



UNITED NATIONS
UNIVERSITY

UNU-EGOV

Capacity Building

UNU-EGOV Training Portfolio



A government leader on Information Technology (IT), often called a Government Chief Information Officer (GCIO), is responsible for developing and managing IT capabilities within a government organization, strategically aligning such capabilities with existing organizational objectives, and leading the organization towards adopting new strategic objectives made possible by IT. In addition to regular responsibilities of an IT leader, a GCIO has a number of specific roles. These include:

- making sure that IT investment creates public value and not just improves internal government efficiency;
- developing, monitoring and evaluating IT policies and related legal instruments to ensure that the needs of the territory or area under jurisdiction are best served by IT;
- making IT resources and capabilities available to the government as a whole, and not only to benefit individual agencies;
- building consensus, resolving conflicts and balancing the needs of different stakeholders;
- managing the influence of politics and electoral cycles on IT decision- and policy-making;
- building on the work of predecessors by incrementally developing structures that the successors can build upon; and communicating effectively with the stakeholders and the public at large, including playing the role of a government spokesperson on IT matters.

In a government operating through networks, a GCIO must also identify the external actors with the required resources and capabilities to bring to the network. Finally, as a leader, a GCIO must be able to communicate ideas, motivate others to accept them, and support their realization through technological, organizational and social change.

The **Capacity Building Portfolio of UNU-EGOV** is designed to equip GCIOs, at all levels of Public Administration, with some of the required competencies to fulfill their responsibilities and to enable the development of an internationally-recognized profession.

Course descriptions include a reference to its main scientific area, **ECTS** when applicable, recommended duration in terms of **contact hours**, learning outcomes and syllabus.

All courses have a flexible curriculum design which can be adapted to the context, training aims and trainees backgrounds of each Administration, Agency or Service. In all cases, however, they include an experimental, interactive component fostering group synergies and active learning strategies.

Most courses in the **UNU-EGOV Capacity Building Portfolio** are formally certified and assign, on successful completion, a number of ECTS through an institutional cooperation agreement between the **United Nations University** and the **University of Minho** in Portugal.



Universidade do Minho



The **European Credit Transfer System (ECTS)** aims at making degree programmes and student performance more transparent and comparable across all European Union countries. ECTS replaced or complemented the different national standards within Europe and are recognized worldwide as an international reference.



Contact hours are hours spent in-house on activities guided by teaching staff. The usual course workload may also include individual – or group – based, project-oriented learning activities.



STUDY AREAS

Informatics

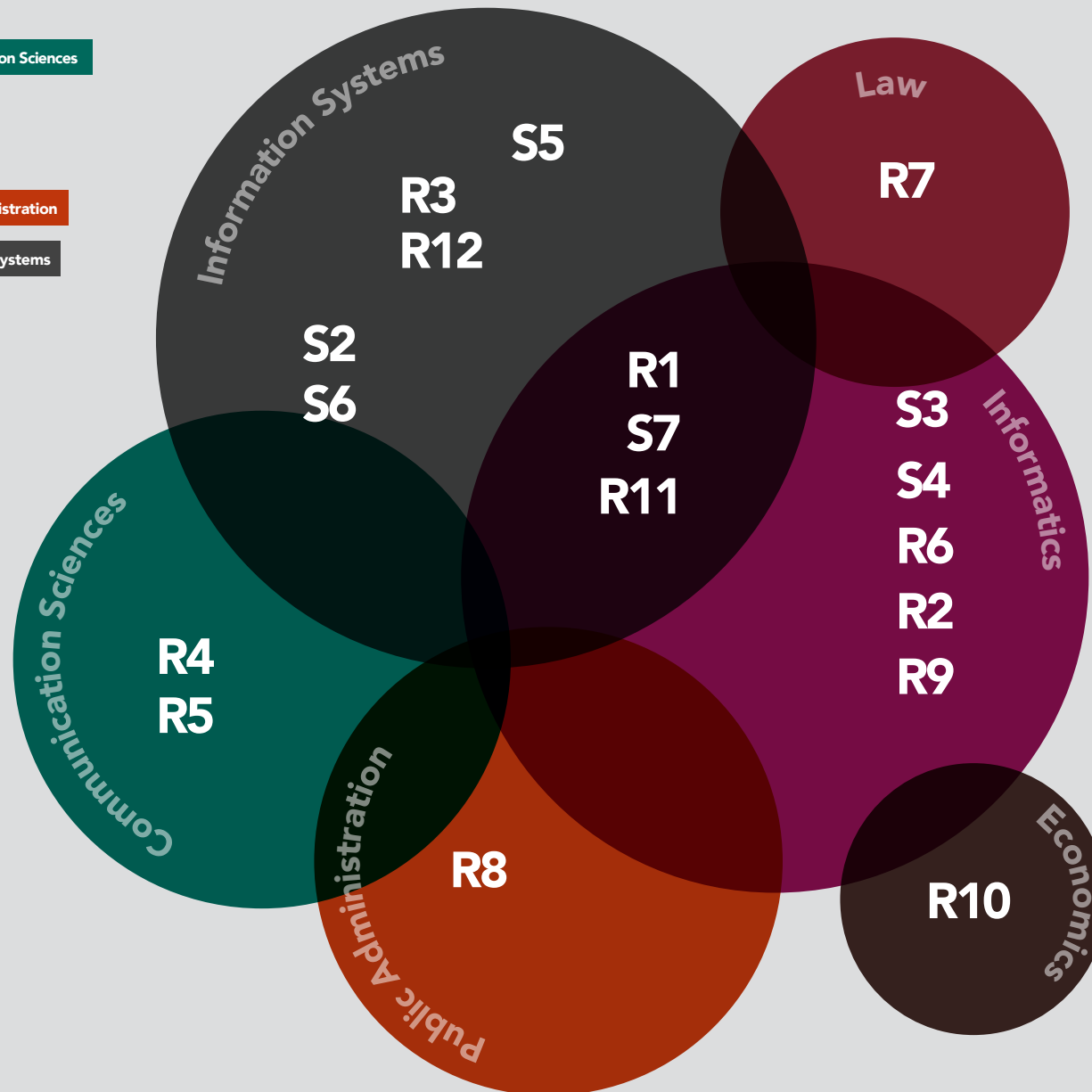
Communication Sciences

Law

Economics

Public Administration

Information Systems



SHORT COURSES

S1 EGOV Strategic Planning	6
S2 Project Management in Information Technologies	8
S3 Information Security	10
S4 Open Data and Data Analytics	11
S5 e-Transformation Change Management	12
S6 Assessment Standards for Government Performance	14
S7 Foundations and Challenges of Mobile Government Applications	16

REGULAR COURSES

R1 EGOV Foundations and Architectures	18
R2 Data and Infrastructures	20
R3 Public Digital Services and Smart Communities	22
R4 Citizens' Engagement through Digital	24
R5 E-participation, Digital Literacy and Community Empowerment	26
R6 State Digital Certification Platforms: The Technical Dimension	28
R7 State Digital Certification Platforms The Legal Dimension	30
R8 Innovation in Public Policy and Governance	32
R9 Decision Support Systems for Smart Governance	34
R10 Public Finance and Socio-economic Analysis	35
R11 Smart Cities: Challenges and Strategies	36
R12 Smart Governance	38

TRAINING ON DEMAND

Some examples	40
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Main Scientific Area

Information Systems

Standard Duration

20 contact hours

ECTS

1.5

S1

EGOV

Strategic

Planning

ECTS
Certification
Diploma

S1 Learning Outcomes

The use of digital technologies by Governments to improve their operation as well as ways to foster bidirectional interaction with citizens has been the subject of significant and steady progress in recent years. Its impact on society and democratic citizenship becomes more relevant day by day. Likewise, its enormous potential in the progressive realization of the United Nations sustainable development objectives is recognized.

