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University of Rome
Tor Vergata
Italy
Department of Enterprise Engineering

KA2 - Cooperation for innovation and the exchange of good practices
Capacity Building in Higher Education
Joint project

Master in Smart Transport and Logistics for Cities / SmaLog

WP3

Theoretical fundamentals of PhD Programme in SmaLog

Progress Seminar / 29 July 2021 / online

CENTRO DI RICERCA
PER IL
TRASPORTO E LA LOGISTICA

SAPIENZA
UNIVERSITÀ DI ROMA

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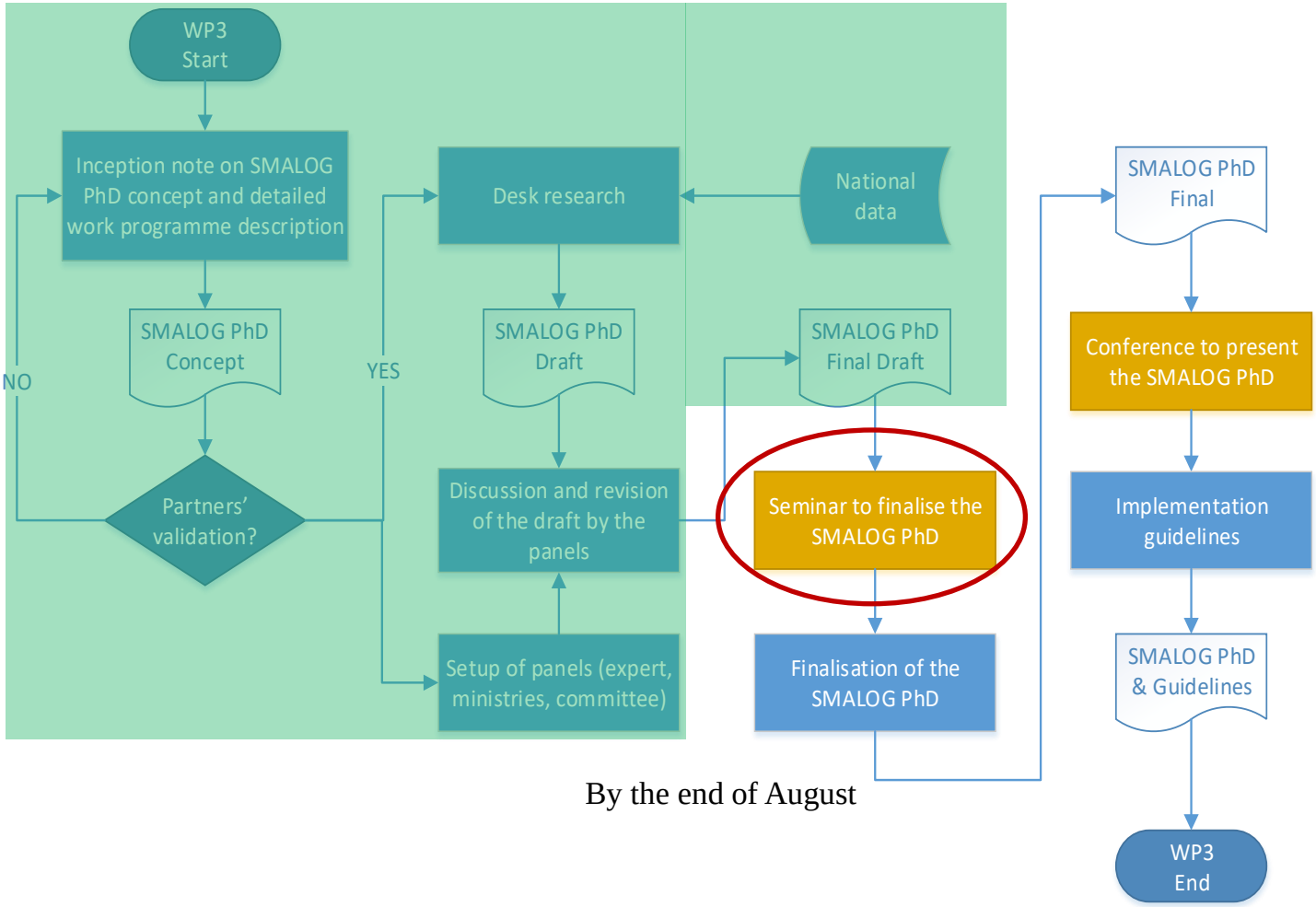
Objectives of WP3

