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A SYSTEMATIC REVIEW OF LAW & TECHNOLOGY MASTER PROGRAMS IN SELECTED EUROPEAN UNION UNIVERSITIES

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SUMMARY

This pilot research provides a systematic review of Law & Tech master programs in selected European Union (EU) universities. The systematic multi-stage sampling process completed the list of 38 Law & Tech master programs, offered by 35 leading universities in 11 high-tech EU member states, for extraction and grouping of almost 600 subjects offered in these programs. This analysis exposed the frequency of subject appearance in the sample of programs, followed by the choice of 16 most frequent subjects using the rule of thumb for a hypothetical Law & Tech master program. Moreover, this analysis revealed the need of inquiry into (i) the alternative practices of technology related skills infusion into the law curriculum; and (ii) variables that impact the choices of Law & Tech program's structure and curriculum. Following these conclusions, universities in the Netherlands were purposively selected for content analysis of their Law & Tech program's descriptions. Such inquiry enabled categorization of arguments that supports radical inclusion of technology's domain into law's curriculum, thus completing the list of key variables for further research on Future of Legal Education.

KEYWORDS

Technology Law, Legal Technologies, Law & Tech, LegalTech, Legal Education.

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ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

INTRODUCTION

Klaus Schwab[2] eloquently warns that technological revolution will fundamentally alter the way we live, work, and relate to one another. Indeed, in its scale, scope, and complexity, the technological transformations are unlike anything humankind has experienced before. It is already clear, that technology is a permanent structural change, leading to unprecedented legal challenges. The concepts of property, personality and transactions change fundamentally due to the rapid (r)evolution of technologies. The existing legal systems and rules originally intended and designed for human-to-human (*in personam*) and human-to-machine (*in rem*) processes cannot work well in machine-to-human and machine-to-machine environment[3].

In addition, development of legal technologies (LegalTech), powered with artificial intelligence, has already caused and continues to drive market shocks to the legal profession[4]. Ribstein (2010)[5] argued that these challenges would result in the death of big law business model. Boston Consulting Group and Bucerius (2016)[6] suggest that the business of law will require fewer general support staff members, junior lawyers, and generalists— and more legal technicians and project managers. Susskind and Susskind (2015) [7] also argue that the introduction of AI means that fewer people will be required to do lower skilled, routine work, thus resulting in technological unemployment of lawyers. Kerikmae (2018)[8] agrees that the business model of many law firms will be facing a considerable paradigm change since the work provided by law firms in the form of billable hours, in fact, largely consists of services that do not require superior legal education but involve mere data procession and thus may be performed by means of legal technology. Clearly, lawyers with higher education are and will be continuously replaced by cheaper and faster technological solutions.

[2] K. Schwab The Fourth Industrial Revolution: what it means, how to respond (01/14/2016, World Economic Forum),
https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/ , accessed on 05/01/2017

[3] V.V. Fomin, AI in the context of regulation of smart technology services (ATEITIS workshop presentation, Kaunas, VMU, 09/21/2018).

[4] See for e.g. D. R. Mountain, "Disrupting Conventional Law Firm Business Models Using Document Assembly," International Journal of Law and Information Technology 15, no. 2 (August 30, 2006): 170–91, https://doi.org/10/djkxjr.

[5] Larry E. Ribstein, "The Death of Big Law," Wisconsin Law Review 2010, no. 3 (2010), https://doi.org/10/fznz5c; Larry E. Ribstein, The Rise of the Uncorporation (Oxford ; New York: Oxford University Press, 2010).

[6] Boston Consulting Group and Bucerius, How Legal Technology Will Change the Business of Law. (2016), Retrieved from:
https://www.law-school.de/article/new-study-how-legal-technology-will-change-the-business-of-law/ , accessed on 03/09/2019

[7] Susskind, R. & Susskind, D. (2015), The Future of the Professions: How Technology will Transform the Work of Human Experts. Oxford: Oxford University Press. See also Burnett, S., 'Legally AI – Disruption in legal services and beyond', (2016). Retrieved from: https://www.everestgrp.com/2017-01-legally-ai-disruption-legal-services-beyond-sherpas-blue-shirts-37624.html/ , accessed on 03/09/2019

[8] Tanel Kerikmäe, Thomas Hoffmann, and Archil Chochia, "Legal Technology for Law Firms: Determining Roadmaps for Innovation," Croatian International Relations Review 24, no. 81 (May 1, 2018): 91–112, https://doi.org/10/gfwp5q.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

Therefore, developments of law and legal practice demand for a new generation of lawyers with interdisciplinary legal training, tech-related skills and knowledge; and for the new generation hybrid professions - legal technologists, legal project managers, just a few to mention[9]. However, a lot of legal studies are still organized according to the conservative model. Usually it requires a lot of space for classical law studies, leaving relatively little space for the studies (as an integral part) of certain other fields - philosophy, information technology, economics, and others. Such law school's curriculum provides students with the theoretical base they need to pass the bar; however, nowadays law schools can make the most of the significant changes roiling the legal industry — a tighter job market, emerging technologies and the increasing use of legal process outsourcers — by turning them into opportunities to make law students better lawyers[10].

Boston Consulting Group and Bucerius (2016) have also noted that law schools can further serve the profession by teaching business, project management, and general tech skills. To do so, schools may need to expand the mandatory curriculum beyond fields of substantive law by offering an additional course introducing case-management processes and legal technology. More specific legal-tech skills (such as database management, statistics, analytics, and digital communications) can be taught in electives and clinics throughout the course of the law degree. Executive-education programs can further foster ongoing learning by focusing on holistic legal project management, as well as on legal-tech literacy.

The American Bar Association (2014, 2016)[11] agrees that law schools should offer more technology training, experiential learning, and the development of practice-related competencies. The Law Society of England and Wales (2018)[12] adds that characteristics such as an entrepreneurial spirit, curiosity, creativity and strategic thinking skills could assume far more significance in the education and recruitment of future lawyers. It was also noted in the FLIP report (2017)[13] that in a changing environment, the skills and areas of knowledge likely to be of increasing importance for the graduate of the future include: technology; practice-related skills (e.g. collaboration, advocacy/negotiation skills); business skills/basic accounting and finance; project management; international and cross-border law; interdisciplinary experience;

[9] See for e.g. Susskind, R. The end of lawyers?, 1st ed., (Oxford: Oxford university press, 2008); Susskind, R., Tomorrow's lawyers: An introduction to your future (Oxford: Oxford University Press., 2013).

[10] Walter K., Six Ways Law Schools Can Make Students More Practice Ready, Thomson Reuters, http://www.legalexecutiveinstitute.com/six-ways-law-schools-students/ accessed on 03/09/2019.

[11] See Report on the Future of Legal Services in the United States, (ABA Commission on the Future of Legal Services, 2016), available at: http://abafuturesreport.com/ , accessed on 03/09/2019; Report and Recommendations (ABA Task Force on the Future of Legal Education. at 26, Jan. 2014), available at http://www.americanbar.org/content/dam/aba/administrative/professional_responsibility/report_and_recommendations_of_aba_task_force.authcheckdam.pdf , accessed on 03/09/2019.

[12] Artificial Intelligence and the Legal Profession – Horizon Scanning Report, (The Law Society of England and Wales, 2018), available at: https://www.lawsociety.org.uk/support-services/research-trends/horizon-scanning/artificial-intelligence/, accessed on 03/09/2019.

