Study programme:	**Applied Informatics**
Type of study / Form of study:	doctoral / full-time and part-time
Limit of credits:	240 ECTS credits
Standard length of study:	4 years
Validity of study plans:	from the academic year 2023/2024

Compulsory courses

Code	*Course*	*ECTS credits*	*Format l-s*	*Type of exam*	*Recom. semester*	*Lecturer*
FES/EMVPA	Science Methodology	20	8-0-4	ex	WS / 1	Prof. Stejskal
FES/EPMMS	Advanced Statistical and Mathematical Methods in Data Science	20	8-0-4	ex	WS / 2	Prof. Munk
FES/EMTMI	Modern Trends and Methods in Informatics	20	8-0-4	ex	SS / 1	Assoc. Prof. Hub Prof. Čapek

Credit evaluation (ECTS) of scientific-research activities (publications):

Publication in a journal with IF factor in Q1 and Q2 (indexed at WoK)	40
Book monographic publication (outside the Czech and Slovak Rep.)	30
Publication in a journal with IF factor in Q3 and Q4 (indexed at WoK)	30
Publication in the Scopus journal with SJR in Q1 and Q2	25
Publication in a journal registered in the ESCI WoK database	25
Publication in the Scopus journal with SJR in Q3 and Q4	20
Book monographic publication (inside the Czech and Slovak Rep.)	20
Publication in an index conference proceeding (WoK, Scopus)	15
Teaching text, text book/script	10
Publication in a reviewed non-index journal	8
Other scientific publication, presentation, performance (non-index conferences in Scopus or WoK databases, scientific journals etc.)	5

Gaining ECTS credits related to scientific-research activities is conditioned by student's affiliation to the Faculty of Economics and Administration of the University of Pardubice. In case of co-authors, the number of credits is stipulated in compliance with the share of each author. If the share is not defined, the number of credits is divided by the number of authors. If a co-author is represented by a supervisor, the supervisor is excluded from sharing.

Compulsory options

Code	*Course*	*ECTS credits*	*Format l-s*	*Type of exam*	*Recom. semester*	*Lecturer*
FES/EDES	Digital Economy and Society	10	4-0-8	ex	LS / 2	Assoc. Prof. Kopáčková
FES/EPMZ	Advanced Methods of Spatial Data Processing	10	4-0-8	ex	LS / 2	prof. Komárková
FES/EPUR	Usability of User Interfaces	10	4-0-8	ex	LS / 2	Assoc. Prof. Hub
FES/ETZID	Theory of Information and Data Security	10	4-0-8	ex	LS / 2	Assoc. Prof. Hub Prof. Čapek
FES/EUVIA	Artificial and Computational Intelligence	10	4-0-8	ex	LS / 2	Prof. Hájek
FES/EVVS	Research Seminar	10	0-0-12	ex	LS / 2	supervisor

Students choose at least two of the compulsory options.

Optional courses

Code	*Course*	*ECTS credits*	*Format l-s*	*Type of exam*	*Recom. semester*	*Lecturer*
FES/EAWA	Architecture and Web Application Design	5	4-0-4	ex	WS / 3	Assoc. Prof. Hub
FES/EDA	Data Analytics	5	4-0-4	ex	WS / 3	Assoc. Prof. Šimonová
FES/EEGOV	e-Government	5	4-0-4	ex	WS / 3	Assoc. Prof. Kopáčková Prof. Čapek
FES/EESYS	Experts Systems	5	4-0-4	ex	WS / 3	Prof. Hájek
FES/EPMB	Advanced Business Intelligence Methods	5	4-0-4	ex	WS / 3	Assoc. Prof. Šimonová
FES/ESU	Machine Learning	5	4-0-4	ex	WS / 3	Prof. Hájek

Students choose such number of optional courses, in compliance with a dissertation theme and supervisor's consent, to gain at least 180 ECTS credits in order to submit an application for the state doctoral exam. The minimum of 240 ECTS credits is required to complete the doctoral study successfully. Extra credits can be achieved based on fulfilment of other activities, such as scientific-research activities, internship, pedagogical activities, submission of a final dissertation thesis (please see below).

Internship requirements

Students are committed to experience an internship within the first three years of study. It can be held at a prestigious foreign university or a scientific-research institution for a minimum length of one month. The internship‘s length can be divided into several parts with a minimum duration of one week. The Internship may also take the form of participation in an European research project or other form of direct participation in international collaboration within an international collective of authors leading to an international output with a defined type of results (for example Jimp, Jsc, D, P) according to the current Register of Information on Results (RIV), and based on an appropriate regulation provided by the Council for Research, Development and Innovations (RVVI).

The internship should lead to deepening the doctoral student's scientific and methodological knowledge related to the dissertation topic. The consent of the supervisor and the chairman of the advisory board is required. When approving the internship, the supervisor primarily considers the professional focus of the visited institution. Upon completion of the internship, the student is required to prepare a report, which is submitted to the supervisor. Based on the report, the supervisor proposes a certain number of credits to the study programme guarantor to be granted to the student. Students gain from 20 to 60 ECTS credits based on the submitted relevant documents showing the quality of the achieved outcomes, where the number of credits allocated is decided by the relevant vice-dean in cooperation with the guarantor of the doctoral study programme.