In this context, the course addresses the strategic planning of the EGOV platforms, as well as the architectures and information systems that support them. It intends to present and discuss the practices, challenges and opportunities currently associated with the use of ICT to support, transform and modernize the multiple activities of the State's governance and its interaction with society.

Upon successful completion of this course, trainees will be able to:

- Master the fundamental concepts associated to strategic planning and strategic management, clearly distinguishing between the two.
- Understand the main approaches to modern strategic planning and strategic management: principles, phases, processes.
- Understand the fundamentals, motivations, problems and challenges in strategic planning in the public sector.
- Apply strategic thinking and informed critical analysis to the design, planning, assessment and monitoring of complex EGOV projects.

Syllabus

1. Fundamentals of strategic management of EGOV: basic notions; strategic planning and strategic management; phases; processes; relation to public value creation; strategic alignment with national objectives and public sector reforms; performance, monitoring and assessment measures and indicators.
2. Planning EGOV strategic management: basic principles and operational strategies; stakeholder analysis; team management; resource planning and monitoring.
3. Definition of a strategic framework for EGOV. Examples and analysis of international case studies.
4. Strategic analysis of complex EGOV projects.
5. Design and implementation of EGOV strategies.
6. Monitoring and assessment of EGOV strategies and their implementation. Indicators and data collecting methods.

Main Scientific Area

Information Systems

Standard Duration

20 contact hours

ECTS

1.5

S2

ECTS
Certification
Diploma

Project

Management

in Information

Technologies

S2 Learning Outcomes

The efficient and successful delivery of public services rely on the processes used to plan, develop and deliver them. While a single service can be delivered through the execution of a project, a set of inter-related services aimed at producing public value is usually conceived in the context of a government program. This course presents concepts, methods, techniques and tools for project and program management.

After approving the course, trainees will possess competencies for planning and managing all phases of the project and program life-cycle, so that they deliver the expected results within the agreed scope, at the expected quality, while meeting time and budget constraints. Trainees will also possess competencies to properly communicate project status, outputs, and risks to the various project and program stakeholders, as well as to effectively manage the project and program team.

Upon successful completion of this course, trainees will be able to:

- Master key concepts and differences between Program and Project Management, and to understand important aspects for their successful implementation, such as benefits management, stakeholder management and governance.
- Have a critical awareness of existing approaches to managing programs and projects including internationally recognized methodologies applied in the public sector.
- Master approaches for aligning programs and projects with strategic government objectives and for integrating programs and projects into government strategies.
- Possess knowledge and skills to manage the EGOV programs and projects - including resources, activities and time, performance and deliverables, quality, communication with internal and external stakeholders, organizational changes.

Syllabus

1. Concepts, lifecycles and success factors of program and project management, their role in organizational context.
2. Attributes for an effective program manager and governance structures.
3. Concepts, components and principles of existing methods and standards.
4. Resource management, activities, tasks, costs, scheduling and performance management.
5. ICT tools for project and program management.
6. Certification frameworks in for project and program management.
7. Risk analysis, capital budgeting and investment rules.
8. Case study in the EGOV domain.

S3

Information Security

Main Scientific Area

Informatics

Standard Duration

20 contact hours

ECTS

1.5



Learning

This course addresses the main issues, challenges, and base requirements, necessary to conceive, deploy, manage and protect trustworthy ICT infrastructures. Trainees are provided with a comprehensive set of tools, techniques and best practices to help assess, design and operate such infrastructures, namely in what concerns the use of cryptographic techniques in communication protocols and information systems within the Public Administration.

Outcomes

Upon successful completion of this course, trainees will be able to:

- Understand the role of and deploy key technologies as building blocks of a trustworthy ICT infrastructure.
- Understand and manage common access controls mechanisms at the application, operating system, and network levels in order to monitor and protect the ICT infrastructure.
- Identify the challenges related to privacy assurance in ICT infrastructures.
- Master the definition, implementation and evaluations of security policies at an organizational level.
- Understand and estimate the economic impacts of computer security policies.
- Have a critical awareness of the ethical and legal aspects of computer and information security.

Syllabus

1. Basic concepts in information security: requirements, vulnerabilities, risks, attacks and control.
2. Introduction cryptography: symmetrical cryptography (symmetric cyphers; cryptographic hash functions); asymmetrical cryptography (key agreement; public key cyphers).
3. Access control: identification, authentication, access control, reference monitoring.
4. Platform security: challenges and problems; protection; defensive programming; secure network architectures.
5. Web security: challenges and problems; security models; session and authentication management.
6. Development life cycle for trustworthy software; risk analysis; standards and development methods.

S4

Open Data and Data Analytics

Main Scientific Area

Informatics

Standard Duration

20 contact hours

ECTS

1.5



Learning

This course is designed to provide trainees with an operational understanding and competences in data analytics, management and visualization. It further addresses scalability issues, challenges and problems in the specific context of Open Data management in Public Administration.

Outcomes

Upon successful completion of this course, trainees will be able to:

- Understand fundamentals of open and big data, and their value for government and society.
- Understand the key techniques and theory used in data analytics and visualization.
- Realize how data visualization may contribute to increased public value by improving data comprehension and enabling informed decision making.
- Design and evaluate visual representations of data to more effectively convey findings, drive decisions and provide evidence supported by the data
- Be aware of legal, policy and ethical implications of data use.

Syllabus

1. Open, linked and big data: concepts, enablers, sources, and public value.
2. Data management: foundations; data types and data attributes; data management systems; data lifecycle; roles and responsibilities; data semantics, meta-data, ontologies.
3. Exploratory data analysis: methods and statistical techniques for data analytics.
4. Data visualization fundamentals: techniques for effective visual presentation of different types of data (multivariate, temporal, textual, geospatial, hierarchical and network/graph-based).
5. Visualization systems and toolkits.
6. Case studies in the EGOV domain.
7. Legal, policy and ethical issues.

Main Scientific Area

Information Systems

Standard Duration

20 contact hours

ECTS

1.5

S5

e-Transformation

Change

Management

S5 Learning Outcomes

This course addresses leadership and change models and tools for successful, goal-orientated ICT innovation in the public sector.