[13] The Future of Law and Innovation in the Profession, (The Law Society of New South Wales, 2017), available at: https://www.lawsociety.com.au/sites/default/files/2018-03/1272952.pdf, accessed on 03/09/2019.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

resilience, flexibility and ability to adapt to change. Walter (2017)[14] also identified six ways, how law schools may be able to improve curriculum to prepare law students for today's practice environment the best: to include more diverse experiential learning; to prepare students for transactional practice; to focus on the business side of law; to expose students to legal processes and case management requirements; to emphasize interpersonal and advocacy skills; and to require proficiency with legal technologies.

In sum, the evidence on the need of tech-literate lawyers in a tech-dependent world is overwhelming. However, as Koo (2007)[15] concluded, a large majority of lawyers perceive critical gaps between what they are taught in law schools and the skills they need in the workplace, and appropriate technologies are not being used to help close this gap. Canick (2014)[16] also notes, that despite the profound changes, legal education has never considered technological proficiency to be a key outcome. Therefore, issues of identification of the gaps in current legal education; methods of infusion of technology-related outcomes throughout the curriculum; exposure of the best practices and optimal architecture of Law & Tech study program; and other form an important interdisciplinary research agenda of legal education's future. However, within this research field, there is a lack of systematic research on the real-life practices and curriculum of Law & Tech studies offered by the leading EU universities.

Recognizing these novel challenges, the "Future of Legal Education" research project has been initiated at Vytautas Magnus University. The purpose of that research is to develop a conceptual model of legal education, integrating Law & Tech related skills into legal curriculum, to prepare future generation of lawyers for a future practice environment. Under the methodological framework of this main research, two interlinked pilot researches were constructed to refine research questions and to test data accessibility and quality for the main research on the future of legal education.

This (first) pilot aims (i) to review systematically the Law & Tech master programs in selected EU universities and (ii) to provide content analysis of the Law & Tech curriculum in selected single EU state. The systematic review in a specific area is important for identifying of research questions, as well as for justifying the future research in the said area[17]. The content analysis is used herein for analyzing and making inferences from text and other forms of qualitative information[18]. Such synthesis will expose general response of the leading law

[14] See note 10; Walter K., Six Ways Law Schools Can Make Students More Practice Ready, Thomson Reuters, http://www.legalexecutiveinstitute.com/six-ways-law-schools-students/ accessed on 03/09/2019.

[15] Gene Koo, Berkman Center, and Harvard University, "New Skills, New Learning: Legal Education and the Promise of Technology," New Learning, n.d., 33.

[16] Simon Canick, "Infusing Technology Skills into the Law School Curriculum," Capital University Law Review 42 (2014).

[17] Pablo Vicente Torres-Carrion et al., "Methodology for Systematic Literature Review Applied to Engineering and Education," in 2018 IEEE Global Engineering Education Conference (EDUCON) (2018 IEEE Global Engineering Education Conference (EDUCON), Tenerife: IEEE, 2018), 1364–73, https://doi.org/10/gfwp54; Martha Kirk Swartz, "The PRISMA Statement: A Guideline for Systematic Reviews and Meta-Analyses," Journal of Pediatric Health Care 25, no. 1 (January 1, 2011): 1–2, https://doi.org/10/cbtqnr.

[18] Žydžiūnaitė, V. ir Sabaliauskas, S., Kokybiniai tyrimai. Principai ir metodai. Vadovėlis socialinių mokslų studijų programų studentams. (Vilnius: VAGA, 2017).

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

schools to the technological challenges of legal profession and the practices of infusing technological context throughout the curriculum.

The second pilot research (reported in separate upcoming paper) is aimed to inquiry into the demand of technology-related skills and knowledge by law practitioners and high-tech industries. Presumably, the results from both pilot researches will enable refining research questions and testing data accessibility for the main research: to identify technology-related skill gaps in legal education and to model the optimal architecture of Law & Tech study program.

Therefore, *the objective* of this pilot (limited scope) research is to explore systematically the existing Law & Tech master programs that are offered by the leading universities in high-tech EU member states for the purposes of refining “Future of Legal Education” research questions and testing data accessibility.

Accordingly, the following key *research questions* were addressed: what subjects are offered within Law & Tech master programs by the leading universities in high-tech EU member states? What variables impacting the structure and content choices should be analyzed for the purposes of modeling the optimal Law & Tech program?

Materials and methods

Typically, the systematic reviews concern synthesis of existing scientific literature[19]. However, the applicability of such review logic has been applied in the very practical fields of legal analysis[20], or simulations and technology in legal education[21]. The research strategy of this research has been built by adopting the framework of PRISMA statement and a step-by-step guide by Yannascoli (2013)[22] and others. The selection of universities *(n)* and programs *(p)* for systematic analysis’ process is generalized in figure 1 below.

[19] Yannascoli, S.M., et al., How to Write a Systematic Review: A Step-by-Step Guide, University of Pennsylvania Orthopaedic Journal, volume 23, June 2013; Piper, J.R., How to write a systematic literature review: a guide for medical students, University of Edinburgh, 2013; Moher D., et al., Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement, Systematic Reviews 2015, 4:1, and others.

[20] Baude, et al., Making Doctrinal Work More Rigorous: Lessons from Systematic Reviews, Coase-Sandor Working Paper Series in Law and Economics No. 768, 2016.

[21] Maharg, P., Nicol, E., Simulation and technology in legal education: a systematic review and future research program, chapter in the book: Strevens C., et al., ed., Legal Education.Simulation in Theory and Practice, (Ashgate, Farnham, UK, 2014) 10.13140/RG.2.1.1911.3129.

[22] Id note 19.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

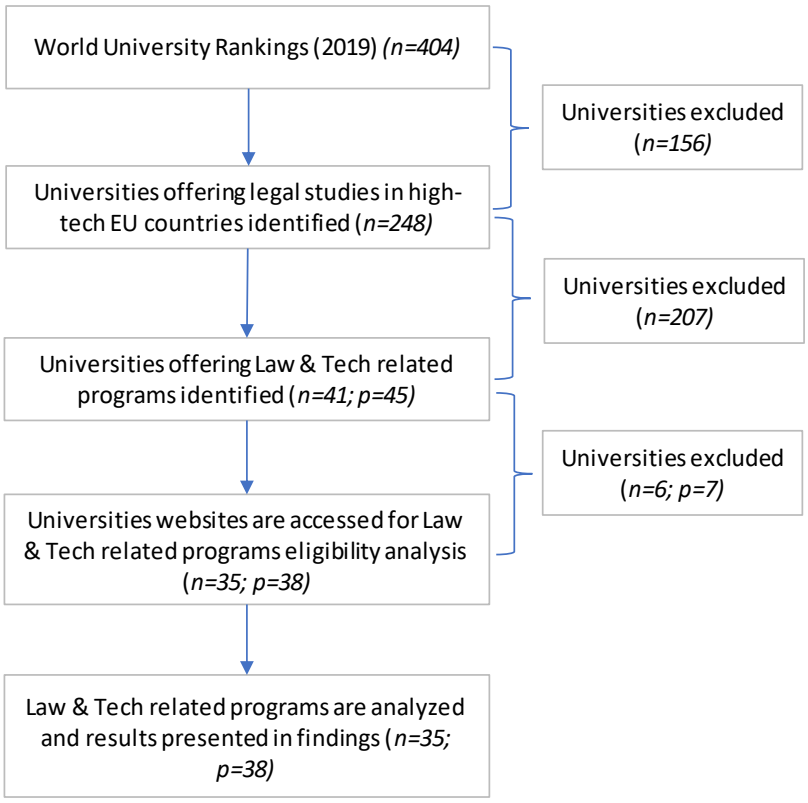

Figure 1. The map of universities *(n)* and programs *(p)* for selection process of systematic analysis.

