# COURSE LAYOUT

## 1. GENERAL

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| **SCHOOL** | ENVIRONMENT AND AGRICULTURAL ENGINEERING |
| **DEPARTMENT** | NATURAL RESOURCES DEVELOPMENT AND AGRICULTURAL ENGINEERING |
| **STUDY LEVEL** | *Undergraduate* |
| **COURSE CODE** | 3455 **SEMESTER** 2nd |
| **COURSE TITLE** | INFORMATICS AND PROGRAMMING (OBLIGATORY) |

| INDEPENDENT TEACHING ACTIVITIES | WEEKLY TEACHING HOURS | ECTS |
|---|---|---|
| **Theory:** Lectures | 2 | 2 |
| **Laboratory:** Use of Software Tools | 3 | 3 |
| **Total:** | 5 | 5 |
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| **COURSE TYPE** | Scientific Area (M4.017) |
| **PREREQUISITES** | |
| **LANGUAGE** | Greek |
| **IS THE COURSE OFFERED forERASMUS STUDENTS?** | Yes (in Greek) |
| **COURSE WEB PAGE** | https://oeclass.aua.gr/eclass/courses/2549/ |

## 2. LEARNING OUTCOMES

| Learning Outcomes |
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Upon successful completion of the course the student will
- understand the basic concepts of Information Science and implications in society, employment, scientific progress and philosophy,
- distinguish the capabilities of the parts that make up a computer and will be able to choose the parts of a computer system that meets the needs of his scientific field,
- understand the capabilities and features of his computer's Operating System,
- use specific software packages for data processing and analysis, evaluation of results and decision-making in matters of his scientific field,
- use the computer for collaborative learning with partners, in the context of group work,
- understand the concept of algorithm and can create in the form of flowcharts, algorithms for solving computational problems,
- implement algorithms using the Python programming language,
- understand the concept of the database, its utility, the design principles and methodology and the ways of processing the data in a database,
- know the basic concepts of networking, the internet, and its services as well as the issues related to their security,
- understand issues of cutting-edge technologies (artificial intelligence, virtual reality, big data, IoT, cloud computing), as well as their applications and techniques.

| General Competenses |
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- Search, analysis and synthesis of data and information by use of the necessary information and communication technologies.
- Adaptation to new situations.
- Decision making.

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| - | Individual work. |
| - | Team work. |

## 3. COURSE CONTENT

**Theory**

1. Representation, storage and manipulation of data in a computer system, IT applications.
2. Computer Hardware: Central Processing Unit, Main Memory, Peripheral Units.
3. Algorithms - Data Flow Diagrams - Programming Languages – Python Programming.
4. Computer Software: Operating Systems, Application Software.
5. Database Systems.
6. Artificial Intelligence.
7. Information Systems: Analysis-Design of Systems, Decision-Making Systems.
8. Communications-Computer Networks: Internet Technology, Internet Services, Internet Multimedia Applications.
9. Computer Security.
10. Recent advancements and technological achievements.

**Laboratory**

1. Spreadsheets (formats, functions, reports, graphs)
2. Programming with Python (variables, branching, iteration, lists, dictionaries)

## 4. TEACHING and LEARNING METHODS - Evaluation

| TEACHING METHOD | In classroom and in laboratory (face-to-face). If needed, synchronous distance teaching can be applied in both theory and laboratory. Also, educational material for asynchronous distance teaching has been uploaded in the course Web page. |
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| **USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES** | Exploitation of Information and Communication Technologies in teaching, in laboratory training and in the communication with students. Use of dedicated software. Use of integrated e-learning system. Communication with students via open eclass platform and e-mail. |

| TEACHING ORGANISATION | Activity | Work Load (hours) |
|---|---|---|
| | Lectures | 26 hours |
| | Laboratory work | 39 hours |
| | Individual study | 60 hours |
| | **Total contact hours and training** | **125 hours** |

| STUDENTS EVALUATION | **I. Theory** Final Exam, written or oral, of increasing difficulty, which may include Multiple choice test, Questions of brief answer, Questions to develop a topic, Judgment questions and Exercise solving. **Marking Scale:** 0-10. **Minimum Passing Mark:** 5. **II. Laboratory** Final Exam, hands on computer, of the software tools taught. |
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| | Assuming feasibility, progress exams will take place during the semester and the mark of the above will contribute to the determination of the final Laboratory mark.<br>**Marking Scale:** 0-10.<br>**Minimum Passing Mark:** 5.<br><br>**The final Course mark is the average of the marks on Theory and Lab.** |
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## 5. BIBILIOGRAPHY

-*Proposed Literature :*

Εισαγωγή στην Πληροφορική και τους Υπολογιστές. Μποζάνης Παναγιώτης Δ. Έκδοση 1$^{η}$, 2016, ISBN: 9789604185382 (Κωδικός Βιβλίου στον Εύδοξο: 50656007),  ΕΚΔΟΣΕΙΣ Α. ΤΖΙΟΛΑ & ΥΙΟΙ Α.Ε.

Εισαγωγή στην πληροφορική. Evans Alan, Martin Kendall, Poatsy Mary Anne. 3η έκδ./2022, ISBN: 9789605864071 (Κωδικός Βιβλίου στον Εύδοξο: 112692279),  ΕΚΔΟΣΕΙΣ ΚΡΙΤΙΚΗ ΑΕ

Η ΕΠΙΣΤΗΜΗ ΤΩΝ ΥΠΟΛΟΓΙΣΤΩΝ: ΜΙΑ ΟΛΟΚΛΗΡΩΜΕΝΗ ΠΑΡΟΥΣΙΑΣΗ.  J. GLENN BROOKSHEAR, 10$^{η}$ έκδοση /2009, ISBN: 9789604612703, Κωδικός Βιβλίου στον Εύδοξο: 13957, ΕΚΔΟΣΕΙΣ ΚΛΕΙΔΑΡΙΘΜΟΣ ΕΠΕ

Εισαγωγή στην Πληροφορική. Beekman Ben, Beekman George, 10η Έκδοση/2015 ISBN: 9789605126674, Κωδικός Βιβλίου στον Εύδοξο: 50658777, ΕΚΔΟΣΕΙΣ: Χ. ΓΚΙΟΥΡΔΑ & ΣΙΑ ΕΕ

ΕΙΣΑΓΩΓΗ ΣΤΟΥΣ ΥΠΟΛΟΓΙΣΤΕΣ ΚΑΙ ΤΗΝ ΠΛΗΡΟΦΟΡΙΚΗ. ΓΚΛΑΒΑ ΜΑΙΡΗ,  Έκδοση: 1/2021, ISBN: 9786182020722, Κωδικός Βιβλίου στον Εύδοξο: 102076250, ΕΚΔΟΣΕΙΣ ΔΙΣΙΓΜΑ ΙΚΕ

-*Related scientific journals:*
1.  Computers and Electronics in Agriculture.
2.  Information Sciences.