It is well known that e-Government projects failure is mainly ascribed to change management processes. Change management in e-Transformation is a substantial matter for at least three reasons: **(1)** changes are caused by outside events such as globalization, policies and legislation, public-private partnership, new technology, etc. over which public administration has little or no control; **(2)** misconception that e-Government is predominantly seen as a technology issue and not as an organizational transformation mission; **(3)** resistance to change in public administration.

With a focus on IT and technology, this course will present the most common models of e-Transformation change management to identify and manage changes that should to be incorporated for successful e-Government projects. It will also emphasize the role of leadership in e-Transformation as a critical success factor of change management in EGOV implementation.

Upon successful completion of this course, trainees will be able to:

- Understand potential pitfalls and challenges in ICT enabled e-Transformation change management.
- Identify aspects of changes which must be managed in e-Transformation and the extent of the change in each of them.
- Be aware of the most common models for e-Transformation change management and be able to apply them.
- Appreciate the role and competencies of e-Government leadership in e-Transformation change management.

Syllabus

1. Change management and e-Transformation.
2. Common e-Transformation change management models.
3. Examples and practices in e-Transformation change management, including, for example, ICT facilitated process and organizational reengineering, as well as structural and functional integration in the public sector.
4. Role of EGOV leadership in e-Transformation change management.
5. EGOV leadership competencies: setting new directions, transforming processes and resource use, and using information strategically.

Main Scientific Area

Information Systems

Standard Duration

20 contact hours

ECTS

1.5

S6

Assessment Standards for Government Performance

S6 Learning Outcomes

Performance and assessment standards for the public sector and its many entities is promoted to improve the efficiency of government. The aim is to optimize productivity and value added by defining goals and success criteria and ensure that different authorities and levels of government do not have conflicting goals. By defining objectives and providing incentives for achieving these goals performance and assessment systems attempt to bring public sector entities the type of discipline that market mechanisms bring to private sector firms.

The annual Yesser assessment of 150 government websites since 2010 is a key example of how public authorities' performance is monitored and analyzed based on a predefined number of criteria and key performance indicators (KPIs) related to the national eGovernment strategy. The UNDESA biannual EGOV and e-Participation Readiness Indexes or the European Union annual EGOV benchmarking share this aim but in an international context.

The case for performance and assessment standards rest on two implicit premises: That entities have specific goals, and; that goals can be quantified so that success or failure can be measured in relation to the original target. A framework for understanding a given goal and for informing judgments about the relative value of different option for dealing with the goal is of utmost importance. Equally important and often underestimated is the link between individual strategies, organizations, departments and initiatives. There is therefore a need to aggregate performance and assessment indicators across multiple areas and actors.

Upon successful completion of this course, trainees will be able to:

- Critically assess the strengths and weaknesses of various assessment and performance frameworks and models.
- Recognize the importance of Key Performance Indicators (KPI) and be able to develop and measure them.
- Link programme and project models to organizational and national goals and KPIs.
- Critically select KPIs which provide both qualitative and quantitative input for assessment of performance in multiple areas including financial and human resources, various service areas and service delivery channels.
- Use KPIs for decision making and planning on a daily, short, medium and long-term basis.

Syllabus

1. Assessment and performance frameworks and models.
2. How to develop KPIs and how to effectively measure them.
3. How to link programme and project models to organizational and national goals and KPIs.
4. How to critically select KPIs which provide both qualitative and quantitative input for assessment of performance in multiple areas including financial and human resources, various service areas and service delivery channels, for decision making and planning on a daily, short, medium and long-term basis.

Main Scientific Area

Information Systems

Standard Duration

20 contact hours

ECTS

1.5

S7

Foundations and Challenges of Mobile Government Applications

S7 Learning Outcomes

This course was designed as an introduction to online service delivery via mobile platforms like tablets, mobile and smart phones, enabling participants to gain insight into, and analyze, the key factors at play when authorities develop mobile service solutions and those leading to citizens and businesses use of said service offers.

Public sector service delivery online is envisioned to increase public sector efficiency and effectiveness while improving the quality of the service experience for citizens and businesses alike. Smart phone applications have been an integral part of the focus. Studies in countries like Canada and Denmark highlight that online self-service is 2-3.5 times cheaper than paper-based or physical service delivery. While authorities across the world offer multiple types of information and transactional services online, only a minority have been able to realize the envisaged benefits for government and the end-users. Successful examples include the Danish digital-by-default strategy eliminating paper based communication and applications with online services and mail, thereby digitizing over 80% of volume and saving over €400 million annually, the UK digital-by-default service standard for improved usability and business data for decision making, Georgia ICT-enabled process and organizational reengineering of both the front- and back-office for increased accessibility, accountability, convenience and transparency of service delivery, how Dubai Electricity and Water Authorities have successfully encouraged consumers to pay online, or how data and electronic identities can be used to design proactive and personalized online services. The course will work through these and other concrete examples.

Upon successful completion of this course, trainees will be able to:

- Recognize the pros and cons of different service delivery channels and how promote and optimize the channel mix.
- Understand the strengths and weaknesses of responsive web-design and native apps and when to choose native apps over responsive web-design.
- Understand cutting edge theory and practices for mobile based content and service design.
- Develop user-friendly, proactive and personalized mobile based content and services.
- Continuously monitor and improve mobile based content and service quality.

Syllabus

1. The spectrum of service delivery channels.
2. Measuring the minimum usability requirements and standards for online service design (including language use, common look and feel, interoperability, data and key enabler reuse, privacy and security).
3. Optimal channel mix, and end-users involvement.
4. Selection and adoption of mobile solutions.
5. Development of user-friendly, inclusive, proactive and personalized mobile content and services.
6. Measuring use and quality of mobile service use for cost efficiency, benefit realization and continued service improvement.

R1

EGOV Foundations and Architectures

Main Scientific Area

Information Systems

Standard Duration

30 contact hours

ECTS

2



Learning Outcomes

Governments cannot ignore the huge potential of digital technologies and of their progressive integration with unsuspected social dynamics. In particular, new technologies provide innovative tools to enhance communication, coordination, and participation in social and political life: their effective harnessing will indeed shape the future of governance and democracy in the years to come.

Goal 16 of the United Nations 2030 Agenda calls for effective, accountable and inclusive institutions at all levels in the framework of peaceful and inclusive societies. Digital transformation of governance processes and procedures has a role to play in achieving such a goal. In such a context, this course introduces the foundations of EGOV and discusses its potential to promote sustainable development and more inclusive societies. Digital public services, interoperability, government technology leadership, as well as architectural design and management of information systems for Public Administration, are carefully addressed from concrete case studies.