- ✓ To contribute to harmonization of the Higher Education Systems between EU, UA and GE, by introducing a **PhD programme on Smart Transport and Logistics** in Partner Countries Universities
- ✓ To provide methodological and technological support of the theoretical fundamentals of PhD Programme
- ✓ To jointly evaluate and approve
  - ➢ Topics of the programme
  - ➢ Implementation approach (e.g. support from industrial and academic sectors)

WP3 Overview

Approach



Contents of the Concept note

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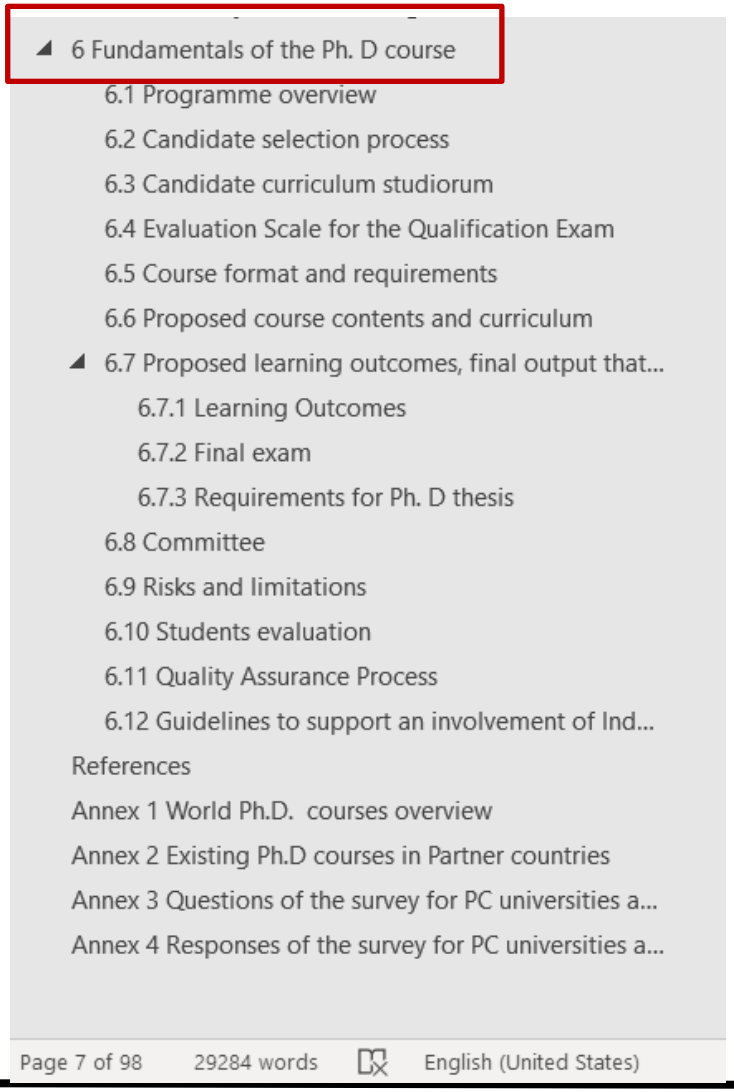
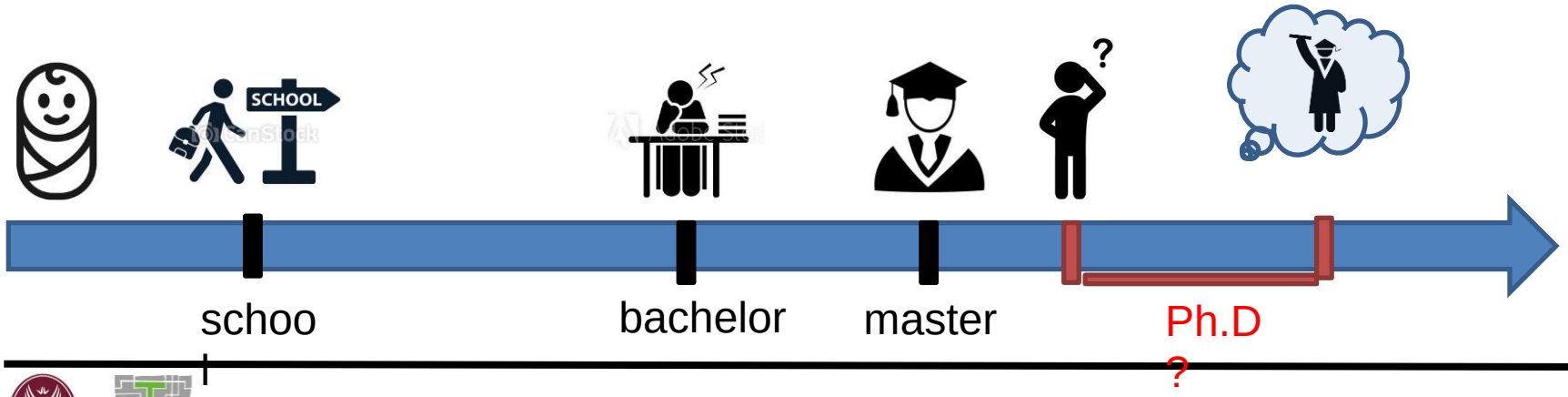