The search of universities offering law studies was conducted according to the *Times Higher Education* World University Rankings (2019)[23], that claims to be “*the only global university performance table to judge research-intensive universities across all of their core missions: teaching, research, knowledge transfer and international outlook*”. Indeed, their carefully calibrated and weighted performance indicators provide trustworthy comparisons. WUR (2019) indicates the total of 404 universities in the EU Member states[24].

In order to determine the appropriate universities for *inclusion*, two filters were used: (i) offering subject (Law) and (ii) country / region (for university list from specific country). With regard to the latter, this research inquiry aims to analyze only the legal study programs offered

[23] Times Higher Education World University Rankings (2019), available at: https://www.timeshighereducation.com/world-university-rankings/2019/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats, accessed on 03/09/2019.

[24] Ibid, available at: https://www.timeshighereducation.com/student/best-universities/best-universities-europe, accessed on 2019-03-09.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

by universities in high-tech EU countries. For the purposes of this research, “high-tech countries” are those, who are at median and higher quartiles in both of these rankings[25]: (i) *World Intellectual Property Organization* Global Innovation Index rankings (2018)[26] and (ii) *Venture Beat* Technological Readiness Ranking (2018)[27]. From the lower quartiles, only Lithuania (as a national state) was included additionally.

It should be noted that scope of inquiry was limited solely due to the pilot nature of this research. In consideration of methodology of the main research, *selection of countries and universities might be extended to a continuous EU study and / or selective study of other high-tech countries at a world-wide scale*.

This selection stage completed the list of 16 EU member states, with 248 (61.4%) leading universities offering legal studies and serving more than 5 million students served by 270 thousand staff members, as shown in *Table 1*.

Country	Universities, sum	No. of FTE Students, sum	No. of students per staff, average
United Kingdom	90	1529074	16.45
France	41	811960	22.31
Spain	35	862586	16.94
Germany	29	793233	44.08
Netherlands	9	197641	17.81
Ireland	8	116613	23.93
Belgium	8	185625	32.94
Sweden	7	148308	14.44
Denmark	5	118023	15.56
Finland	4	56078	18.35
Austria	4	74640	16.40
Czech Republic	4	112431	15.85
Estonia	2	18949	16.05
Luxembourg	1	4969	16.50
Lithuania	1	16773	11.60
Malta	0	0	0.00
TOTAL:	248	5046903	18.70

Table 1. Selected EU member states.

[25] Except Luxemburg and Malta, which are not ranked in Venture Beat at al, but are in upper quartile in Global Innovation Index.

[26] World Intellectual Property Organization, Global Innovation Index rankings (2018), available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2018.pdf, accessed on 03/09/2019.

[27] Venture Beat Technological Readiness Ranking (2018), available at: https://venturebeat.com/2018/06/10/the-best-countries-for-tech-companies-2018-rankings/, accessed on 03/09/2019.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

According to this list of universities offering law studies, the official websites of each of them were accessed and legal studies programs screened for tech – related keywords[28] in their names. This resulted in the list of 45 Law & Tech related master programs offered by 41 universities in 11 EU countries. All these programs were accessed for eligibility analysis and duplicate removal. In total, 6 universities (and 7 Law & Tech programs) were excluded due to the undisclosed or unreadable (due to language constraints) program or curriculum description. All of the remaining 38 programs offered by 35 universities were selected for further in-depth analysis of their curriculum.

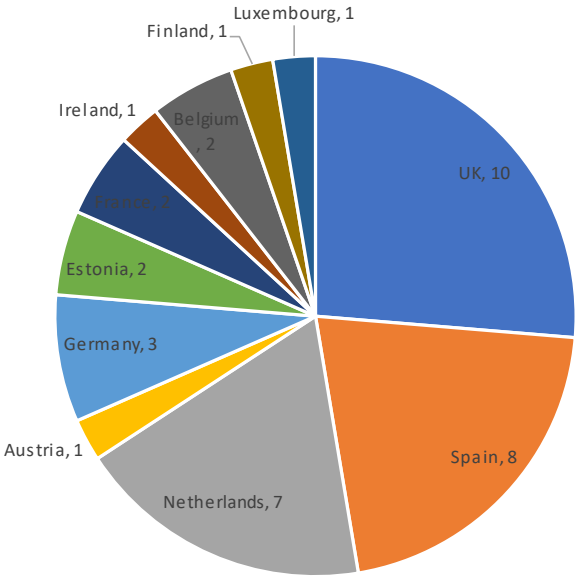

Figure 2. Distribution of the selected Law & Tech master programs

All the selected EU member states are in highest quartiles of Global Innovation Index and Technological Readiness Rankings. All of them are home states of the prestigious universities that make World University Rankings and hold impressive academic records. However, the Netherlands universities deserve a separate in-depth analysis.

Six out of nine universities offering legal studies have one or two (Leiden University) Law & Tech master programs. Three of these six universities make the top 100 in World University Rankings and three of them are among numbers 100-250. Five out of these six universities have a special Law & Tech research unit. Moreover, the Netherlands ranks as No. 2 in the Global Innovation Index and No. 4 in Technological Readiness Rankings. In addition, the Netherlands

[28] For e.g. keywords like technology, digital, information, space, telecommunication, innovation, e-law, legal tech, cyber~, electronic, intellectual property, IT, ICT, IP.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

is one of the states that have already adopted Artificial intelligence strategy[29] and serve as a home for Legal Tech Association[30].

University	Program	No. of FTE Students	No. of students per staff	Int'l Students	Research Unit	World University Ranking	Global innovation index	Technological Readiness Ranking
Leiden University	(1) Air and Space Law; (2) Law and Digital Technologies	52642	36	0.26	The Legitimacy and Effectiveness of Law & Governance in a World of Multilevel Jurisdictions	68	2	4
Maastricht University	Intellectual Property Law and Knowledge Management	16250	15.8	0.52	Maastricht European Centre on Privacy and Cybersecurity	128		
Tilburg University	Law and Technology	7666	21.2	0.14	Tilburg Institute for Law, Technology, and Society (TILT) (+TILT Clinic)	201-250		
University of Amsterdam	Information Law	23778	12.3	0.12	Institute for Information Law	166		
University of Groningen	Governance and Law in Digital Society	26183	23.8	0.18	Security, Technology & e-Privacy Research Group	79		
Vrije Universiteit Amsterdam	International Technology Law	23919	17.8	0.08	-	62		
Total		150438	21.15	0.22	5	62-250	2	4

[29] Special Interest Group on Artificial Intelligence, Dutch Artificial Intelligence Manifesto, (2018), available at: http://ii.tudelft.nl/bnvki/wp-content/uploads/2018/09/Dutch-AI-Manifesto.pdf , accessed on 03/09/2019.

[30] Dutch Legal Tech website: https://www.dutchlegaltech.nl/, accessed on 03/09/2019.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

Table 2. Characteristics of the selected universities in the Netherlands

Such attention to the Law & Tech domain paid by the highest-tech state in the EU is exceptional and justifies selection for deeper analysis. The focus on the special case of selected universities in the Netherlands will enable to learn the most about what led to the radical inclusion of technological domain into the law curriculum. For this purpose, the *content analysis* of their Law & Tech programs descriptions was performed.

