th September to 1st October, 2020</i>. Sheffield : University of Sheffield. eISSN 1368-1613. 2020, vol. 25, no. 4, [1–23]. DOI: /10.47989/irisic2019.</p>
<p>GUDINAVIČIUS, Arūnas; MARKELEVIČIŪTĖ, Greta. Using augmented reality in book publishing from a small language market perspective // <i>Publishing research quarterly</i>. New York : Springer. ISSN 1053-8801. eISSN 1936-4792. 2020, vol. 36, no. 1, p. 43–54. DOI: 10.1007/s12109-019-09704-1.</p>
<p>ŠUMINAS, Andrius; GUDINAVIČIUS, Arūnas;</p>

		<p>ALEKSANDRAVIČIUS, Arnas. Skaitmeninės atskirties požymiai ir lygmenys: Lietuvos atvejo analizė. <i>Informacijos mokslai</i>, 2018, Vol. 81, p. 7–17. DOI: <a href="https://doi.org/10.15388/Im.2018.0.11937">https://doi.org/10.15388/Im.2018.0.11937</a>.</p> <p>MANŽUCH, Zinaida; GUDINAVIČIUS, Arūnas; ŠUMINAS, Andrius. Skaitmeninės atskirties mažinimo priemonės Lietuvoje: tikslinės grupės ir taikymo rezultatai. <i>Viešoji politika ir administravimas</i>, 2018, t. 17, Nr. 1, p. 84–98. DOI: <a href="http://dx.doi.org/10.5755/j01.ppa.17.1.19789">http://dx.doi.org/10.5755/j01.ppa.17.1.19789</a>.</p>
Rimvydas Laužikas	Prof. Dr.	<p>PLIKYNAS, Darius; MILIAUSKAS, Arūnas; LAUŽIKAS, Rimvydas; DULSKIS, Vytautas; SAKALAIŠKAS, Leonidas. (2022). The cultural impact on social cohesion: an agent-based modeling approach. <i>Quality &amp; quantity</i>, 56(6), 4161–4192. DOI: 10.1007/s11135-021-01293-6.</p> <p>FOMIN, Vladislav; LAUŽIKAS, Rimvydas; ŽIŽIŪNAS, Tadas. (2022). Digital urban heritage preservation practices: framing a new European standart. In Kai Jakobs, Dong-Hyu Kim (Eds.), <i>EURAS proceedings 2022: standardisation and open source, 8 - 10 June 2022, Glasgow University</i> (pp. 125–142). Glasgow University.</p> <p>FOMIN, Vladislav; PUTRIMAS, Marius; ŽIŽIŪNAS, Tadas; LAUŽIKAS, Rimvydas. (2022). Reference architecture for AI-based urban heritage preservation risks monitoring tool. <i>Baltic journal of modern computing</i>, 10(2), 142–158. DOI: 10.22364/bjmc.2022.10.2.04.</p> <p>KELPŠIENĖ, Ingrida; ARMAKAUSKAITĖ, Donata; DENISENKO, Viktor; KIRTIKLIS, Kęstas; LAUŽIKAS, Rimvydas; STONYTĖ, Renata; MURINIENĖ, Lina; DALLAS, Konstantinos. (2022). Difficult heritage on social network sites: An integrative review. <i>New media &amp; society</i>, first on line, [1–28]. DOI: 10.1177/14614448221122186.</p> <p>LAUŽIKAS, Rimvydas; ENQUIST, Johanna; LUENGO, Pedro; ŠOŠIĆ-KLINDŽIĆ, Rajna; TOUMPOURI, Marina. (2022). Discussing archaeology and the nation in six European countries: a discourse analysis. <i>Journal of community archaeology &amp; heritage</i>, 9(3), 161–174. DOI: 10.1080/20518196.2021.1988210.</p> <p>LAUŽIKAS, Rimvydas; ŽIŽIŪNAS, Tadas; FOMIN, Vladislav. (2022). Novel technologies as potential catalyst for democratizing urban heritage preservation practices: the case of 3D scanning and AI = Naujos technologijos kaip galimas katalizatorius demokratizuojant miestų paveldo</p>

išsaugojimo praktika: 3D skenavimo ir dirbtinio intelekto atvejis. *Information & media*, 93, 93–115. DOI: 10.15388/Im.2022.93.64.

LAUŽIKAS, Rimvydas; PLIKYNAS, Darius; DULSKIS, Vytautas; SAKALAUŠKAS, Leonidas; MILIAUSKAS, Arūnas. Agentinio modeliavimo taikymas kultūros tyrimų informacijos valdymui = Application of agent-based modeling for cultural information-based decisions making // *Informacijos mokslai*. Vilnius : Vilniaus universitetas. ISSN 1392-0561. eISSN 1392-1487. 2020, vol. 88, p. 8–28. DOI: 10.15388/Im.2020.88.29.

SAKALAUŠKAS, Leonidas, DULSKIS, Vytautas, LAUŽIKAS, Rimvydas, MILIAUSKAS, Arūnas, & PLIKYNAS, Darius. (2020). A probabilistic model of the impact of cultural participation on social capital. *The Journal of Mathematical Sociology*, 0(0), 1–14. <https://doi.org/10.1080/0022250X.2020.1725002>

LAUŽIKAS, Rimvydas; KUNCEVIČIUS, Albinas; AMILEVIČIUS, Darius; ŽIŽIŪNAS, Tadas; ŠMIGELSKAS, Ramūnas. (2019). Nekilnojamojo kultūros paveldo monitoringas taikant 3D ir dirbtinio intelekto technologijas = Monitoring of immovable cultural heritage implementing 3D and artificial intelligence technologies. *Archaeologia Lituana*, 20, 151–166. DOI: 10.15388/ArchLit.2019.20.7.

LAUŽIKAS, Rimvydas, DALLAS, Costis, THOMAS, Suzie, KELPŠIENĖ, Ingrida, HUVILA, Isto, LUENGO, Pedro, NOBRE, Helena, TOUMPOURI, Marina, & VAITKEVIČIUS, Vykintas. (2018). Archaeological knowledge production and global communities: boundaries and structure of the field. *Open Archaeology*, 4(1), 350–364. <https://doi.org/10.1515/opar-2018-0022>

LAUŽIKAS, Rimvydas. (2018). Digital effects-based transformations in heritage practices and knowledge work. *Authority, Provenance, Authenticity, Evidence : Selected Papers from the Conference and School Authority, Provenance, Authenticity, Evidence, Zadar, Croatia, October 2016*, 171–212.

Approved by the Doctoral Committee of the field of Communication and Information of the Social Sciences area on 19 December 2022, minutes of the meeting No. (7.17 E) 15600-KT-518

Chair of the Committee Prof. Dr. Aušra Navickienė