Other study duties

1. Pedagogical activities

In particular, the full-time students are required to perform pedagogical activities in the number of 2-4 hours per week in a semester during two semesters, usually within the first two years of study. The number of hours will be stipulated by a supervisor upon an agreement with a head of an institute/department. A student’s pedagogical activity is evaluated by 5 ECTS credits for 2 hours per week in a semester. A student can obtain the maximum of 10 ECTS in one semester.

2. State doctoral exam

By the deadline for submission of the application for the state doctoral examination, a student is obliged to complete an internship at a selected foreign university or research institution in the minimum length of one month, and to complete all compulsory courses, selected compulsory options and optional courses, and to achieve at least 180 credits in all study and other obligations specified in a student’s individual study plan.

The state doctoral exam has two parts:

- the first part is a doctoral thesis defence, in which a student demonstrates the ability to theoretically grasp and analyse problems related to a dissertation. In the treatise, the

student presents a current state of scientific knowledge, results of his/her research activities that have been processed or published so far, and his/her intention of further progress in preparation of the dissertation;

- in the second part of the state doctoral examination, a student answers two questions from the courses he/she has taken during his/her studies.

3. Defence of a dissertation (PhD thesis)

A student receives 40 ECTS credits for submitting a final version of a dissertation at the Department of Research and Development of the Faculty of Economics and Administration, University of Pardubice. Only a doctoral student who has successfully passed the state doctoral examination and has attained at least 240 credits in all study and other obligations stipulated in his/her individual study plan, and who submits a list of publications that includes at least one full-author publication in a journal with a non-zero impact factor or two full-author publications with a non-zero SJR value, may submit an application for defence of the dissertation; in case of co-authorship, the shares are cumulative. In this case, a publication produced by a student with his/her supervisor is also considered to be a full-author publication. In the dissertation defence, a doctoral candidate presents particularly the results of his/her scientific research work and the process by which he/she achieved these goals.

Explanatory notes

code	*= course abbreviation*
format l-s	*= lectures - seminars*
type of exam: ex, Sdo	*= examination , state doctoral exam*
recom.semester / year	*= recommended semester / year to take the course*
WS / SS	*= winter semester / summer semester*

NOTICE
Admission to study in accordance with the study plan below, reflecting the academic year 2022/2023, has been closed.

Doctoral study programme: **Applied Informatics**
Doctoral study specialization: **Applied Informatics**
Limit of Credits: 180
Form of Study: full-time/part-time
Standard Length of Study: 4 years

Compulsory Courses

Code	*Course*	*Credit Points ECTS*	*Format L+S*	*Type of Exam*	*Recom. Semester*	*Lecturer*
FES/AVCA2	Scientific-Research Activities	10	0-0	a	SS/1	supervisor
FES/AVCA4	Scientific-Research Activities	10	0-0	a	SS/2	supervisor
FES/AVCA5	Scientific-Research Activities	20	0-0	a	WS/3	supervisor
FES/AVCA6	Scientific-Research Activities	20	0-0	a	SS/3	supervisor
FES/AMVPA	Methodology of Scientific Work	15	15-0	ex		Prof. Stejskal Prof. Krejcar
FES/APMMS	Advanced Methods of Mathematics and Statistics	15	15-0	ex		Prof. Skalská Prof. Slabý
FES/ATI	Theoretical Informatics	30	15-0	ex		Prof. Čapek Prof. Hynek

Credit evaluation of scientific and research publications in terms of scientific-research activities of a PhD student

Publication in a periodical with IF awarded (registered in ISI Thomson)	30
Book monographic publication (outside the Czech and Slovak Rep.)	30
Publication in an index journal (e.g. Scopus, ACM, IEEE)	25
Publication in index conference proceedings (ISI Thomson, Scopus, ACM, IEEE, etc.)	20
Book monographic publication (inside the Czech and Slovak Rep.)	20
Publication in a reviewed non-index journal	15
Publication in non-index international conference proceedings	12
Teaching text, text-book/script, e-course	10
Publication in national conference proceedings	8
Other scientific publication, presentation, performance	5

In case of co-authors, the number of credits is awarded in compliance with the share of each author. If the share is not defined, the number of credits is divided by the number of authors.

NOTICE
Admission to study in accordance with the study plan below, reflecting the academic year 2022/2023, has been closed.