Upon successful completion of this course, trainees will be able to

- Understand the concepts of public value and public value creation and recognize how public value can be created through the government digitization efforts.
- Master the basic concepts and processes associated to strategic EGOV planning and analyse Master assessment and monitoring techniques for the EGOV domain, including the definition and use of suitable sets indicators.
- Identify the technology function in a government organization, how it interacts with other functions and how it differs from technology functions in the private or non-profit sector organizations
- Understand the Government Chief Information Officer (GCIO) role in leading the government technology function and determine competencies a GCIO should possess to effectively perform his/her role, and institutional mechanisms to achieve impact, legitimacy and sustainability in GCIO operations.
- Master the basic concepts, methods and practices to planning, designing, and assessing information system in the context of Government and Public Administration.
- Analyze government information systems, their components, services architectures and processes.

Syllabus

The course is composed of two modules:

IT1 – EGOV Foundations and Strategic Planning

1. Digital transformation and organizational change in Government and Public Administration. Public value in the public, private and non-profit sectors. Technology as public value creator in a government, whole-of-government, policy network and other governance contexts.
2. Foundations of EGOV: historical evolution; fundamental concepts, processes, methods, and policies; challenges and risks.
3. Public digital services: definitions and frameworks. Quality assurance and assessment. Multi-channel service delivery. EGOV service architecture. Business models.
4. Information sharing and interoperability. Interoperability concepts and levels. Challenges (technical, semantic, organizational, legal, and politics). Interoperability strategies and frameworks.
5. Government technology leadership function vis-à-vis planning, operations, finances and other government leadership functions, compared to private and non-profit sector counterparts. The Government Chief Information Officer (GCIO) function: general and specific knowledge, skills and behaviors. Case studies on the establishment and monitoring of the GCIO function.

IT2 – Architectures and Management of Information Systems

1. Foundations of information systems: relevance, structure, components, processes, governance.
2. Information systems planning: foundations, processes, methods.
3. Information systems management: architectures and organizational strategies.
4. Information systems assessment: governance, efficiency, performance, integrity.
5. Information systems auditing: foundations, processes.
6. Conformance certification of information systems.

Main Scientific Area

Informatics

Standard Duration

30 contact hours

ECTS

2

R2

ECTS
Certification
Diploma

Data and Infrastructures

R2 Learning Outcomes

This course focus on challenges, problems and requirements for the design and deployment of software architectures that will be able to sustain large scale services. Trainees are provided with a comprehensive set of tools and techniques to help design and operate complex software systems in Public Administration, with a particular emphasis on interoperability issues.

Upon successful completion of this course, trainees will be able to:

- Be familiar with the most common systems architectural layouts and the state of the art and best practices on middleware design.
- Conceptualize, from a technological viewpoint, the organization's information ecosystem.
- Build and analyze roadmaps for alternative technologies and processes and measure their impact on the organization information system.
- Assess the medium/long term sustainability of new technologies and processes.

Syllabus

The course is composed of two modules:

IT3 – IT Infrastructures and Interoperability (1.5 ECTS)

1. Software infrastructures and information systems.
2. Infrastructure planning: redundant services and servers virtualization. Database management services planning. Operation and maintenance of distributed software architectures.
3. Middleware: approaches and technologies.
4. Service oriented architectures.
5. Cloud computing: standards; open source strategies; implementations and management.
6. Open distributed systems – reference model; enterprise, computational, technology, engineering and information viewpoints.
7. Software services as a technical interoperability strategy. Open IT standards; Web standards; Web accessibility standards.
8. Open IT Standards; Web Standards; Web Accessibility Standards.
9. Case studies in Public Administration.

IT4 – Data Center Infrastructures (0.5 ECTS)

1. Infrastructures at hardware and software service levels: management, communications, network, storage, information processing. Virtualization strategies. Private data centers, private clouds, cloud computing strategies.
2. Data infrastructures: network storage; RAID; management of logical volumes; file systems; relational and key-value databases; safety mechanisms and policies.
3. Centralized management and monitoring of IT infrastructures. Performance analysis.
4. Introduction to security issues in services and data infrastructures.

Main Scientific Area

Information Systems

Standard Duration

30 contact hours

ECTS

2

R3

ECTS
Certification
Diploma

Public Digital Services and Smart Communities

R3 Learning Outcomes

This course focus on the specification, design, implementation and monitoring of public digital services. The approach emphasizes smart governance principles in what concerns the active involvement of citizens, the private sector and other non-governmental agents in the elicitation, definition and co-creation of public digital services. Such services are framed in the broader context of smart cities and communities.

Upon successful completion of this course, trainees will be able to:

- Understand the concept of sustainable smart city and smart community, in the context of knowledge societies.
- Have an effective knowledge of trends and principles in public digital service design and be able to discuss the complexity and challenges of public digital service delivery and relevant quality criteria.
- Plan, assess and monitor public digital services.
- Be aware of the role and relevance of contextualization and adaptation processes.
- Recognize best practices related to definition, operationalizations and delivery of public digital services.
- Be proficient in the use of ITIL as a service management framework: fundamentals, dimensions, concepts, advantages and benefits for the public sector.

Syllabus

1. Smart cities and smart communities: urbanization trends and models; sustainability; case studies.
2. Smart transformation processes; contextualization; policy frameworks and recommendations for the design and implementation of sustainable smart cities and communities.
3. Public digital services: specification, design, implementation and monitoring.
4. Introduction to ITIL as a service management framework.
5. Analysis of case studies and identification of best practices in the Public Administration domain.

Main Scientific Area
Communication Sciences
Standard Duration
35 contact hours
ECTS
2.5

R4

ECTS
Certification
Diploma

Citizens Engagement through Digital Media

R4 Learning Outcomes

Globalization and technological innovation are challenging participatory processes like never before. Actually, the ways citizens nowadays interact and engage with public issues, in public and private spheres, is constantly changing and digital media play a crucial role in this process. While digital media impact citizen engagement and transform e-participation, the concrete consequences and assessment of those forms of interaction is not obvious. Although it seems that every institution is compelled to be online and digital, this implies adaptation mechanisms and practices, which may be found hard to accomplish. In addition, it is quite challenging to find correspondence between online intentions and/or reactions and offline practices. Indeed, digital media are also seen as responsible for the establishment of institutional and organizational practices, with both positive and negative impact.

This course aims at addressing the challenges in communication processes from the providers and the users points of view, focusing on the transformation of e-participation processes brought with globalization and technological innovations. It combines a theoretical and practical perspective by approaching e-participation and digital media in terms of: **1)** theoretical background; **2)** literature and policy review of the impact of digital media in citizens engagement; **3)** possibilities, challenges and limitations of new ways of fostering participation; **4)** the impact of social media in citizens engagement with reference to international orientations and best practices.

Upon successful completion of this course, trainees will be able to:

- Identify and understand the major theoretical trends and approaches.
- Comprehend and distinguish the concepts of digital media, social media, e-participation, engagement.
- Recognize how and in which areas digital media can be used to improve citizens engagement with public issues.
- Know the impact and effects of digital media actions by having insight on qualitative and quantitative research methods and analysis.
- Recognize the advantages and disadvantages of digital media usage with the aim of fostering citizens engagement with public issues, distinguishing between areas and/or service types.
- Propose and apply strategies in accordance with communication strategies and plans and (inter)national best practices.