The retrieved program descriptions were analyzed using the qualitative content analysis where coded sub-categories discovered in the transcripts were developed according to the topicality wherever they appeared in the text. The sub-categories were grouped into categories (themes) at the end of analysis. These categories were then reviewed, and key findings developed, conceptualizing key variables to consider modeling of the optimal Law & Tech master program in the main research.

This search has been performed in the utmost ethical nature. All information was obtained lawfully, from official websites of universities. All information has been double checked and reported accurately. Since no one was interviewed during the search, confidentiality and privacy issues are irrelevant.

Results and discussion

Systematic review of Law & Tech master programs revealed that relatively small part (16,5%) of leading EU universities offering specialized Law & Tech master programs in high-tech EU countries signals either the gap in legal training or the dominant existence of alternative practices infusing technology-related outcomes throughout the curriculum. Presumably, the majority of the excluded universities offer separate subjects or cover tech – related aspects within regular curriculum, or employ the benefits of research and clinical practices. Accordingly, *further research should consider mapping these choices and question the reasons behind them.*

The majority (25 out or 38) of the master programs analyzed within the scope of this inquiry are offered by the universities in the UK (10), Spain (8) and the Netherlands (7). Most of these programs are aimed at (information) technology law in general or intellectual property law. However, there are some exceptional offers aiming at very specific skill sets, for example - “Legal Tech” (Swansea University, UK), “Cyber Delinquency” (Open University of Catalonia, Spain) or “Air and Space Law” (Leiden University, Netherlands) and others.

The analysis of the curriculum of these 38 Law & Tech master programs revealed the list of 587 subjects taught within. Based on the names and descriptions of these subjects, they were grouped into 29 topicality groups and sorted by the frequency of appearance within the analyzed programs (*Figure 3*).

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

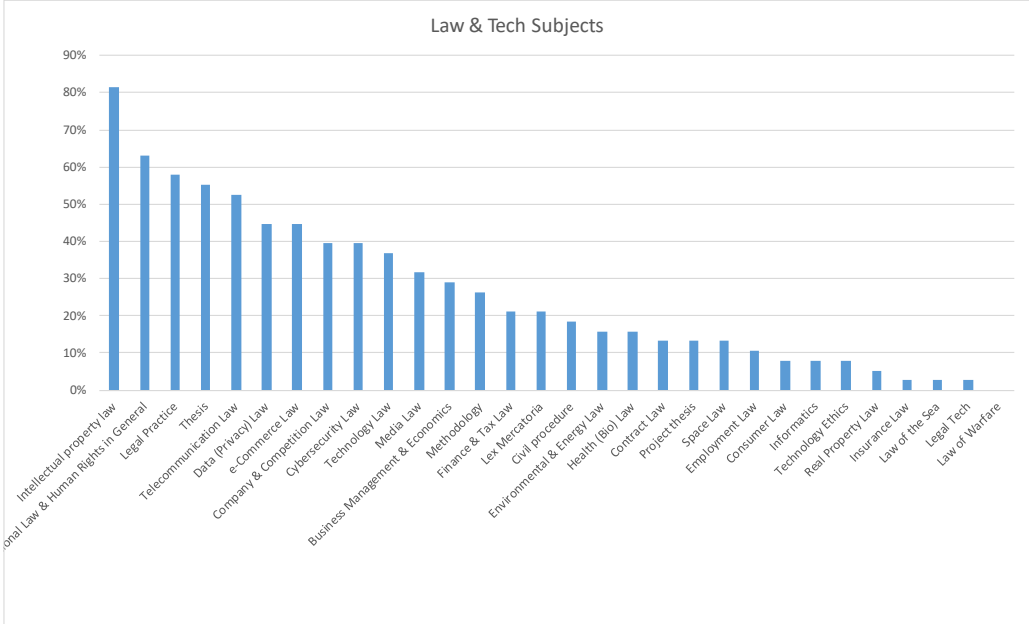

Figure 3. Frequency of topic appearance within the selected Law & Tech master programs

The choice of 16 most frequent topics using the rule of thumb allows to construct a hypothetical, 2-year (4 semesters) Law & Tech master program with 5 subjects per semester and master thesis project and / or legal practice at a final stage of such studies (Table 3).

Group of subjects	Freq.
Intellectual Property law	82%
Public, Constitutional Law & Human Rights in General	63%
Legal Practice	58%
Thesis	55%
Telecommunication Law	53%
Data (Privacy) Law	45%
e-Commerce Law	45%
Company & Competition Law	39%
Cybersecurity Law	39%
Technology Law	37%
Media Law	32%
Business Management & Economics	29%
Methodology	26%
Finance & Tax Law	21%
Lex Mercatoria	21%
Civil Procedure	18%

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

Table 3. Selection of 16 most frequent subjects for hypothetical Law & Tech master program

Many variations and interdisciplinary context are usually added to deliver a specific subject within each topic group. For example, the program “Advanced Master of Intellectual Property Law and Knowledge Management (Maastricht University, Netherlands) offers 18 different courses related to the Intellectual property’s domain. Some of them aim at a classic training in trademark, copyright, design and patent laws. Some of these subjects focus on management, financing or business side of intellectual property, others – on the dispute resolution or jurisdictional aspects of it. Also, there are some niche subjects like “IP/IT Law and Health” (KU Leuven) or “Digital Intellectual Property and LegalTech” (Swansea University), “Intellectual Property Rights in Computer Software and Related Products” (Aberystwyth University), and alike.

Another most frequent subject group - Public, Constitutional Law & Human Rights in General, includes the variety of subjects on general governance, public international law, EU law and alike. However, unlike the case of intellectual property, this group involves many tech-related subjects. These special courses include, for example, “Technological Keys of Electronic Administration” (Open University of Catalonia), “National Security Law” (Trinity College Dublin), Digital Government (Leiden University) and others. Even the traditional “Legal Practice” domain has many tech-related variations. For example, “Clinical Legal Education in the Digital Economy” (Swansea University), or “Digital Strategies for Legal Advice” (University of Deusto), or even “Work-Life Balance” (University of East Anglia), alongside with the legal internships, moot court or other traditional variations.

Of course, many subjects in lower quartiles of appearance frequency[31] may be offered as elective courses, or trained through various research groups, institutes, Law & Tech Labs, Legal Clinics or other units. In fact, the majority of analyzed universities (24 out of 35) have one or few such units, working within Law & Tech related field. Therefore, the study process in the most of cases is aligned with the research or clinical practice agenda of the given university.

Notably, the topics related to Legal Tech and Informatics are obviously an underdeveloped part of Law & Tech curriculum. Among the analyzed programs, only Swansea University offers a special program on “Legal Tech”, and only few subjects are offered in other universities. However, as noted before, lawyers with higher education are and will be continuously replaced by cheaper and faster technological solutions. Therefore, future lawyers cannot ignore the obvious need of data processing knowledge and legal technology skills. On the other hand, low frequencies of Legal Tech appearance in the curriculum strengthen the assumption that majority of law schools employ alternative means of infusing technology-related (incl. LegalTech) outcomes throughout the curriculum.

