IONIAN UNIVERSITY

SCHOOL OF INFORMATION SYSTEMS AND INFORMATICS

DEPARTMENT OF INFORMATION TECHNOLOGY

POSTGRADUATE PROGRAMME

"Ethics in Information Technology"

STUDY GUIDE

ACADEMIC YEAR 2024-2025

* *The study guide is detailed on the MSc website (https://msc-ethics.di.ionio.gr/)*

Contents

The Ionian University and the Department of Informatics

Ionian University

The Ionian University was founded in 1984, based in Corfu, together with the Universities of Thessaly and the Aegean. The dispersion of the University's buildings in different parts of the city of Corfu has resulted in its integration into the spatial and social structures of the city. Since 2018, with the integration of the Ionian Islands Technical University, the Ionian University has expanded its operation with six new departments, five of them in three other islands, Lefkada, Kefalonia and Zakynthos.
Ionian University website: http://www.ionio.gr.

Schools and Departments

The Ionian University consists of the following Faculties:
School of History and Translation-Interpretation, which includes the following departments:
- *Department of History*
- *Department of Foreign Languages*, Translation and Interpretation

School of Music and Audiovisual Studies, which includes the following departments:
- *Department of Music Studies*
- *Department of Audio and Visual Arts*
- *Department of Ethnomusicology*

School of Information Science and Computer Science, which includes the following departments:
- *Department of Archaeonomy, Library and Museology*
- *Department of Informatics*
- *The Department of Digital Media and Communication*

School of Environment, which includes the following departments:
- *Department of Environment*
- *Department of Food Science and Technology*

School of Economics, which includes the following departments:
- *Department of Regional Development*
- *Department of Tourism*

The Rectoral Authorities

The rectorial authorities of the Ionian University are defined as follows:
Rector
Andreas Floros,
Professor of the Department of Audio and Visual Arts

Vice Rectors
Elias Yarenis,
Associate Professor of the Department of History
Vice Rector for Finance, Student Affairs and Quality Assurance

Efstathios Makris,
Associate Professor of the Department of Music Studies
Vice Rector for Administrative Affairs and Planning

Catherine Kampasi,
Professor, Department of Environment
Vice Rector for Academic Affairs, International Relations and External Relations

Christina Beneki,
Professor at the Department of Tourism
Vice Rector for Research, Lifelong Education and Development

Rectorate Secretariat
Office of the Rector:
Ria Avgerinou (ria@ionio.gr)
Contact phone: 26610 87110

The School of Information Science & Informatics

The School of Information Science & Informatics of the Ionian University was established in May 2013, according to the Government Gazette 119/28.5.2013, issue A.

Dean
Panagiotis Kourouthanasis
Professor of the Department of Informatics

Secretariat of the Deanery
Evangelia Kraniotis (kosmitia_sepp@ionio.gr)
Contact phone: 26610 - 87760

The Department of Informatics

The Department of Computer Science of the Ionian University was created within the framework of the operational programme "Education and Initial Vocational Training" (EPEAEK) by Law 3255 and has been operating since the academic year 2004-05. The department has as its subject both theoretical and applied computer science.
The website of the Department of Computer Science is located at http://di.ionio.gr/.

Purpose

The purpose of the Department of Informatics is:

- To cultivate and promote Information Science, with particular emphasis on the theory and applications of Information Technology in the fields of Humanities and Social Sciences, as well as in the design, development, operation and management of Information Systems.
- To provide students with specialised knowledge that will enable them to engage, beyond the basic areas of Computer Science, in the study, research, understanding and application of Information Science and its use in supporting a variety of social, administrative and economic activities.

Administration and Administrative Staff

President
Emmanuel Magos (Professor)

Deputy President
Katia - Lida Kermeridou (Associate Professor)

Secretariat
Head of Secretariat
Elena Laskari
Tel. 26610 87763

Library

The library of the Department of Informatics is part of the unified Library and Information Centre (BIKEP) of the Ionian University. The library is fully automated and connected to the university network. Its purpose is to satisfy the academic and research needs of the students, the teaching and administrative staff of the Department and the wider university community of the Ionian University.

The Central Library of the Ionian University is located at:

John Theotoki 72
491 32 Corfu

Website: http://iup.ionio.gr.