Syllabus

1. Introduction to the topic: Media, Society and Public issues.
2. Theoretical background and approaches to e-participation and Digital Media.
3. Definition and distinction of concepts: digital media, social media, e-participation, engagement.
4. Different perspectives in digital media: Providers and users.
5. Communication strategies and plans in the public sector.
6. Social media usage and applications.
7. Scientific research in the analysis of digital media actions.
8. Cases and (best) practices of fostering citizens engagement with public issues using digital media.

Main Scientific Area
Communication Sciences
Standard Duration
35 contact hours
ECTS
2.5

R5

E-participation, Digital Literacy and Community Empowerment

R5 **Learning Outcomes**

Social relations and connections play a very important role in achieving goals and strong community cohesion. Engagement is an important element for successful governance and political interaction. Communities can facilitate political debate by raising awareness to the other's problems and improve policy efficiency by ensuring wider participation and cooperation. Facing the decline of the traditional community, traditional and digital media present an appealing opportunity to reengage citizens and revitalize social cohesion.

Which are the main barriers and the basic enablers of citizen participation in the public sphere? This course addresses this question by focusing on central aspects surrounding the implementation of participation tools, the specific features of the real and ideal community and the digital and media literacy levels of the participants. In particular, it guides trainees to identify the characteristics and needs of a certain community and exploring how its members can be empowered through e-participation.

The goals of this course can be adapted to suit the particular needs of its participants. Community engagement can be approached from the local, regional, national and international levels. Furthermore, targeted communities and participation tools may present specific challenges depending on sociocultural features.

Upon successful completion of this course, trainees will be able to:

- Identify and understand the major theoretical trends on community and social capital.
- Understand the concepts of digital literacy, media literacy and digital exclusion/divide.
- Know the skills citizens should master in order to participate effectively in mediated communities.
- Diagnose the particular features of a community and adapt e-participation mechanisms to its needs.
- Recognize how e-participation and digital media can be used to improve community engagement and policy making processes.
- Identify appropriate opportunities for community engagement through e-participation.

Syllabus

1. Communities, social networks and social capital.
2. Civic engagement and political participation.
3. Media and digital literacy.
4. The media, public spheres and community development.
5. Cases and best practices in community building and engagement.

State Digital Certification Platforms: The Technical Dimension

Main Scientific Area

Informatics

Standard Duration

45 contact hours

ECTS

3

Learning Outcomes

Software systems underlying digital governance and knowledge society platforms often require mechanisms for strong digital authentication of identities and electronic signatures. Typical projects that require this kind of mechanisms are those related to the electronic identity card, the electronic passport, the provision of Public Administration services over the Internet, and service dematerialization. State Digital Certification Platforms aim at ensuring the effective operation and consistency of these mechanisms, while maintaining interoperability with different infrastructures, and compatibility in terms of certification policies and practices. The introduction of these platforms requires the ability to design, deploy and evaluate computing structures with tight functional and operational correctness requirements, namely in what concerns security and privacy requirements.

The course focuses on the technical-operational dimension of this domain, introducing the basic skills related to the definition of public key infrastructures as well as their implementation and operation. Consequently, it is oriented to the needs of specialized training of middle and upper Public Administration managers, responsible for the management of these processes, as well as the coordination of strategic initiatives in this area.

Upon successful completion of this course, trainees will be able to:

- Understand the concepts and techniques underlying the correct use of digital signature and certificates, as well as the objectives, design, overall operation, monitoring and auditing of a Public Key Infrastructure (PKI).
- Plan, analyze and monitor State digital certification platforms,
- Assess the medium/long term sustainability of new technologies and processes.
- Correctly use and implement public signature and certification mechanisms so that trust can be established between entities interacting in an information system.
- Understand the reference architecture and key components of a PKI.
- Understand and implement different models of trust in a PKI.
- Understand and be able to ensure in a PKI project compliance with legal, technical, and normative requirements.

Syllabus

EI1 – Introduction to Public Key Infrastructures (1.5 ECTS)

1. Introduction to Information Security. Fundamentals of cryptography and information security. Cryptographic techniques and applications.
2. Digital Certificates: Architecture and operational aspects. X509 Certificates. Certificate profiles and policies.
3. Public Key Infrastructure: concept; components, relations and dependencies. Publication, management and revocation of certificates and registration authorities. Application integration with PKI.
4. Certification entities. Their roles, hierarchies and trust models. Legal requirements, technical requirements and standards. Physical and logical security, infrastructure and components. Disaster recovery.

EI2 – Implementation and Operation of Public Key Infrastructures (1.5 ECTS)

1. Registration entities. The role of a Public Key Infrastructure. Proof of identity and registration of ownership. Management of applications and documents relating to revocation of certificates.
2. Validation entity. Value-added services. Revocation of certificates by CRL and OCSP. Relevant standards.
3. Managing a Public Key Infrastructure. Human resources. Environments, ceremonies, artifacts. and documentation.
4. Introduction to auditing a Public Key Infrastructure. Objectives, scope and regulatory compliance. Structure of an audit plan. Preparation, documentary, physical, procedural and procedural audit. Elaboration of a report and closure of an audit.



State Digital Certification Platforms: The Legal Dimension

Main Scientific Area

Law

Standard Duration

45 contact hours

ECTS

3

Learning

This course addresses the operation and management of digital certification platforms in Public Administration from a legal and normative point of view.

Outcomes

Such platforms aim at ensuring the effective operation and consistency of mechanisms for strong digital authentication of identities and electronic signatures. They are nowadays part of the kernel of typical EGOV software systems.

The introduction of these platforms materializes a new operational and legal environment where new competencies need to be developed and mobilized. Consequently, this course is oriented to the needs of specialized training of middle and upper level managers in the Public Administration, responsible for process management, operationalization and coordination of initiatives in the field of digital authentication mechanisms of identities and electronic signatures. It aims at providing the necessary skills to identify and analyze the legal frameworks in which State Digital Certification platforms may operate.

Upon successful completion of this course, trainees will be able to:

- Be able to identify and assess legal challenges and issues in the use of digital certification mechanisms and frameworks in Public Administration.
- Understand the notions of digital certification, digital signature, electronic document, data privacy, information rights, virtual transactions and automated administrative processes and their legal and normative implications.
- Be able to question and problematize technical solutions proposed in this domain from a legal and normative perspective.

The course is composed of two modules:

- EL1: Electronic Identification and Certification (1.5 ECTS)
- EL2: Administrative Simplification and Electronic Procedure (1.5 ECTS)

Syllabus

EL1 – Electronic Identification and Certification (1.5 ECTS)

1. Signature and authentication. Electronic signature, digital signature, dynamic signature; Authentication mechanisms; the Digital Mobile Keys.
2. Legal frameworks for identity, digital authentication and digital signature.
3. Validity, effectiveness and probative value of electronic documents and digital signature. The evidential value of the electronic document.
4. Electronic identification and trust services for electronic transactions; European legal framework - Regulation (EU) 910/2014 of 23 July on electronic identification and trust services for electronic transactions in the internal market. Electronic certification services (entities, objectives, legal framework). Certification bodies (functions, duties, legal frameworks, governance and organizational aspects).
5. The new electronic certification services and their legal framework: Digital signature and its certificate; electronic seal; time stamp; electronic registered mail service; website authentication. Digital filing system and long-term preservation.