Although such “rule of thumb” architecture of Law & Tech master program curriculum seems to deliver reasonable results, none of the analyzed universities offers such content. The programs of Information Technology and Intellectual Property Law at University of East Anglia (81% match); Intellectual Property and Information Technology Law at Trinity College

[31] For example: Contract Law, Project thesis, Space Law, Employment Law, Consumer Law, Informatics, Technology Ethics, Real Property Law, Insurance Law, Law of the Sea, Legal Tech, Law of Warfare.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

Dublin (75%); IT Law and Policy at University of Hertfordshire (75%); and Law of New Technologies at Complutense University of Madrid (63% match) are the closest to this context.

This leads to the need for inquiry into the variables that affect the choices of Law & Tech program's structure and curriculum. Such inquiry certainly demands in-depth interviews with the administrative and academic teams that were involved into these decisions, and content analysis of these programs. However, due to the limited nature of this pilot research, only universities in the Netherlands were purposively selected for content analysis of their Law & Tech programs' descriptions. Such inquiry will enable categorization of key arguments that would support radical inclusion of technological domain into law curriculum, thus completing the list of key variables for further research.

Content analysis of Law & Tech master programs has been carried out in the leading Netherland universities selected in previous research stage: **Leiden University** (Air and Space Law[32]; Law and Digital Technologies[33]); **Maastricht University** (Intellectual Property Law and Knowledge Management[34]); **Tilburg University** (Law and Technology[35]); **University of Groningen** (Governance and Law in Digital Society[36]); **Vrije Universiteit Amsterdam** (International Technology Law[37]); **University of Amsterdam** (Information Law[38]).

It should be noted that the University of Amsterdam has announced that Information Law program will be terminated as of September 01, 2022. The example of such ultimate case strengthens the need for further inquiry into the variables that affect the choices of Law & Tech program's structure and curriculum. Presumably, quantitative analysis of external variables[39], and internal variables[40] will enable to construct the model of optimal Law & Tech program and key performance indexes.

The analysis of the publicly available descriptions of these programs, key pitch arguments, sub-categories and categories have been extracted from this content. This led to the list of 5

[32] Leiden University, Air and Space Law program's web page: https://www.universiteitleiden.nl/en/education/study-programmes/master/air-and-space-law, accessed on 03/09/2019.

[33] Leiden University, Law and Digital Technologies program's web page: https://www.universiteitleiden.nl/en/education/study-programmes/master/law-and-digital-technologies, accessed on 03/09/2019.

[34] Maastricht University, Intellectual Property Law and Knowledge Management program's web page: https://www.maastrichtuniversity.nl/education/post-initial-master/advanced-master-intellectual-property-law-and-knowledge-management, accessed on 03/09/2019.

[35] Tilburg University, Law and Technology program's web page: https://www.tilburguniversity.edu/education/masters-programmes/law-and-technology, accessed on 03/09/2019.

[36] University of Groningen, Governance and Law in Digital Society program's web page: https://www.rug.nl/masters/governance-and-law-in-digital-society/, accessed on 03/09/2019.

[37] Vrije Universiteit Amsterdam, International Technology Law program's web page: https://masters.vu.nl/en/programmes/international-technology-law/index.aspx, accessed on 03/09/2019.

[38] University of Amsterdam, Information Law program's web page: http://www.uva.nl/en/shared-content/subsites/amsterdam-law-school/en/research-masters/information-law-research/information-law-research.html?t=fdr&origin=5BOaRAofTjCccATraJp2XA, accessed on 09/03/2019.

[39] For example, technological readiness and Innovation indexes, major socio-demographic characteristic and economic performance indicators.

[40] For example, key content and structure indicators; student and teacher performance, employability and other performance indicators.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

categories for key arguments and considerations that support the architecture of Law & Tech program (see annex 1):

- *Complexity of technological progress* is usually presented as a contextual argument for the need of Law & Tech program. The speed and scope of developments, outdated laws and security concerns are usually presented as a background for the rise of a cutting-edge and ever-growing field of law;
- *Knowledge and skills* tackled by these programs vary from general topics in Law & Tech, inclusion of Management or Digitization contexts, to the very niche specialization in Air and Space Law.
- *Structure and curriculum of programs* might be generalized as offering structure of specialized core and selective subjects, mingled with practical experience, focusing on cross-border and interdisciplinary perspectives.
- *Student benefits* typically are presented in terms of in-demand career opportunities and other benefits of the students, mostly - research and international experience and other professional enhancement opportunities.
- *Teachers' and students'* behavioral variables, maturity and motivation requirements are typically stressed alongside the information on the expertise of teachers and workload of the studies.

The details of the arguments are presented in table 4 below.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

Argument	Sub-category	Category
complex, cutting-edge field of aviation and aerospace activities within international and European dimensions	Cutting-edge field of law	Complexity of technological progress
complex legal and regulatory issues in ever-growing field of law and digital technologies	Ever-growing field of law	
technology creates situations that were the stuff of fantasy when most of our laws were created, therefore, we are forced to ask ourselves again in the face of technological progress.	Outdated laws	
Technology has become an important, challenging and interesting field, developing more rapidly than the law		
new and important issues of creating, disseminating and using information impact democracy and human rights, for which our laws are not optimally adapted		
advances in digitization have resulted in increasing number of security concerns	Security concerns	
exponential rate and speed of technological innovation need smart and inventive solutions by lawyers	Speed and scope of developments	
learn how to address a wide variety of Air and Space Law issues that affect society	Air and Space	Knowledge and skills
Equipment to discuss and tackle problems related to digitization	Digitization	
Interdisciplinary and global theoretical knowledge and professional skills in Law and Digital Technologies	Law & Tech	
in-depth knowledge of law and digital technologies from an international and multidisciplinary perspective		
scientific and practical skills to tackle the complex legal issues of information society		
cutting-edge and interdisciplinary expertise in Law and Technology		
in-demand knowledge, skills, and solid understanding of the law concerning emerging technologies		
legal foundations and practical and technical skills for legal and knowledge management work in technology-driven, innovative and creative industries	Law, Tech & Management	
Questions of private and public air and space within international and a European perspective	Cross-border, interdisciplinary perspective	Structure and curriculum of program
combination of public and private air law and space law, examining them from both an international and a European perspective		
Questions of digitization and mass distribution of creative work within intellectual property, regulation and security perspectives		
'Security and digitization' are concerned with cybercrime, surveillance and the maintenance of law and order		
cross-border and multiple perspectives		
core courses and selective subjects in law concerning emerging technologies	Specialized core and selective subjects with practical experience	
Unique program, clear teaching and research dimensions, highest academic standards		
Support combination of working and studying		
Besides the traditional legal doctrine, we focus on regulations in a broader perspective, allowing to specialize and explore questions and issues surrounding technological developments		
Private, public, and international organizations demand lawyers trained in the law concerning emerging technologies	Career opportunities	Student benefits
Private, public, and international aviation and telecommunications organizations demand lawyers trained in the air and space law		
clear demand for graduates with an interdisciplinary skill to interpret developments in digital society and respond to them		
Private specialized career		
Private, public, and international organizations demand lawyers trained in the law and technology		
Students benefit from International environment; Expert instructors; Excellent reputation; Strong professional dimension; Internship experience; Moot court skills; Study trip; High demand for graduates; Beautiful, advantageous location; Superior research resources	Other student benefits	
enhance their knowledge, obtain hands-on research and international experience		
Students benefit from Multidisciplinary learning; Excellent reputation; International environment; Professional skills; Extensive networking; Study trips; Additional specialization opportunities; Supportive student groups; Beautiful, convenient location; Superior research resources.		
friendly, accessible and international group of teachers	Behavior of teachers	Teachers and students
Training for legal professionals and top graduates	Maturity of students	
work experience and professionals are prioritized		
motivated students	Motivation of students	
ambitious students		
Outstanding and motivated students		
foremost experts in academia and legal practice	Selection of teachers	
with partners in both the private and public sectors		
internationally respected teaching staff with multidisciplinary approach and close connection with research unit		
Intensive practical experience	Workload for students	
Intensive studying		

Table 4. Content of selected Law & Tech master programs

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

The analysis of the Law & Tech program revealed important categories that might be used as a narrative for research on external and internal variables impacting choices of structure and content. That is, when modeling the optimal Law & Tech program, the variables of (i) complexity of technological progress; (ii) knowledge and skills, (iii) student benefits and (iv) teachers and students should be within the scope of main inquiry.