Guide to the MSc Studies

General Information

The Postgraduate Programme (MSc) "Ethics in Information Technology" aims to develop the mindset, conceptual tools and skills to better assess and improve the ethical interaction between ethics, bioethics, technological ethics, justice as a basic principle of ethics, social phenomena and the exploration of ethical dilemmas as well as policy-making methods, enabling MSc holders to understand the economic, social, legal, political and ethical implications of information technology by applying and following a broad framework of legislative, philosophical and sociological principles.

The aim of the MSc is to provide postgraduate students with the knowledge necessary to deepen their understanding of specific issues of Ethics in Information Technology and the individual fields of bioethics and artificial intelligence, while at the same time they will develop high-level scientific thinking with a research orientation. By combining specializations in fundamental areas of the science of Ethics and Technology and exposure to advanced research issues, students of the MSc will acquire important scientific skills that will help them to develop either as researchers or as practitioners in other fields (technological, professional, etc.).

Duration

The duration of studies for the award of the Diploma of Postgraduate Studies is set at two (2) semesters (4 quarters).

Import requirements

There will be a call for admissions to the MSc every academic year. After submitting their application files, candidates will be evaluated by the competent candidate evaluation committee, which will examine and score each candidate's file. There will also be an interview, which will also be marked by the relevant committee.

Structure of the Programme:

The MSc awards a Diploma of Postgraduate Studies (MSc) in "Ethics in Information Technology" (MSc "Ethics in Information Technology"), without further specializations.

Detailed curriculum titles and short description

For the award of the MSc, the successful completion of 60 credits of the European Credit Transfer and Accumulation System (ECTS) (30 credits per academic semester) is required, through the participation of each student in all the educational and research activities of the programme.

The curriculum consists of 4 quarters. The first 3 quarters consist of 3 courses each, while in the fourth quarter the thesis is written.

<table>
<tr><th colspan="4">A Quarter ETHICS AND SCIENCES (15 ECTS)</th></tr>
<tr><td colspan="4">An introduction to cutting-edge developments in technology, medicine, law, biology, sociology, philosophy and the difficult ethical questions they raise. The course will explore the ways in which technological advances affect the development and use of the sciences. Students will understand and analyze the ethical and social impact of the sciences through an applied ethical lens. They will watch videos with leading experts in technology, ethics and policy as they discuss relevant and timely topics such as algorithmic bias, the impact of social media on democracy , privacy in the digital age, the doctor-patient relationship model in the new healthcare reality, the ethical issues raised by human space missions for humanity, and the impact of artificial intelligence on issues of human free will and autonomy. Issues such as ,facial recognition regarding misuse, racial bias and restriction of personal freedoms, replacement of jobs by automation of low level tasks, health monitoring and whether it is ethical to monitor people's health status and how this will affect the restrictions we place on them</td></tr>
<tr><td><u>1</u></td><td>NORMATIVE ETHICS AND META-ETHICS</td><td>MATERIALS:
1. The role of Ethics from yesterday to tomorrow in the sciences
2. The importance of the Oath and the link with Bioethics (Declarations, binding texts, Oviedo Convention, etc.)
3. Ethics - Medical Ethics - From Aristotle to Th. Percival (Philosophical currents - Kant - Mill - Bentham - Introduction to Bioethics - Law - Justice)
EXPECTED LEARNING OUTCOMES:
The student will learn the importance of ethics in the sciences, the role of ethical oaths in bioethics, and the evolution of ethics from Aristotle to Percival, enriching their understanding of medical ethics.</td><td>5 ECTS</td></tr>
</table>

2	EMPIRICAL BIOETHICS AND THE NORMATIVE FRAMEWORK OF CONTEMPORARY SOCIOLOGICAL CHALLENGES	**MATERIALS:** 1. Ethics and Democracy (Social determinants of health (race, income, education, gender, housing, integration, ethics and media-deep fakes, sociology of culture) 2. Cross-cultural ethical reflection and decision-making (Bioethics and human rights) 3. Algorithms in the workplace - ethical issues and discrimination, controversial use of corporate technology **EXPECTED LEARNING OUTCOMES:** The student will examine the relationship between ethics and democracy, analyze cross-cultural ethical considerations and decision-making in relation to bioethics and human rights, and explore the ethical issues and discrimination arising from the use of algorithms in the workplace.	5 ECTS
3	HUMAN RIGHTS AND RESEARCH ETHICS	**MATERIALS:** 1. Clinical Studies and Research Methodology 2. Embryology and Eugenics - Donors of reproductive material - Precedents **EXPECTED LEARNING OUTCOMES:** The student will learn about the ethical challenges in clinical trials and research methodology, as well as the ethical issues surrounding embryology and eugenics, also focusing on the case study of donors of reproductive material.	5 ECTS
B Quarter Ethics in Information Technology (15 ECTS)			
The reason why technological ethics is rising to prominence is that new technologies give it more power to act, which means that we have to make choices we should not have made before. Technology is built by developers and inherits the bias of its creators because humans are inherently biased.			