EL2 – Administrative Simplification and Electronic Procedure (1.5 ECTS)

1. Electronic Governance and Public Administration; Administrative paradigms. Examples.
2. Requirements for the electronic administrative procedure. Principles of

Public Administration: good administration, open administration, equality.

3. Public Administration and right to information; The right of access and re-use of administrative documents. The impact of the European Electronic Agenda on administrative law and the exercise of the administrative function - the concept of interoperability and the development of the one-time principle. Right to inform and be informed. The right to informational self-determination.
4. Privacy and protection of personal data: the principle of protection of personal data. European regulations. Principles regulating personal data processing. Special categories of personal data. Consent for the processing of personal data. Data rights: rectification, deletion, limitation of treatment, portability, right of opposition. Automated individual decisions including profile definition.
5. Right of option for the electronic administrative relationship. Automation of administrative processes: decision-making; conditional decision schedules and finalistic decision schedules; linked action and discretion; opposition; creation and determination of assumptions; externalization of the will of the Administration - appropriation of decision proposed by the computer equipment. Vices in the administrative act: specific causes of invalidity; civil liability resulting from electronic administrative acts; role and legal relevance of electronic platforms; electronic notifications.

Main Scientific Area

Public Administration

Standard Duration

45 contact hours

ECTS

3

R8

Innovation in Public Policy and Governance

R8 Learning Outcomes

This course is designed to provide a background on public administration as governance for the 21st century. The goal is to understand how current trends of globalization, IT-modernization, and emergency management situations have changed and shaped the structure and organization of public administration and to prepare the next generation of GCIOs to address these major challenges.

Governance is the unifying concept of this course. GCIOs involved in governance activities should develop the means to achieve the direction, control and coordination of individuals or totally or partially autonomous organizations in the interests to which they contribute together.

Upon successful completion of this course, trainees will be able to:

- Identify the opportunities and prospects for a networked and IT-enabled public policy development and administration.
- Use ICTs to reshape the State and its relationship with citizens, exploring the potential of an IT-enabled public administration to stimulate collaborative governance, improve information sharing, and address stakeholder pressures.
- Expand the use of IT tools of public participation in order to develop and enhance practices of deliberative democracy and promote collaborative governance and cross-boundary information sharing (both across and between levels of governments).
- Diagnose public policy decisions and assess the degree of success of government programs that have been tested on an experimental basis as pilot programs or policies of wider coverage
- Encourage citizen involvement in deliberative democracy initiatives and public management co-production by replicating case study applications.
- Engage in public policy monitoring and evaluation by taking advantage of standard diagnosis and forecasting methods and techniques.

Syllabus

1. Public policy and administration as governance.
2. Collaborative leadership and governance.
3. Policy design and development.
4. Policy innovation and innovation systems.
5. Deliberative democracy, public participation, and policy legitimation.
6. Country-, location- and sector-specific features and experience in public policy implementation and monitoring.
7. Policy evaluation and sustainability.
8. Managing public organizations of the future and teaching the next generation of leaders.

R9

Decision Support Systems for Smart Governance

Main Scientific Area

Informatics

Standard Duration

45 contact hours

ECTS

3

Learning Outcomes This course introduces IT leaders in the Public Administration to the use and adaptation of AI-based decision support systems in smart governance processes. It is specially designed so that gradually, step by step, trainees will receive effective instruction to be able to justify, evaluate, design, model and develop a decision support system application for the public sector, covering its most relevant aspects, ranging from requirement analyses to system deployment and monitoring, without forgetting all the issues concerning data and knowledge management.

Upon successful completion of this course, trainees will be able to:

- Design and analyze logical and physical models for the definition of decision-making processes, as well their coordination and cooperation primitives, where necessary, in federated environments, particularly in the governmental sphere.
- Master the terminology and general concepts about decision support systems and related technology, in particular those involved with smart government.
- Acquire the necessary basic competencies for the development of decision support systems, supported by a concrete methodology, either in a centralized or distributed perspective.
- Understand how to define plans for the integration of several information sources, defining appropriated data models for hosting the information gathered.
- Have an operative knowledge of up-to-date, AI-based tools to support the design and development of decision support systems.

Syllabus

1. Basic concepts and terminology on planning and decision-making processes in public institutions, and functional architectures and services for smart governance systems, based on international case studies and real-world applications.
2. Decision support systems: concepts; evolution; trends; applications.
3. Models, processes and interfaces for the development of decision support systems.
4. Strategies for decision support systems analysis and design; classical and generalized system development life cycle; development processes; requirement analysis, modelling and prototyping; end-user decision support systems development.
5. Basic characteristics, architectures and services of decision support systems for smart government; information sources integration and acquaintance; distributed services integration; coordination and cooperation.
6. Design and implementation of a federation of decision support systems.
7. Smart government decision support systems in real-world applications.

R10

Public Finance and Socio-economic Analysis

Main Scientific Area

Economics

Standard Duration

45 contact hours

ECTS

3

Learning Outcomes This course examines public finance and budgeting and finance from theoretical and comparative perspectives. Since the financial crisis of 2008, public finances have moved to the center stage of the political and economic debate. The aim of the course is to provide students an opportunity to critically evaluate the nature of budgetary decision making, the importance of information for budgeting, the issues of responsibility and auditing in budgeting, and the rationality of public policy decision making. It will also explore fiscal policy in an international context, namely the causes and effects of large public deficits and debts that several countries are currently facing. It will also address socio-economic analysis of government initiatives, in particular IT initiatives.

Upon successful completion of this course, trainees will be able to:

- Explain the objectives and rationale for public intervention in the economy, as well as the main problems associated with it.
- Identify the main sources of government revenue and discuss the desirable characteristics of any tax system.
- Critically evaluate arrangements for sharing fiscal responsibilities among levels of government, the options for local governments' revenues and expenditures, and private participation in service delivery.
- Discuss the main objectives of fiscal policy and the causes and consequences of budget deficits.
- Analyze the relationship between accountability, governance and policy outcomes, taking into account the lessons that can be extracted from the recent international experience.
- Assess socio-economic impact of government-led IT initiatives.

Syllabus

1. The economic rationale for government intervention in the economy.
2. The size and growth of government.
3. Public revenues and the tax system.
4. Federalism, decentralization, and budgeting.
5. Public budgets: governance structures, norms and organizational practices.
6. Budgetary policy, institutions and accountability; good practices from international experiences.
7. Sustainability of public finance.
8. Private participation in service delivery: PPPs and other forms.
9. IT investments in the public sector and socio-economic analysis of IT initiatives.

R11

Smart Cities: Challenges and Strategies

Main Scientific Area

Information Systems

Standard Duration

45 contact hours

ECTS

3

Learning Outcomes This course examines, from a multidisciplinary and project-oriented perspective, how to successfully implement efficient and sustainable cities.