The repeated selection of 16 most frequent topics in the selected Netherlands universities using the rule of thumb allows constructing the second hypothetical Law & Tech master program (*Table 5*) and comparing it with previous one (*Table 3*).

Group of subjects	Freq.
Intellectual Property Law	28%
Legal Practice	11%
Methodology	9%
Cybersecurity Law	7%
Space Law	7%
Public, Constitutional Law & Human Rights in General	6%
Thesis	6%
e-Commerce Law	4%
Civil Procedure	4%
Data (Privacy) Law	3%
Telecommunication Law	2%
Environmental & Energy Law	2%
Company & Competition Law	1%
Business Management & Economics	1%
Technology Law	1%
Media Law	1%

Table 5. Selection of 16 most frequent subjects in the selected Netherlands universities for a hypothetical Law & Tech master program

Almost all subject groups fall into both hypothetical programs. The difference is in Finance & Tax Law and Lex Mercatoria subject groups that are replaced by the Space Law and Environmental & Energy Law here. This example supports the ultimate importance of these 14-16 topics forming a typical curriculum of Law & Tech master programs. The question remains, however, what alternative means are employed by universities to infuse technology-related knowledge and skills into law curriculum, and what variables determine these choices. The answer to these questions should enable modeling of an optimal Law & Tech program at any given university.

CONCLUSION

1. This pilot research of limited scope explored systematically the existing Law & Tech master programs that are offered by the leading universities in high-tech EU

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

member states, for the purposes of refining “Future of Legal Education” research questions and testing data accessibility. The systematic multi-stage sampling process led to the list of 38 Law & Tech master programs offered by 35 leading universities in 11 high-tech EU member states used for extraction and grouping of almost 600 subjects offered in these programs. After the systematic review of these programs, the universities in the Netherlands were selected purposively for content analysis of their Law & Tech program descriptions. The data retrieved through this selection process support general conclusion that selection of countries and universities might be extended to a continuous EU study and / or selective study of other high-tech countries on a world-wide scale**.**

2. The choice of 16 most frequent topics using the rule of thumb allowed to construct a hypothetical, 2-year (4 semesters) Law & Tech master program with 5 subjects per semester and master thesis project and / or legal practice at a final stage of such studies. However, many subjects in lower quartiles of appearance frequency may be offered as elective courses or trained through various Law & Tech research units. This choice using the rule of thumb has been repeatedly performed regarding Law & Tech master programs in the selected Netherlands universities. The comparison of both hypothetical programs revealed that 14 out of 16 subjects are the same, thus providing a supporting argument for the typical content of thus constructed hypothetical Law & Tech master program.
3. Although limited in scope, the systematic analysis revealed the testable proposition that majority of excluded universities employ alternative practices, infusing technology-related outcomes throughout the curriculum and many variations of subjects and their context. The conclusion was made that further research should consider mapping these choices and questioning the reasons behind them. Therefore, this systematic analysis has revealed the need for further inquiry into (i) the alternative practices of technology-related skills’ infusion into the law curriculum; and (ii) variables that impact the choices of Law & Tech program’s structure and curriculum. Presumably, quantitative analysis of external and internal variables will enable to construct the model of optimal Law & Tech program and to set the key performance indexes.
4. The content analysis of Law & Tech master programs in the leading Netherland universities supported the need for further inquiry. Moreover, the analysis of the publicly available descriptions of these programs enabled to complete the list of 5 categories for key arguments and considerations supporting the offering of specialized Law & Tech program. That is, when modeling the optimal Law & Tech program, the variables of (i) complexity of technological progress; (ii) knowledge and skills, (iii) student benefits and (iv) teachers and students should be within the scope of main inquiry.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

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No. 1 (19), 2019, p. 148-175

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Law review
No. 1 (19), 2019, p. 148-175

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ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

SANTRAUKA

SISTEMINĖ TEISĖS IR TECHNOLOGIJŲ MAGISTRANTŪROS PROGRAMŲ, SIŪLOMŲ PASIRINKTUOSE EUROPOS SĄJUNGOS (ES) UNIVERSITETUOSE, APŽVALGA (PILOTINIS TYRIMAS)

Šiame pilotiniame tyrime pateikiama sisteminė apžvalga teisės ir technikos magistrantūros programų, siūlomų pasirinktuose Europos Sąjungos (ES) universitetuose. Sisteminės daugiapakopės atrankos būdu tyrimui buvo atrinktos 38 teisės ir technologijos magistrantūros programos, kurias siūlo 35 pagrindiniai universitetai iš 11 aukščiausią technologinį išsivystymą turinčių ES valstybių narių. Šiose programose siūlomi dalykai bei kursai (apie 600) buvo sugrupuoti pagal jų tematikas, taip nustatytas jų pasikartojimo dažnumas visoje programų imtyje. Iš 16 dažniausiai pasikartojančių (populiariausių) dalykų buvo sudaryta hipotetinė teisės ir technologijų krypties magistro programa. Ši analizė taip pat leido patikslinti pagrindinio tyrimo klausimus: (i) kokiais alternatyviais būdais į teisės studijų programas yra integruojamos technologinės žinios, ir (ii) kokie veiksniai lemia teisės ir technologijų programų struktūros ir mokymo programos pasirinkimus. Gilesnei teisės ir technologijų programų turinio analizei buvo pasirinkti Olandijos universitetai. Šių programų turinio analizė leido kategorizuoti, tolesniam tyrimui, pagrindinius veiksnius, kuriais yra grindžiamas technologijų srities įtraukimas į teisės studijų programą.

RAKTINIAI ŽODŽIAI

Technologijų teisė, teisės technologijos, teisė ir technologijos, LegalTech, Teisės studijos.

