Διεθνές Κοινό Πρόγραμμα Μεταπτυχιακών Σπουδών
Ανοιχτά Δεδομένα και Τεχνητή Νοημοσύνη για την Διακυβέρνηση και την Καινοτομία

D3.3. ΟΔΗΓΟΣ ΣΠΟΥΔΩΝ ΠΜΣ

Open Data and Artificial Intellinge for Policy and Innovation

The objective of the Postgraduate Studies Programme in Open Data and Artificial Intelligence for Policy and Innovation is to prepare professionals to harness the power of open data combined with the advanced technologies for processing and analysis while addressing privacy, security, ethical, and legal challenges towards the co-creation of novel digital services for businesses and administrations. With open data being a critical asset for innovation, transparency, and societal development, the Master of Science (MSc) in Open Data and Artificial Intelligence for Policy and Innovation is a comprehensive, interdisciplinary programme designed to equip students with the skills and knowledge to manage, regulate, and utilize open data effectively across different sectors. This programme combines elements of data science, policy, law, ethics, and digital transformation to create leaders capable of navigating the complexities of open data governance in an increasingly data-driven world.

The MSc in Open Data and Artificial Intelligence for Policy and Innovation is three semesters, full-time programme that combines theoretical knowledge with practical skills through coursework, workshops, case studies, and a research-based capstone project. The sub-objectives of the MSc is to train, educate and equip the students towards:

- Solid understanding of the open data landscape and ecosystem, including data creation, curation, sharing, and reuse across sectors such as government, healthcare, finance, education, and environmental sciences.
- Developing Legal and Ethical Frameworks through the exploration of the legal, regulatory, and ethical frameworks governing open data, including data protection laws (e.g., GDPR), intellectual property rights, and ethical use of data.
- Applying and Promoting Data-Driven Decision-Making: Equip students with the skills to leverage open data for decision-making, policy formulation, and innovation within organizations and public institutions.
- Applying collaborative governance and citizens science techniques towards the co-creation of novel digital services.
- Strengthening their Data Management Skills through developing their expertise in data collection, cleaning, visualization, and management, focusing on tools and technologies for open data platforms and repositories.
- Fostering global collaboration through learning to navigate international and cross-sectoral collaboration on open data initiatives, understanding diverse governance models and global data standards.
- Advancing Responsible Data Governance through promoting the development of equitable, inclusive, and sustainable data governance frameworks that protect individual privacy while maximizing data’s public good.

Graduates of the MSc in Open Data and Artificial Intelligence for Policy and Innovation will acquire knowledge and be equipped for leadership roles in the public and private sectors, with career paths in:

- Data Governance and Management: Oversee open data initiatives in government agencies, international organizations, or corporations.
- Open Data Policy Advisor: Develop and advise on policies that govern the responsible sharing and use of data.
- Data Privacy Officer: Ensure organizations are compliant with data protection laws and manage data privacy concerns.
- Open Data Analyst/Scientist: Analyze datasets for actionable insights, especially in sectors like healthcare, urban development, and environmental monitoring.
- Data Science and Engineering: Work in technical roles developing data infrastructure and tools for open data platforms in different domains such as air-quality, agriculture, transport, renewable energy, waste management etc.

Courses Structure

Course ID	Course Title	Type	ECTS	Teaching Type and perc.	Semester
8001	Open Data I	Mandatory	6	Synchronus e-learning 100%	A
8002	Open Data and AI Policy, Regulation and Ethics	Mandatory	6	Synchronus e-learning 100%	A
8003	Data Analytics and Visualization	Mandatory	6	Synchronus e-learning 100%	A
8004	Open GeoSpatial Data for Smart Cities	Mandatory	6	Synchronus e-learning 100%	A
8005	Digital Collaborative Governance	Mandatory	6	Synchronus e-learning 100%	A
8006	Open Data II	Mandatory	6	Synchronus e-learning 100%	B
8007	Research Methods and Thesis Seminar	Mandatory	6	Synchronus e-learning 100%	B
8008	Open Data Infrastructures and Interoperability	Elective (3 from 4)	6	Synchronus e-learning 100%	B