The world urban population will grow around 63 percent between 2014 and 2050. Megacities, cities with over 20 million inhabitants, will increase from the current 28 to 41 by 2030. Cities are already facing severe challenges in order to become sustainable in the long run but in the future, with the foreseen urbanization rate, the sustainability challenges will be even greater. IT and technology can provide innovative new ways to improve urban life and sustainability in transportation, energy consumption, environment footprint, economy growth and prosperity, education, public service delivery, governance and decision-making process – essentially improve the quality of life.

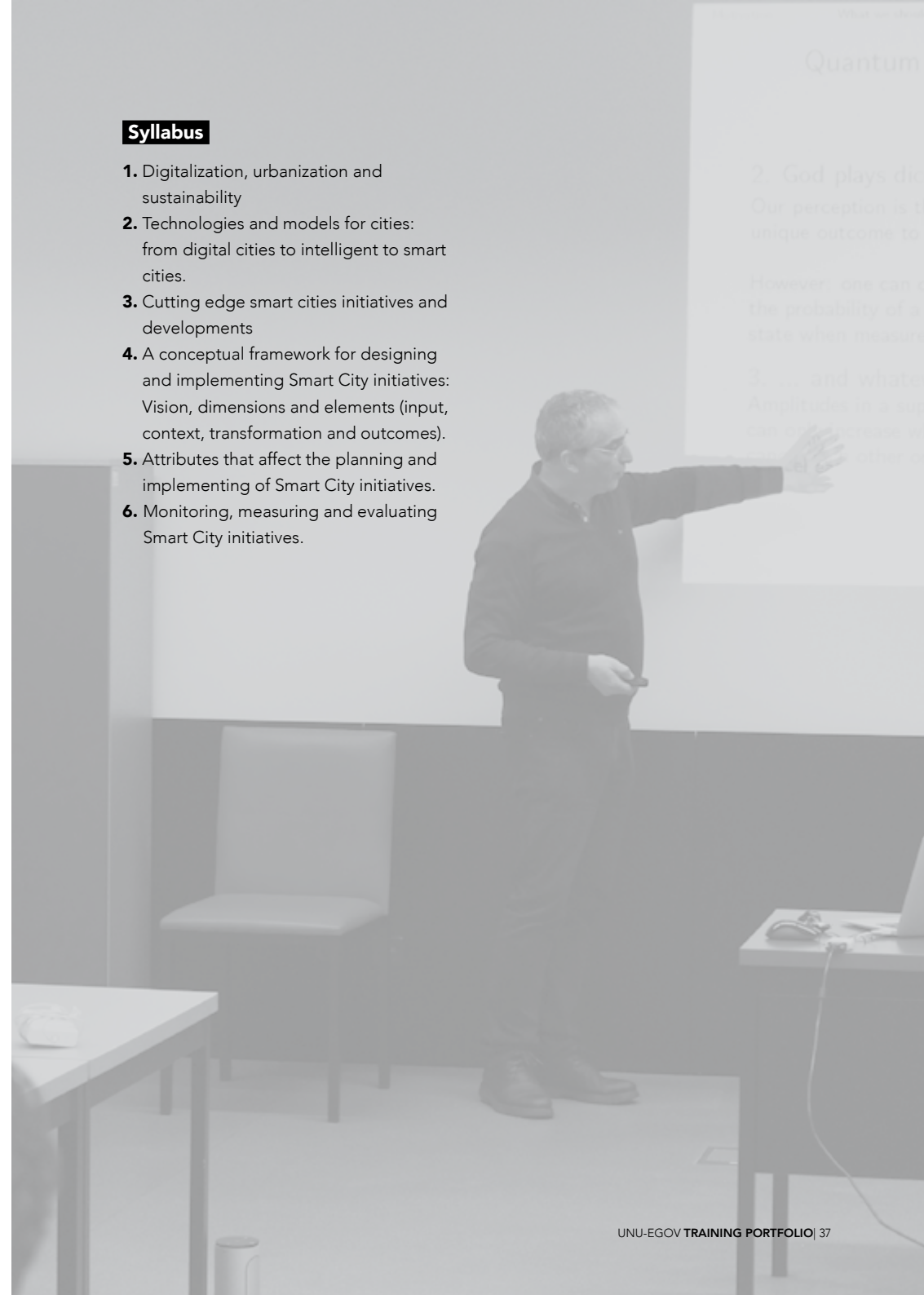
The so-called smart cities urban model shares this vision and promises to be a comprehensive tool to address the Sustainable Developments Goals of the United Nations 2030 Agenda, in particular to achieve Goal 11 of "making cities and human settlements inclusive, safe, resilient and sustainable". However, the development of Smart Sustainable Cities initiatives is very complex and context-specific, depending on several multi-dimensional factors such as geographical size, economy, political environment, infrastructures, governance, culture, human development, among others. This course will help participants get a clear understanding of smart city notion by using a rigorous conceptual framework for implementing smart cities initiatives. Examples include discussions on how citizen input can be used for urban development, financial planning and budgeting, and increase the transparency. Similarly, the use of data analytics, artificial intelligence and cognitive learning can be combined with consultation tools to develop not only smart cities, but smart villages, regions and countries.

Upon successful completion of this course, trainees will be able to:

- Recognize and identify the most pressing urbanization challenges, the dimensions of smart cities, the good practices and the current state of the art.
- Understand the notion of smart city and the different perspectives around it.
- Develop a context-specific smart initiative using the conceptual framework for smart sustainable cities, including linking vision, with strategy, with action plans and individual initiatives.
- Measure, monitor, evaluate and enhance smart city implementations for a continued improvement of its design, planning and implementation.

Syllabus

1. Digitalization, urbanization and sustainability
2. Technologies and models for cities: from digital cities to intelligent to smart cities.
3. Cutting edge smart cities initiatives and developments
4. A conceptual framework for designing and implementing Smart City initiatives: Vision, dimensions and elements (input, context, transformation and outcomes).
5. Attributes that affect the planning and implementing of Smart City initiatives.
6. Monitoring, measuring and evaluating Smart City initiatives.



Main Scientific Area

Information Systems

Standard Duration

45 contact hours

ECTS

3

R12

Smart

Governance

R12 **Learning Outcomes**

The symbiosis of good governance principles and processes, powered by advanced technologies, are the essential elements of Smart Governance and must be addressed if a country wishes to be “smart” about its IT and technology use, public sector structures, processes and service provision. Actionable and real-time information along with its advanced technologies are essential prerequisites for developing models of Smart Governance, which in turn foster smart, open, and responsive governmental institutions as well as business and citizen participation and collaboration.

Smart Governance is a dimension of any Smart City project, and relies on good governance such as open (i.e. transparent), accountable, collaborative (i.e. involving all stakeholders) and participatory (i.e. citizens participation) principles, as well as on EGOV dynamics. Smart Governance can, through its interaction between technologies, people, policies, best practices, resources, social norms and information, support effectively city governing towards a Smart Nations, Smart Regions, Smart Cities, Towns and even Villages.