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

Annex 1: Content analysis of the descriptions of selected Law & Tech master programs

University // Program	Argument	Argument	Sub-category	Category
Vrije Universiteit Amsterdam // International Technology Law	Technology creates situations that were the stuff of fantasy when most of our laws were created. Robots, biotech, autonomous vehicles and weapons, and the endless amassing and crunching of data - what does it mean to be a human being? And how do we relate to each other and to the natural world? These are the questions we are forced to ask ourselves again in the face of technological progress. Law shapes and reflects the answers that we find.	technology creates situations that were the stuff of fantasy when most of our laws were created, therefore, we are forced to ask ourselves again in the face of technological progress.	Outdated laws	Complexity of technological progress
	Alongside core courses in international technology law, and big data, human rights and security, you will choose from subjects including: international weapons law, biotech and law, robots and artificial intelligence, and blockchain and disruptive tech.	core courses and selective subjects in law concerning emerging technologies	Specialized core and selective subjects with practical experience	Structure and curriculum of program
	You will be part of a friendly, accessible and international group of teachers and students interested in exploring the frontiers of regulation and technology,	friendly, accessible and international group of teachers and	Behavior of teachers	Teachers and students
		motivated students	Motivation of students	
	and you will graduate as a specialist with in-demand knowledge and skills. As an ITL graduate, you will use, develop or research the regulation of emerging technologies. There are relatively few lawyers with a solid understanding and knowledge of the law concerning emerging technologies, so graduates will be part of a specialized and in-demand group.	in-demand knowledge, skills, and solid understanding of the law concerning emerging technologies	Law & Tech	Knowledge and skills
	Typically, you will work in law firms, international organizations such as the UN, EU or international technology regulators, governments, or NGOs.	Private, public, and international organizations demand lawyers trained in the law concerning emerging technologies	Career opportunities	Student benefits
Leiden University // Air and Space Law	Which laws govern the commercial use of outer space? Are States responsible for mitigating space debris? Who is liable for accidents that happen onboard the aircraft? Learn how to deal with questions like these from both an international and a European perspective. The LL.M. program *Air and Space Law* combines public air law, private air law and space law. It has a clearly defined European and international dimension, making it unique in the world.	Questions of private and public air and space within international and European perspective	Cross-border, interdisciplinary perspective	Structure and curriculum of program
	In this intensive one-year master’s program, you will gain a solid legal foundation in this exciting field, learning from some of the foremost experts in academia and legal practice.	Intensive studying and	Workload of students	Teachers and students
		foremost experts in academia and legal practice	Selection of teachers	

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

	You will learn how to address a wide variety of issues that affect society, such as: passenger safety; accident investigation; environmental protection; the use of drones; fair competition; sustainability of space activities; militarization of outer space.	learn how to address a wide variety of Air and Space Law issues that affect society	Air and Space	Knowledge and skills
	As a student of Advanced Studies in Air and Space Law, you will benefit from: (i) International environment: In addition to the international focus of the curriculum, the unique blend of students and instructors that represent all continents makes our program a truly global experience. (ii) Expert instructors: You will be taught by expert faculty from the International Institute of Air and Space Law, visiting international professors and distinguished legal practitioners specialized in specific aspects of air and space law. (iii) Excellent reputation: Leiden Law School has developed its reputation for excellence by combining a high level of academic teaching with acclaimed and innovative research. Its tradition of quality attracts prestigious professors and professionals from around the world who teach you in a challenging and supportive atmosphere. (iv) Strong professional dimension: The courses include professional skills trainings as well as frequent visits to air and space organizations to closely follow their activities and to expand your professional network. (v) Internship experience: You will gain professional experience by conducting a 6-8 weeks internship in an institution dealing with either air or space law. (vi) Moot court skills: You will receive training in research, analysis, legal writing and pleading in a simulation of a legal case. (vii) Study trip: You will take a study trip to Luxembourg and Brussels to visit the European Commission. (viii) High demand for graduates: Due to the European Union’s liberalization of air transport and an increase in the number of actors operating in outer space, there is a high demand for legal experts who understand these regulations and policies. (ix) Beautiful, advantageous location: The Law School is housed in two beautifully restored historic buildings located in the old center of Leiden. We also have teaching and research facilities close to international legal institutions in The Hague.	Students benefit from International environment; Expert instructors; Excellent reputation; Strong professional dimension; Internship experience; Moot court skills; Study trip; High demand for graduates; Beautiful, advantageous location; Superior research resources	Other student benefits	Student benefits

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

	(x) Superior research resources: As a student, you will have access to the extensive library of the International Institute of Air and Space Law. Leiden is also in close proximity to the Peace Palace in The Hague, which houses one of the world's largest legal collections.			
	Are you fascinated by the myriad legal issues involved with aviation and aerospace activities? This program will help you gain a thorough understanding of the international and European dimensions of this complex, cutting-edge field.	complex, cutting-edge field of aviation and aerospace activities, within international and European dimensions	Cutting-edge field of law	Complexity of technological progress
	This program is a good fit for you if you are a law graduate wishing to pursue a challenging master's study or a legal practitioner wishing to specialize in air and space law who is currently working at for example a(n): internationally operating law firm; private company (e.g. airline, aircraft parts manufacturer); civil aviation authority; telecommunications organization; governmental organization.	Private, public, and international aviation and telecommunications organizations demand lawyers trained in the air and space law	Career opportunities	Student benefits
	In the Advanced Studies in Air and Space Law program, you will study a combination of public air law, private air law and space law, examining them from both an international and a European perspective.	combination of public and private air law and space law, examining them from both an international and a European perspective	Cross-border, interdisciplinary perspective	Structure and curriculum of program
	The Leiden Air and Space Law program is unique. Its teaching and research have a clearly defined European and international dimension and are in line with the highest academic standards.	Unique program, clear teaching and research dimensions, highest academic standards	Specialized core and selective subjects with practical experience	
Leiden University // Law and Digital Technologies	How does the digitization and mass distribution of creative work affect intellectual property rights? In what ways can digital technology regulations evolve to better protect individuals and organizations from identity fraud or security breaches?	Questions of digitization and mass distribution of creative work within intellectual property, regulation and security perspectives	Cross-border, interdisciplinary perspective	Structure and curriculum of program
	Technology has become an important issue in almost every area of national and international law practice. Today, people are constantly confronted with concerns of privacy, personal data protection, cybercrime and cybersecurity. New uses for technology are often developing more rapidly than the law itself, creating interesting challenges for legal professionals and scholars.	Technology has become an important, challenging and interesting field, developing more rapidly than the law	Outdated laws	Complexity of technological progress
	This program will equip you with both theoretical knowledge and professional skills necessary to thrive in an interdisciplinary, global environment.	Interdisciplinary and global theoretical knowledge and professional skills in Law and Digital Technologies	Law & Tech	Knowledge and skills
	Reasons to choose Law and Digital Technologies at Leiden University? As a student of the Law and Digital Technologies	Students benefit from Multidisciplinary learning;	Other student benefits	Student benefits

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

	program, you will benefit from: (i) Multidisciplinary learning: You will develop expertise on the law and governance of the internet and digital technologies, focusing on regulatory theory (internet governance and techno-regulation) as well as national and international law (hard law, soft law and case law). (ii) Excellent reputation: Leiden Law School has developed its reputation for excellence by combining a high level of academic teaching with acclaimed and innovative research. Its tradition of quality attracts prestigious professors and professionals from around the world who teach you in a challenging and supportive atmosphere. (iii) International environment: In addition to the international focus of the curriculum, the unique blend of students and instructors that represent all continents makes our program a truly global experience. (iv) Professional skills: You will develop professional skills through participation in workshops with specialized lawyers (e.g. moot courts, negotiating IT contracts and Taught within the Centre for Law in the Information Society, this program takes a multidisciplinary and international approach when addressing the modern legal challenges posed by digital technology, performing privacy impact assessments) and technologists (e.g. hacking and social engineering). (v) Extensive networking: You will build a strong professional network during site visits to major high-tech companies, law firms and governmental institutes and through interacting with your fellow students, who are often practicing lawyers that come from all corners of the globe. (vi) Study trips: You can participate in several excursions, for instance to major high-tech companies or law firms. (vii) Additional specialization opportunities: You can choose to follow one course from one of the Leiden Law School's other Master of Laws Advanced Studies programs (excluding International Tax Law) in addition to the core curriculum. (viii) Supportive student groups: You will have the opportunity to participate in a reading group which will discuss relevant literature. (ix) Beautiful, convenient location: The Law School is housed in two beautifully restored historic buildings located in the old center of Leiden. We also have teaching and research facilities close to international legal institutions in The	Excellent reputation; International environment; Professional skills; Extensive networking; Study trips; Additional specialization opportunities; Supportive student groups; Beautiful, convenient location; Superior research resources.		