8009	AI and Disruptive Technologies for Open Data	Elective (3 from 4)	6	Synchronus e-learning 100%	B
8010	Digital Innovation and Entrepreneurship in Data Ecosystems	Elective (3 from 4)	6	Synchronus e-learning 100%	B
8011	Open Data Applications and Case Studies for Policy and Innovation	Elective (3 from 4)	6 (el)	Synchronus e-learning 100%	B
8012	Internship	Elective (1 of 2)	5	Synchronus e-learning 20% Asynchronus e-learning 80%	C
8013	Summer School	Elective (1 of 2)	5 (el)	Onsite 100%	C
8000	Diploma Thesis	Mandatory	25	Synchronus e-learning 10% Asynchronus e-learning 90%	C

Description of Courses (Syllabus)

A. MANDATORY COURSES

8001. Open Data I
The course Open Data I provides a comprehensive introduction to the foundations and governance of open data ecosystems. It explores the evolution and key actors of the open data movement, as well as the FAIR and CARE principles, the 5-star model, and the use of data portals and catalogues. Students learn how open data supports transparency, innovation, and collaboration while examining governance models, institutional frameworks, and stakeholder roles that shape decision-making processes. The course emphasizes the development and evaluation of governance strategies that promote accountability, sustainability, and effective management of open data.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.
Grading

- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8002. Open Data & AI Policy, Regulation and Ethics
The course Open Data Policy, Regulation and Ethics offers an in-depth understanding of the legal, regulatory, and ethical dimensions of open data. It examines intellectual property rights, licensing models, and major data protection frameworks such as the GDPR and HIPAA, alongside emerging regulations like the Data Governance Act, Data Act, PSI Directives, and AI Act. Students explore how data policy frameworks and comparative legal systems shape open data practices at international, regional, and national levels. The course also addresses key ethical considerations, including privacy-by-design, anonymisation, fairness, and algorithmic accountability, enabling students to navigate legal compliance and ethical challenges in open data management and reuse.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.
Grading

- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8003. Data Analytics and Visualisation
The course Data Analytics and Visualisation equips students with the essential skills to process, analyse, and communicate insights from open data. It covers data curation, cleaning, transformation, and structuring, along with practical techniques for analysis and visualisation using tools such as R and Python. Students gain hands-on experience working with datasets from open data portals, developing dashboards, and applying data storytelling methods to convey findings effectively.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.
Grading
- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8004. Open GeoSpatial Data for Smart Cities
The course Open Geospatial Data for Smart Cities examines the role of geospatial open data in supporting urban innovation and smart city development. It introduces key concepts such as the INSPIRE Directive, spatial data infrastructures (SDIs), and volunteered geographic information (VGI), alongside geospatial standards and mapping tools. Students learn how geodata is managed, shared, and applied in urban contexts, exploring open data initiatives at local and global scales that enable data-driven decision-making, sustainability, and smarter urban governance.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.
Grading
- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8005. Digital Collaborative Governance

The course Digital Collaborative Governance focuses on participatory and inclusive approaches to open data and digital governance. It explores citizen engagement, e-participation, and collaborative innovation methods such as hackathons, living labs, and citizen science initiatives. Students learn how to design, manage, and evaluate participatory processes that enhance data ecosystems through crowdsourcing, collective intelligence, and open service co-creation. Emphasizing inclusiveness and collaboration, the course prepares students to foster transparent, citizen-driven governance models, with assessment based on participation, assignments, and a final written exam.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.
Grading

- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8006. Open Data II
The course Open Data II provides an advanced exploration of the open data lifecycle, focusing on the management, sustainability, and quality of data within broader ecosystem contexts. It covers key concepts such as metadata standards, data quality assurance, storage and warehousing principles, and the use of APIs for data access and integration. Students learn how to manage open data from creation to long-term preservation and reuse, while examining strategies that support interoperability, scalability, and sustainable data practices across diverse domains.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.
Grading

- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8007. Research Methods and Thesis Seminar
The course Research Methods and Thesis Seminar provides the methodological and epistemological foundation for conducting MSc-level research. It introduces both

quantitative and qualitative research methods, data analytics techniques, and case study design, while emphasizing academic writing and research ethics. Through practical workshops, students develop their thesis proposals and design open-data-based experiments or policy evaluations, preparing them to undertake independent, rigorous, and impactful research.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.
Grading

- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8000. Diploma Thesis
The diploma thesis is the final project of the programme, enabling students to conduct an independent, research-paper oriented or applied project that demonstrates interdisciplinary integration of knowledge. Drawing on the theoretical, technical, and ethical foundations developed throughout the programme, students address a complex real-world problem or research question related to open data ecosystems. The project is completed under academic supervision and may involve collaboration with external partners or organisations, showcasing the student’s ability to apply open data principles in practice.