Smart Governance goes beyond the efficient delivery of public services, is about leadership, mobile government and continuous improvement of the government process through innovation. Smart Governance relies on technology to facilitate and support better planning and decision making. At the same time, Smart Governance requires a holistic approach linking vision, strategies, policies, action plans and initiatives across multiple service delivery areas and require the active cooperation between multiple organizations and stakeholders in the public and private sectors as well as civil society.

Upon successful completion of this course, trainees will be able to:

- Understand what Smart Governance is, its dimensions, characteristics and principles.
- Develop a strategic vision and priority policies for achieving smarter and value adding public governance.
- Develop a context-specific framework for Smart Governance and how to use it as a roadmap for governance reform.
- Define indicators and assess the degree of Smart Governance in countries and municipalities.

Syllabus

1. The evolution of Smart and Open Government.
2. The elements of Smart Governance as well as Smart and Open Government.
3. Research and practice of Smart Governance models, and their respective strength and weaknesses.
4. Cutting edge Smart Governance initiatives and developments.
5. Planning and implementing Smart Governance initiatives.
6. Monitoring, measuring and evaluating Smart Governance.

Training on Demand

Although all courses described in this portfolio can be adapted to each concrete deployment context, UNU-EGOV may also prepare training programmes on-demand, i.e., entirely developed to meet specific needs or bridge training gaps for a specific audience. Such programmes are carefully designed by UNU-EGOV experts in a constant dialogue with the relevant stakeholders. A few examples of on-demand training programmes are listed next.

2021 - 2022

Capacity Building Programme for Egyptian Cadres

National Institute for Governance and Sustainable Development of Egypt (NIGSD)

UNU-EGOV has designed this programme following a request for collaboration by NIGSD in which training needs were identified. The topics highlighted by NIGSD were organized into four Capacity Building Courses which address, in a coherent way, the potential, practices and challenges of digitalization and smartness: Digital Transformation in Public Administration; Digital Transformation for Corruption Fighting; Smart Governance; and Smart Cities & Communities.

Each course content mixed theory, practice (i.e. how to do it) and examples. Global, regional and local good and bad practices were highlighted throughout. Each course has been designed for 20 to 25 officials selected from various public institutions by NIGSD, including the Presidency, the Administrative Control Authority and multiple Ministries. UNU-EGOV ensured excellent teaching/learning conditions and maximized interaction among participants and lecturers by combining both internal and external speakers. In addition, various field visits pertinent to the course topic were organized in order to provide opportunity for participants to hear from those involved in the initiatives presented about challenges and successes. Visits included the Portuguese Court of Auditors, Valongo Municipality and the Public Prosecution Service of Portugal.

2017

Executive training for Indonesian officials

Ministry of Communications and Information (Government of the Republic of Indonesia)

The executive training programme on ICT's Policy, Strategy, and Experiences from across the Globe aimed to better understand the issues revolving around the emergence of digital economy across the globe. The programme was attended by 18 selected Indonesian officials, covering main topics such as Public Policy in the ICT Sector, ICT and Broadband Economy, ICT and eGovernment, Smart Cities, and Lessons from Developing Countries. Other topics that were covered included: telecommunications policy (such as spectrum management – encompassing technology, regulatory, and business aspects) and recent issues in the telecommunications industry (such as Next Generation network-5G, IP communications services, Voice over LTE and the Internet of Things). By the end of the training, participants developed some understanding on preparing evidence-based data for policy analysis, as well as the ability to draft a policy brief. The programme included a field visit to Portuguese agencies that work in the area of ICT, telecommunications, and public policy: Altice-Labs and the Agency for Administrative Modernisation.

2017

Executive Training for Decision-Makers from Latvia

**Latvian School of Public Administration (VAS)
and the Ministry for Environmental Protection
and Regional Development (VARAM)**

The project consisted of two parts: first, a training and brainstorm seminar for 25 selected Latvian decision-makers ran for two days in Riga; second, based on current and future best practices, and the interactive brainstorming sessions during the seminar, a number of policy recommendations were outlined. The training and recommendations were based on a multi-country comparative analysis of the respective strengths and weakness of portals in Denmark, the United Kingdom, the United States, and Portugal. This project has resulted in a set of policy recommendations for the Ministry of Environmental Protection and Regional Development (VARAM) on a Latvian public service delivery ecosystem, a development strategy and management model for the national one-stop portal, as well as a framework for increased online usability across government.

2017

Policy Briefing Training for Officials from Indonesia

**Ministry of Communications and Information
(Government of the Republic of Indonesia)**

This short training on the public policy perspective on spectrum re-farming was tailored to fulfil the need of the Ministry of Communications and Information (MCI) of the Government of Indonesia on a specific topic related to public policy challenges in the telecommunications industry. The training addressed three main modules: Policy brief and spectrum reform (issues of choice, importance of stakeholders' analysis and tools), spectrum policy from the perspective of industry, and spectrum policy from industry perspective. The training also gave participants the opportunity to work independently on specific topics concerning spectrum re-farming, its consequences, challenges, and alternative approaches for public communication.

2016 - 2017

Integrated Training Programme PASP/ PALOP-TL for Government Managers of Lusophone Countries

**Portuguese-Speaking African Countries:
Angola, Cape Verde, Guinea- Bissau,
Mozambique, São Tomé and Príncipe, and
Equatorial Guinea**

As a three-week training programme, the PASP/ PALOP-TL focused on capacity and skills development for government managers working with ICT enabled public sector modernisation and service delivery in the PALOP-TL countries (i.e. Portuguese speaking countries).

2014

Executive Training for Government Technology Leaders from Colombia

**National University of Colombia, Ministry of
Communication and Information Technology,
and University of Minho**

Two executive training courses for over 60 government technology leaders ran for ten days each in Bogotá, Colombia. The first course was dedicated to the "Foundations of Government Information Leadership". It was comprised by the following complementary areas: Strategic technology planning and technology-business alignment; programme, project, and stakeholder management; electronic participation concept, framework, and toolkit; change management, process reengineering, and performance management; technology leadership concept, features, and skills. The second course focused on topics related to electronic governance and government leadership, knowledge management, information sharing, and enterprise architecture. Both courses combined theory, practice, international examples, discussions, and problem solving. The courses were tailored to the Colombian context and strategic objectives

2014

Executive Training for Government Technology Leaders from Saudi Arabia

**Saudi Computer Society, Saudi National
e-Government Programme (Yesser)**

This executive training course was attended by over 20 Government Chief Information Officers (GCIO) from the Government of Saudi Arabia and ran for three days in Riyadh. The course focused on topics related to electronic governance, strategies, organisational change, leadership and information sharing, among other topics. The course combined theory, practice, international examples, discussions, and problem solving. The course was tailored to address the specific IT policy context in Saudi Arabia and, particularly, the Kingdom's Second eGovernment Action Plan 2012-2016.