Introduction

Fonte: https://www.ukud.co.uk/phd-research/

Abilities to develop:

- Specific expertise and ability to search for relevant work done in an area, as well as the ability to critically read and understand research papers, reports etc…
- Ability to identify research problems
- Ability to actually do the research
- Ability to write and present the results and thesis.



International review of relevant Ph.D. courses

Institution	QS Ranking	CWUR Ranking	Duration
University of Leeds	91	101	3 years
Sapienza University of Rome, Italy	171	113	3 years
Tallinn University of Technology, Estonia	651-700	1447	4 year
Technical University of Denmark, Denmark	103	196	3 years
University of Stavanger, Norway	N/A	1360	3 years
The Hong Kong University of Science and Technology	27	229	3-4 years
New Jersey Institution of Technology, US	N/A	948	
Institute of Transport and Logistics Studies at University of Sydney in Australia	40	98	3 years
NYU Shanghai, China	N/A	N/A	4-5 years
Johannes Kepler University Linz Austria	362	926	3 years
University of Twente (UT), Netherlands	197	411	4 year
Molde University College (HiM), Norway	N/A	N/A	3-4 years
The University of Zaragoza, Spain	501-510	453	4 year
Macquarie University, Australia	214	380	3 years
University of Rome Tor Vergata, Italy	494	263	3 years

Some of the topics studied:

- Supply Chain,
- Logistics,
- Collaboration and Competition between Transport and Logistics Modes,
- Smart Transport and Logistics,
- Sustainable Transport and Logistics,
- Intelligent Transportation,
- Transport Network Modelling,
- Connected Automated Cities with Smart Mobility,
- Designing-Constructing-Operating of Transportation

Entry requirements:

- ✓ a good level of graduation from Bachelor's and Master's degrees (for some cases, with Honors),
- ✓ at least B level of English Language knowledge and its certification,
- ✓ a well-prepared research proposal,
- ✓ additional requirements (such as computer skills,, previous professional experiences, backgrounds (such as logistics-related, supply chain, transport network programming, etc.)