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

	Hague. (x) Superior research resources: As a student, you will have access to the Center for Law and Digital Technologies' excellent library, as well as the library of the nearby Peace Palace (The Hague), which houses one of the world's largest legal collections.			
	Are you interested in learning more about complex legal and regulatory issues related to the development and convergence of digital technologies? Law and Digital Technologies is a focused and demanding postgraduate program that will foster your knowledge of this ever-growing field.	complex legal and regulatory issues in ever-growing field of law and digital Technologies	Ever-growing field of law	Complexity of technological progress
	It is aimed at both legal professionals and top graduates	Training for legal professionals and top graduates	Maturity of students	Teachers and students
	who wish to acquire in-depth knowledge of law and digital technologies from an international and multidisciplinary perspective. In this program, you will acquire in-depth knowledge about legislation and governance regarding the internet, computers, mobile devices, persuasive technologies and ambient intelligence.	in-depth knowledge of law and digital technologies from an international and multidisciplinary perspective	Law & Tech	Knowledge and skills
University of Groningen // Governance and Law in Digital Society	What role does the government play in digital society? And what impact does this have on the public sector? How should we approach issues of cybercrime from a legal and organizational perspective? Recent advances in digitization have resulted in an increasing number of parties becoming involved in security issues.	advances in digitization have resulted in an increasing number of security concerns	Security concerns	Complexity of technological progress
	'Security and digitization' are, after all, not restricted to cybercrime and thus affects both the police and courts of law. It is also concerned with issues of surveillance and the maintenance of law and order, including online as well as offline public order. Government agencies have to decide which strategies to adopt in order to deal with such obstacles and issues brought about by digitization.	'Security and digitization' are concerned cybercrime, surveillance and the maintenance of law and order	Cross-border, interdisciplinary perspective	Structure and curriculum of program
	In the job market, there is a clear demand for graduates with an interdisciplinary profile capable of interpreting developments in digital society and responding to them accordingly. This Master's program is designed to meet this demand and prepare students for a career within this field.	clear demand for graduates with an interdisciplinary skill to interpret developments in digital society and respond to them	Career opportunities	Student benefits
	In this program, you will work intensively with university partners in both the private and public sectors, to gain insight into the real-life problems that organizations encounter. You will gain practical experience in working in a public context in the field of problems related to digitization.	Intensive practical experience	Workload for students	Teachers and students
		with partners in both the private and public sectors	Selection of teachers	

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

	Graduates of the program will be well equipped to discuss and tackle such problems, whether in academic research or in political or governmental organizations or the business world.	Equipment to discuss and tackle problems related to digitization	Digitization	Knowledge and skills
University of Amsterdam // Information Law	Information is the central building block of markets and societies. New ways of creating, disseminating and using information impacts the workings of democracy, science and education, and creativity and culture. Reliance on personal data and personalized online services affects individuals and their human rights. As a result, new and important issues are emerging for which our laws are not optimally adapted.	new and important issues of creating, disseminating and using information impacts democracy and human rights for which our laws are not optimally adapted	Outdated laws	Complexity of technological progress
	The Research Master's in Information Law provides ambitious students with the	ambitious students	Motivation of students	Teachers and students
	legal skills that enable them to tackle the complex legal issues that arise in an information society, both from a scientific and practical perspective.	scientific and practical skills to tackle the complex legal issues of information society	Law & Tech	Knowledge and skills
	The program offers outstanding students with an interest in scientific research in the field of information law,	Outstanding and motivated students	Motivation of students	Teachers and students
	the opportunity to enhance their knowledge of subjects relevant to information law, to obtain hands-on research experience embedded in one of the world's leading research centers and a semester at a foreign law school abroad.	enhance their knowledge, obtain hands-on research and international experience	Other student benefits	Student benefits
Maastricht University // Intellectual Property Law and Knowledge Management	Are you fascinated by the ins and outs of intellectual property protection systems in the EU, US, Asia and beyond? Do you want to advance your international career in cross-border IP litigation practice, or to become an IP expert at the European Patent Office? Are you looking for a challenging, small-scale program that approaches IP law from multiple perspectives?	cross-border and multiple perspectives	Cross-border, interdisciplinary perspective	Structure and curriculum of program
	The IPKM Advanced Master’s in Intellectual Property Law and Knowledge Management (IPKM) program provides you with the legal foundations and practical and technical skills to work at the crossroads of legal services, policy and knowledge management in technology-driven, innovative and creative industries.	legal foundations and practical and technical skills for legal and knowledge management work in technology-driven, innovative and creative industries	Law, Tech & Management	Knowledge and skills
	Students with work experience and working professionals are particularly encouraged to apply.	work experience and professionals are prioritized	Maturity of students	Teachers and students
	The curriculum is structured to support a combination of working and studying.	Support combination of working and studying	Specialized core and selective subjects with practical experience	Structure and curriculum of program
	advance your career as a lawyer, patent agent or manager accredited by the European Patent Office for EQE remission	Private specialized career	Career opportunities	Student benefits

ISSN 2029-4239 (online)
Teisės apžvalga
Law review
No. 1 (19), 2019, p. 148-175

Tilburg University // Law and Technology	The exponential rate of technological innovation and the speed in which these developments take place raise serious legislative questions and demand smart and inventive solutions by lawyers with a broad regulatory perspective.	exponential rate and speed of technological innovation needs smart and inventive solutions by lawyers	Speed and scope of developments	Complexity of technological progress
	During the international master of Law and Technology, you will develop cutting-edge and interdisciplinary expertise within the burgeoning field of technology regulation.	cutting-edge and interdisciplinary expertise in Law and Technology	Law & Tech	Knowledge and skills
	The master deals with European Law and International Law on regulation within the public, private and criminal law domain. Besides the traditional legal doctrine like jurisprudence and comparative law, we focus on regulations in a broader perspective, like ethics, market mechanisms and techno-regulation. Even though the main focus of the master is on law and digital technology, you can also explore questions and issues surrounding controversial and fascinating technological developments in biotechnology, nanotechnology, and neuroscience. You can specialize in a particular subject area thanks to a curriculum that covers a variety of subjects.	Besides the traditional legal doctrine, we focus on regulations in a broader perspective, allowing to specialize and explore questions and issues surrounding technological developments	Specialized core and selective subjects with practical experience	Structure and curriculum of program
	The program is taught by internationally respected teaching staff. The program has a multidisciplinary approach to regulation. There is a strong connection with the research of the Tilburg Institute for Law, Technology and Society (TILT).	internationally respected teaching staff with multidisciplinary approach and close connection with research unit	Selection of teachers	Teachers and students
	Graduates are qualified to pursue a leading position as a consultant, researcher, policy-maker, or lawyer, specialized in law and technology in various types of centers, such as large international law firms, in-house legal departments of large firms, the civil service (including the EU civil service), and transnational organizations (both for-profit and non-profit).	Private, public, and international organizations demand lawyers trained in the law and technology	Career opportunities	Student benefits