Optional Courses

Code	*Course*	*Credit Points ECTS*	*Format L+S*	*Type of Exam*	*Recom. Sem.*	*Lecturer*
FES/AAINA	Ambient Intelligence	10	12	ex		Prof. Mikulecký
FES/AAIB	Application of Informatics in Biomedicine	10	12	ex		Prof. Kuča
FES/AAZP	Application of Knowledge Management	10	12	ex		Prof. Hájek Prof. Bureš
FES/AAWA	Architecture and Design of Web Application	10	12	ex		Prof. Komárková Assoc. Prof. Kozel
FES/ADAM	Data Modelling	10	12	ex		Assoc. Prof. Šimonová
FES/ADKP	Discrete and Combinatorial Approaches	10	12	ex		Assoc. Prof. Pražák
FES/AEP	Evolutionary Approaches	10	12	ex		Prof. Hynek
FES/AFMA	Fuzzy Methods and Application	10	12	ex		Dr. Ponce
FES/AGIS	Geographic Information Systems	10	12	ex		Prof. Komárková Assoc. Prof. Horák
FES/AMAD	Data Mining Methods and Algorithms	10	12	ex		Assoc. Prof. Petr Prof. Skalská
FES/AMAS	Multi-agent systems	10	12	ex		Assoc. Prof. Olševičová
FES/APGGM	Computer Graphics and Graphical Methods	10	12	ex		Prof. Slabý
FES/APMV	PC Modelling in Natural Sciences	10	12	ex		Assoc. Prof. Musílek
FES/APDM	Advanced Database Methods	10	12	ex		Assoc. Prof. Šimonová Assoc. Prof. Poulová
FES/APUR	Usability of User Interfaces	10	12	ex		Assoc. Prof. Hub Prof. Krejcar
FES/ARRS	Decision-making and Management in Complex Systems	10	12	ex		Assoc. Prof. Křupka Prof. Bureš
FES/ASIM	Simulation and Modelling	10	12	ex		Assoc. Prof. Antlová Assoc. Prof. Hubálovský
FES/ASU	Machine Learning	10	12	ex		Prof. Hájek
FES/ASAPS	System Analysis and Design	10	12	ex		Assoc. Prof. Křupka Prof. Slabý
FES/ATZDI	Theory of Data and Information Security	10	12	ex		Prof. Čapek Assoc. Prof. Zelenka
FES/ATZT	Knowledge and Technology Transfer	10	12	ex		Assoc. Prof. Petr Prof. Kuča

NOTICE
Admission to study in accordance with the study plan below, reflecting the academic year 2022/2023, has been closed.

FES/ATSA	Trends in Software Architectures	10	12	ex		Assoc. Prof. Hub Assoc. Prof. Malý
FES/AUVIA	Artificial and Computational Intelligence	10	12	ex		Prof. Hájek Prof. Mikulecký
FES/AVASP	Selected Application of Statistical Approaches	10	12	ex		Assoc. Prof. Linda Prof. Skalská
FES/AVKV	Selected Chapters from Cognitive Science	10	12	ex		Assoc. Prof. Linda Prof. Zelenka
FES/AVPD	High Parallel and Distributed Computing Systems for Big Data Processing	10	12	ex		Prof. Krejcar

Students choose at least two optional courses.

Students enrolled in full-time form of study:

Compulsory Courses

Code	*Course*	*Credit Points ECTS*	*Format L+S*	*Type of Exam*	*Recom. Semester*	*Responsible person*
FES/APPA1	Pedagogical Activities	5	0-0	a	WS/1	supervisor
FES/APPA2	Pedagogical Activities	5	0-0	a	SS/1	supervisor
FES/APPA3	Pedagogical Activities	5	0-0	a	WS/2	supervisor
FES/APPA4	Pedagogical Activities	5	0-0	a	SS/2	supervisor
FES/APPA5	Pedagogical Activities	5	0-0	a	WS/3	supervisor
FES/APPA6	Pedagogical Activities	5	0-0	a	SS/3	supervisor

Students enrolled in part-time form of study:

Optional Courses

Code	*Course*	*Credit Points ECTS*	*Format L+S*	*Type of Exam*	*Recom. Semester*	*Responsible Person*
FES/APPA1	Pedagogical Activities	5	0-0	a	WS/1	supervisor
FES/APPA2	Pedagogical Activities	5	0-0	a	SS/1	supervisor
FES/APPA3	Pedagogical Activities	5	0-0	a	WS/2	supervisor
FES/APPA4	Pedagogical Activities	5	0-0	a	SS/2	supervisor
FES/APPA5	Pedagogical Activities	5	0-0	a	WS/3	supervisor
FES/APPA6	Pedagogical Activities	5	0-0	a	SS/3	supervisor

NOTICE

Admission to study in accordance with the study plan below, reflecting the academic year 2022/2023, has been closed.

Students choose the pedagogical activity in each semester or at least two courses from the group of Optional Courses per whole doctoral study.

Students choose a certain number of courses to gain the total number of 180 credit points for the whole doctoral study.

Compulsory courses for Final State Exam

Code	*Course*	*Credit Points ECTS*	*Format L+S*	*Type of Exam*	*Recom. Semester*
FES/AZI	Informatics	0	0-0	state exam	SS

Explanatory notes:

Format
Indicates the teaching format of the subject i.e. the number of lectures (L) and seminars (S) per semester.

Credit Points
Indicates the number of credit points appointed to each course upon its completion. A total of 180 credit points is required to complete successfully the Doctoral study programme.

Type of Exam
Explains the form of a course assessment. The following two types of assessment are recognized:
a – assignment
ex – examination (written and/or oral examination)

SS = summer semester
WS = winter semester