4	ETHICS, LAW AND INFORMATION TECHNOLOGY	Issues of Information Technology Law - Legal Framework - Case Studies IT applications and biomedical technology systems Privacy issues in AI and the world of Big Data Bioethical analysis of the use of artificial intelligence in surgery **EXPECTED LEARNING OUTCOMES:** The student will study the legal issues related to IT, the application of IT and biomedical technology systems, examine privacy issues in AI and the world of Big Data, and analyze bioethical issues arising from the use of AI in surgery.	5 ECTS
5	ELECTRONIC CRIME	Microeconomics and Macroeconomics of Digital Markets- Risks and challenges of blockchain technology on the financial stability of countries, Cryptocurrency -The "digital" money Personal Data Protection - Topical Issues -- Case Studies from International Case Law **EXPECTED LEARNING OUTCOMES:** The student will examine the microeconomic and macroeconomic aspects of digital markets, analyse the risks and challenges of blockchain technology for the financial stability of states, study the aspects of cryptocurrency as "digital" money, and examine privacy issues, incorporating cases from international case law.	5 ECTS
6	META- UNIVERSE AND ETHICS	1. Human Genome - Genomic Databases 2. Precision Medicine (Telemedicine and new challenges) 3. Space Ethics 4. Neuroethics (Mental privacy, autonomy, questioning free will, artificial intelligence and brain implants)	5 ECTS

		EXPECTED LEARNING OUTCOMES: The student will learn about the ethical aspects of the human genome and genomic databases, examine precision medicine and the new challenges of telemedicine, explore space ethics, and analyze neuroethical issues such as cognitive privacy, autonomy, the questioning of free will, and the relationship between artificial intelligence and brain implants.	
C Quarter Ethics in Artificial Intelligence (15 ECTS)			
AI systems learn to make decisions based on training and coding data, which may be corrupted by human bias or reflect historical or social inequalities			
7	INTRODUCTION TO ARTIFICIAL INTELLIGENCE	The Ethics of AI - Introduction to Machine Learning and Deep Learning Artificial Intelligence, the danger and reality of implicit bias Systemic Errors-Black box-bias and ethical challenges **EXPECTED LEARNING OUTCOMES:** The student will become familiar with the ethics of artificial intelligence, as well as the fundamentals of machine and deep learning. They will explore the dangers and realities of implicit bias in AI, and examine the systemic errors, black box effect, bias, and ethical challenges associated with this technology.	5 ECTS
8	COMPUTER SECURITY AND INDUSTRIAL ECONOMY	Cyber ethics (The risk of data security breaches and technological abuse has become a global priority as businesses and governments seek to exploit their capabilities) Digital and Innovative Government - Comparative examples Data and Algorithm for Public Policy Regulation and the Digital Economy at EU level - e-commerce, digital services, markets, price search engines	5 ECTS

		Autonomous machines and security issues - The ethics of war (self - driving cars, unmanned drones, Robotic machines in place of human soldiers) **EXPECTED LEARNING OUTCOMES:** The student will study cyber ethics, examining the risks of data security breaches and technological abuse. He will explore aspects of digital and innovative government through comparative examples, analyse the relationship of data and algorithms to public policy, examine the regulation and aspects of the digital economy in the EU context, and explore ethical issues relating to autonomous machines and security, such as the ethics of war in relation to self-driving cars, unmanned drones and robotic machines.	
9	GLOBALISATION AND ARTIFICIAL INTELLIGENCE	Artificial intelligence and robotics in the 21^{o} century Ethical challenges of using artificial intelligence in healthcare The Ethics of Post-Humanity - Hyperagency Case Green Global Bioethics: Data - Digital Infrastructure - Environmental Sustainability **EXPECTED LEARNING OUTCOMES:** The student will examine artificial intelligence and robotics in the 21st century, analyze the ethical challenges of using AI in healthcare, explore the ethics of post-humanity through the case of Hyperagency, and examine Green Global Bioethics, focusing on issues such as data, digital infrastructure, and environmental sustainability.	5 ECTS
D Quarter Dissertation (15 ECTS)			

Official language of the programme

The language of the programme is Greek.

