COURSE OUTLINE

(1) GENERAL

SCHOOLS	**ENGINEERING, NATURAL SCIENCES**
ACADEMIC UNIT/UNITS	**COMPUTER ENGINEERING AND INFORMATICS DEPARTMENT, DEPARTMENT OF MATHEMATICS**
TITLE OF MASTER'S DEGREE	*MSC in Data Driven Computing and Decision Making*
LEVEL OF STUDIES	Post graduate

COURSE CODE	DDCD002	**SEMESTER**	Second
COURSE TITLE	Research Methodology and Case Studies in Data Driven Decision Making		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
	3	7.5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).	Total	7.5

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special background, specialized general knowledge, skills development
PREREQUISITE COURSES:	None at the graduate level Linear algebra, numerical analysis (especially numerical linear algebra) and algorithms at the undergraduate level.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek but English is also possible
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	`https://eclass.upatras.gr/courses/CEID1173/`

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A
- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

```
At the end of the course the student out to be able: • To show
that he can grasp, and present in summary the content of a set
of topics selected from the seminar presentations. • To
compose technical documents and reports of various types
according to a set of specifications and be familiar with the
tools that facilitate such tasks. • To be familiar with
intellectual property issues and the problem of plagiarism.
```

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
	Showing social, professional and ethical responsibility and

Working independently	*sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*......*
Production of new research ideas	*Others...*
	....

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Working independently
Working in an interdisciplinary environment
Production of new research ideas
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism

(3) SYLLABUS

The course consists of the following: 1) Most lectures will consist of seminars delivered by invited speakers (researchers and faculty from the U. of Patras and elsewhere). Some of the seminars would would be on advanced topics related to the courses offered in the DDCDM program, while others would introduce new topics related to Data Science, Data Driven Computing, and Decision Making based on mathematical and algorithmic tools as well as on the impact of these techniques in science and society. 2) A few lectures would present tools for writing scientific articles, the cycle of writing and publishing research papers, codes of conduct, writing resumes and techniques for presenting scientific research.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Most lectures/seminars are conducted face-to-face. Depending on the speakers' availability, a limited number might be presented via videoconferencing facilities.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	All lectures and additional material are posted on the course's e-Class website. Video lectures would be posted on GrNet Pithos+ and registered students will access them after obtaining suitable credentials.

TEACHING METHODS		
The manner and methods of teaching are described in detail. *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	*Activity*	*Semester workload*
	Lectures/seminars	40
	Study of relevant bibliography and familiarization with the topic of selected seminars.	60
	Project preparation and writing of the presentation.	60
	Learning about technical writing, publishing and presentation skills.	25
	Παρουσίαση και	3

	εξέταση	
		188

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Evaluation is based on the following factors: 1) Class participation (attendance is mandatory). 2) Learning the tools and methodologies for writing, presenting and publishing technical documents as well as their oral presentation under various conditions. Study and evaluation of papers selected from the recent literature in the form of a report. 3) Oral presentation of the report. 4) Oral examination based on the report. The oral examination also tests the student's familiarity with the topics discussed in class. Η αξιολόγηση του μαθήματος γίνεται βάσει των εξής: 1) Συμμετοχή στο μάθημα (υποχρεωτική παρακολούθηση). 2) Βαθμό εξοικείωσης με τα εργαλεία και τις δεξιότητες που αφορούν συγγραφή και δημοσίευση τεχνικών κειμένων και στη διεξαγωγή παρουσιάσεων. 3) Μελέτη και γραπτή αναφορά επιλεγμένων εργασιών βασισμένες στα σεμινάρια που διεξήχθησαν και τη σχετική βιβλιογραφία. 4) Παρουσίαση της αναφοράς υπό μορφή διάλεξης. 5) Ικανότητα απάντησης σε ερωτήσεις επί των θεμάτων που παρουσιάστηκαν στα σεμινάρια.

(4) ATTACHED BIBLIOGRAPHY

- **Seminar speakers will provide pointers to the literature as well as a copy of their**

presentation. In most cases, the lecture would also be recorded and available to registered students.

- Justin Zobel, Writing for Computer Science, Springer, 2014.
- D. Knuth, T. Larrabee and P.M. Roberts, Mathematical Writing, http://jmlr.csail.mit.edu/reviewing-papers/knuth_mathematical_writing.pdf
- S.G. Krantz, A Primer of Mathematical Writing, 2nd ed., arXiv:1612.04888 [math.HO]