B. ELECTIVE COURSES

8008. Open Data Infrastructures and Interoperability
The course Open Data Infrastructures and Interoperability focuses on the technical and semantic foundations that enable open data to be shared and reused across platforms and domains. It introduces key frameworks and standards such as APIs, DCAT, RDF, and Linked Data, as well as FAIR-aligned best practices for data cataloguing and metadata management. Students learn how to design and evaluate interoperable data systems, exploring both technical and semantic interoperability through the use of ontologies, vocabularies, and semantic mapping. Practical work includes analysing interoperability across open data portals, with a focus on real-world applications and cross-domain data integration.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual assignments are taken into account.
Grading

- Individual Assignments (30%)
- Written Exam (70%)

8009. AI and Disruptive Technologies for Open Data
The course AI and Disruptive Technologies for Open Data explores how emerging technologies such as artificial intelligence (AI), machine learning (ML), and natural language processing (NLP) can improve the quality, discoverability, and interoperability of open data. Students learn about automated metadata generation, data enrichment, and other advanced methods that enhance open data management and reuse. The course also examines human–machine collaboration in addressing open data challenges, as well as the role of blockchain and decentralised technologies in ensuring data traceability, transparency, and integrity.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual assignments are taken into account.
Grading

- Individual Assignments (30%)
- Written Exam (70%)

8010. Digital Innovation and Entrepreneurship in Data Ecosystems
The course Digital Innovation and Entrepreneurship in Data Ecosystems explores how open data drives innovation, entrepreneurship, and sustainable value creation. It examines business and governance models that support collaboration between public and private sectors, highlighting strategies for developing data-driven products and services. Students learn about digital innovation thinking, data-based decision-making, and entrepreneurial approaches that promote transparency, accountability, and social impact. Through case studies and practical assignments, they apply these concepts to real-world challenges in digital and open data ecosystems.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.

Grading

- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8011. Open Data Applications and Case Studies for Policy and Innovation

The course Open Data Applications and Case Studies explores how open data is applied across various sectors, including health, environment, cultural heritage, smart cities, and data journalism. It examines domain-specific data models, standards, and challenges, showing how open data can drive innovation, improve services, and inform policy. In this practice-based module, students actively engage with an existing open data ecosystem—such as a governmental, civic, or sectoral platform—by contributing to data publication, curation, or reuse. Through this hands-on experience, they analyse real-world governance models, stakeholder interactions, and the practical factors that shape open data use.

The evaluation results from the student's presence in the course, active participation in discussions and in the weekly course development. For the final evaluation, the performance in the final, written exam and the performance in individual and group assignments are taken into account.

Grading

- Individual Assignments (20%)
- Group Project (20%)
- Written Exam (60%)

8012. Internship

Internship at academia or industry - associated companies and/or public bodies. The course aims to provide the student with practical training in the knowledge and skills acquired from the MSc through their participation in the industry or public bodies working with open data, policy, and technologies in practice.

Grading

- Individual Assignments (100%)

8013. Summer School

The International Summer School on Digital Government takes place on the island of Samos and focuses on Technologies and Applications for Government 3.0, a really growing, diverse and challenging domain. The Summer School on Government 3.0 is organized by the Department of Information and Communication Systems Engineering, University of the Aegean and provides a unique opportunity for participants and

students of the MSc programme to interact with internationally acclaimed scientists and researchers in the domain of ICT-enabled Governance, to develop their skills in the areas of open data, AI, policy modeling, information management, disruptive technologies in governance, and more.

Grading

- Individual Assignments (100%)