Maximum number of postgraduate students admitted

The maximum number of postgraduate students admitted is 80.

Rights and obligations of students

The rights and obligations of students are those defined in the internal regulations of the UAS and in the internal regulations of the postgraduate programme.

Scholarships

Scholarships will be awarded on the basis of excellence criteria, in accordance with article 86 of 4957/2022. In addition, reciprocal scholarships will be awarded as follows: The first graduate to graduate on time will be awarded a scholarship for the full amount of tuition fees. The second will receive the amount of 2000 euros and the third the amount of 1000 euros. The reciprocal scholarships are based on the average final grade of the postgraduate degree. The scholarship policy for the Postgraduate Programme is designed to encourage and reward academic excellence and the timely achievement of study objectives. Scholarship offerings are governed by the following key principles:

1. **Excellence-based scholarships**: According to Article 86 of Law 4957/2022, scholarships will be awarded on the basis of academic excellence. This means that students who demonstrate outstanding academic performance and commitment to their studies will be rewarded with financial scholarships or other forms of support.
2. **Reimbursement Scholarships**: Reciprocal scholarships are about rewarding students who not only demonstrate excellence but also complete their studies on time. These scholarships are awarded as follows:
    - The first graduating student is given a scholarship for the entire tuition fees.
    - A scholarship of €2,000 is awarded to the second graduate.
    - A scholarship of 1,000 euros is awarded to the third graduate.

    Reciprocal scholarships are based on the average final grade of the postgraduate degree, thus offering a fair and objective way of rewarding.

With this scholarship scheme, Ionian University seeks to motivate and enhance student achievement and commitment, creating an environment where excellence and goal achievement are rewarded and encouraged.

How the educational process is organised

The MSc is organised using modern and asynchronous distance learning methods. Course examinations will be conducted in person. The MSc is structured with educational practices that include both synchronous and asynchronous distance learning throughout the programme. Students will have the opportunity to attend classes and participate in educational activities both in real time and through independent study, depending on their individual preferences and needs. As for examinations, these will be conducted face-to-face, offering the opportunity for objective assessment and interaction with instructors and peers. In this way, we ensure that students acquire the knowledge and skills required to successfully complete the MSc.

Learning Outcomes

The learning outcomes for the MSc in Ethics in Information Technology include the following:

1. Understanding of Ethics: Students are expected to develop a deep understanding of the ethical challenges associated with information technology, such as privacy, cyber justice, and ethics in software development.
2. Critical thinking: Students will be trained to analyze and evaluate various challenges and ethical dilemmas that arise in the field of information technology.
3. Creating solutions: students will develop the ability to propose ethical solutions to problems related to information technology and computing.
4. Application in practice: Students will be able to apply ethical principles to information and information technology practices such as data management, network security, and software development.
5. Collaborative work: Students will learn to collaborate with other IT and information technology professionals to address ethical issues.
6. Understanding of the legal framework: Students will be familiar with the legal issues related to information technology, such as copyright and cyber-legal regulations.

The MSc in Ethics in Information Technology will prepare students for professional positions in the field of information and information technology, enhancing their ethical sensitivity and their ability to respond to ethical challenges in the digital world.

In addition, the learning outcomes for the MSc in Ethics in Information Technology include:

7. Communication skills: Students will develop communication skills to be able to express their ethical views and discuss ethical issues with other professionals.
8. Research and Critical Thinking: Students will be trained in conducting ethical research and the ability to evaluate the ethical aspects of information technology objectively.
9. Timeliness and Innovation: Students will be kept abreast of the latest developments in ethics and information technology and will be encouraged to propose innovative solutions to ethical problems.
10. Readiness for Professional Employment: Students will gain the skills and experience needed to work in a variety of fields, including information governance, ethics management in technology, cyber justice, and corporate social responsibility.

In summary, the MSc in Ethics in Information Technology aims to prepare students to respond to ethical and moral challenges related to IT and information technology by enhancing their skills and understanding in this important and growing field.

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