Analysis of the existing Ph.D. Courses in UA&GE universities

Review of the Ph.D. courses in Partner countries

	NTU	NUUE	LPNU	ZSTU*	BSMA*
ECTS	60	45	60	-	-
Duration	4	4	2	-	-
Language	Ukrainian			-	-
Prerequisites	Master's degree or educational qualification level of a specialist			-	-

** no Ph.D. courses taught in ZSTU and BSMA for Smart Transport technology*

Research needs:

- the study programs are to be reinforced and supplemented with Road Safety section, Traffic management and Logistics,
- increase the quality of existing programs, update with state-of-the-art approaches
- need of the state-of-the-art software, equipment for monitoring and collecting information on the road network and passenger flows

Fundamentals of the Ph. D course

Programme overview

Degree	Doctor of Philosophy in Smart Transport and Logistics
Programme start	1st semester
Period of study	From 6 semesters to 8 semesters (3/4 study years, depending on University)
Application period	01.06 – 30.07
Admission restrictions	yes
ECTS	120 ? **180 Georgia (thesis 60)**
Number of available places	To be defined by each University
Number of Scholarships	To be defined by each University

- in-depth knowledge in the Smart Transport and Logistics
- focus areas: Smart Transport and Logistics are in the fields of sustainable mobility, road safety, behavior of road users, CCAM, Mobility As A Service (MaaS), Logistics As A Service (LaaS), transport policies, and others

Fundamentals of the Ph. D course

Committee

The Ph.D. committee must satisfy the requirements imposed by the University:

- There must include **three to five people**, appointed by the head of the institution of higher education (scientific institution);
- At least **two and no less than half** of the members must be members of the Faculty;
- At least **one member** must be from outside of the Faculty/Department (it is highly recommended for all students);
- The members should be chosen fairly and in correspondence to the Gender equality strategy set up by the European Commission.

Fundamentals of the Ph. D course

Candidate selection process

Students' selection involves a rigorous evaluation of knowledge, skills, and motivational aspects.

The process of selection includes:

- the presentation of the application

- an interview (in presence or online (by Skype or similar))

Before the interview, the selection committee analyses the Master Degree to assess its validity for the research activities to be performed in Ph.D programme.

The certificate of English language skills is optional (TOEFL/Cambridge/IELTS/course, language school).

Afterwards, the Committee establishes a ranking considering the applicant's merits.

Fundamentals of the Ph. D course

Candidate curriculum studiorum

- Graduation date and grade of the Master's degree;
- Detailed list of exams including completion dates and scores of Masters's degree;
- Computer skills (list all the competences);
- *History of Scholarships, Research Grants (or similar, if any);*
- *Certificates of Foreign Languages (if any);*
- *Certificates of participation in post-graduate university courses (if any);*
- *Certificates of Participation in research groups (if any);*
- *Certificates of Participation in internships (if any);*
- *Other University Awards/Degrees (e.g.: awards in competition, second degree, if any);*
- *Publication's list (if any);*
- *Documentation of work experience (if applicable)*

Required documentation to be presented:

- **Research project (mandatory)**
- **List of publications**

Fundamentals of the Ph. D course

Evaluation Scale for the Qualification Exam

Qualification, research project and oral exam to be evaluated according to the following criteria:

1. CV and professional titles

Mark		Points
Ukrainian system	Georgian system	
95-100/100	(95-100/100) / A	5
90-95/100	(90-95/100) / A	4
85-90/100	(85-90/100) / B	3
80-85/100	(80-85/100) / B	2
75-80/100	(75-80/100) / C	1
<75/100	(<75/100) / <C	0

2. Scientific Publications (1 point/publication)

3. Research Experience

Description	Points
Experience abroad	2.5
Collaboration contracts	1
Training courses for researchers	0.5

4. Research Project

Description	Points
Knowledge of the state of the art	10
Innovative aspects of the project	10
Clarity and completeness of the specific objectives, research strategy, attainability	10
Feasibility of the project	10
Relevance of the project to the educational goals of the PhD program	5

5. Interview (Discussion project (40p); clarity of presentation, synthesis and scientific interest (10p); English (10 points)) **MIN 40/60**

Admission to the Ph. D Course: min 80/120.

Fundamentals of the Ph. D course

Fee particulars

It is recommended leaving the issue of fee payment for regulation by each university separately, within the framework of the Regulations on the procedure for preparing Ph.D. at each university.

There is a possibility of financing education by the state (budgetary place, state order). The cost of contract education is determined by each university independently.

Fundamentals of the Ph. D course

Research Supervisors

Possible requirements **for Research Supervisor**:

- any regular Professor of the University
- with at least five research publications in refereed journals (SCI/SCI-E/Scopus)

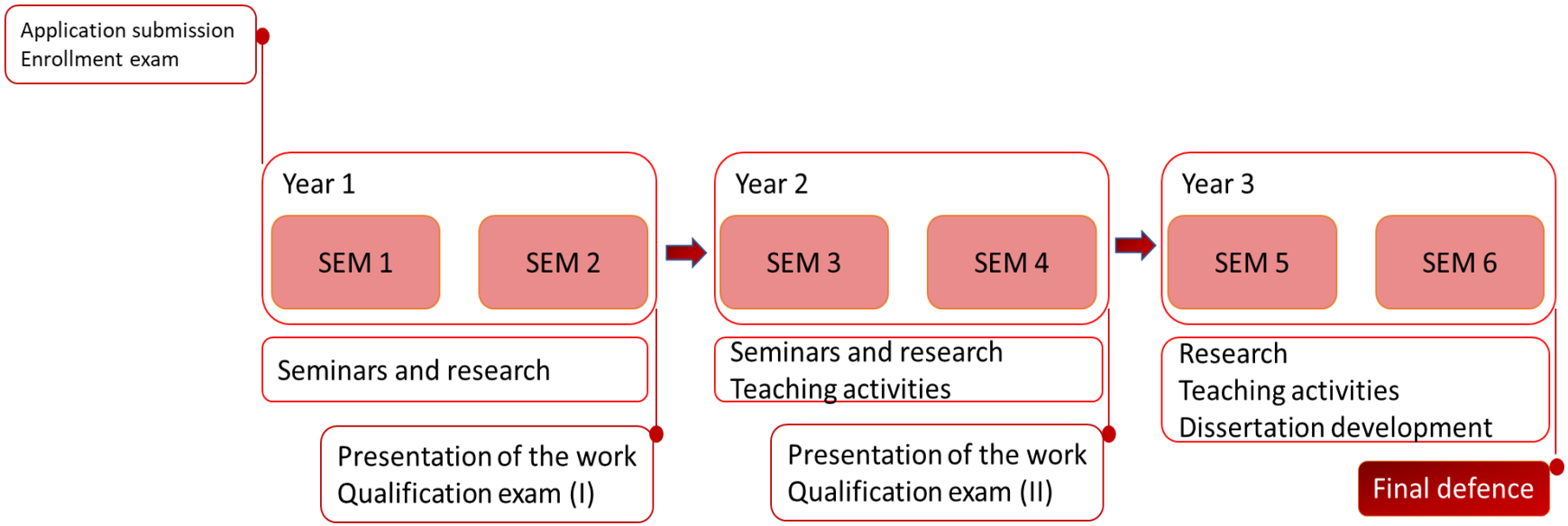
OR

- any regular Associate/Assistant Professor of the University with a Ph.D. degree
- and at least two research publications in refereed journals (SCI/SCI-E/Scopus)

Co-Supervisor - from outside the Department/ Faculty/University on terms and conditions to be specified and agreed upon by the consenting Institutions/ Colleges/Industry.

Fundamentals of the Ph. D course

Course format and requirements



Students have to present in the three-year course of the Ph. D at least:

bibliometric SSDs - an article in a peer-reviewed journal included in the Web of Science or Scopus databases

Fundamentals of the Ph. D course

Proposed course contents and curriculum

Teaching activities for PhD students could be subdivided in 4 levels:

I level – the seminar is open and is provided for students from several universities (as of the same country as internationally),

II level – the seminar is held for all the PhD students at the same university but different programmes,

III level – in the seminar the entire doctoral team of the same department participates,

IV level – the seminar is held only for PhD students for Smart Transport and Logistics course.

Fundamentals of the Ph. D course

Proposed course contents and curriculum

Proposed Seminars for **IV level**:

Mandatory Seminars:

a. Foreign Language (English) in scientific communication;
b. Methodological bases of scientific research of transport problems ;
c. Basic concepts and current state of scientific knowledge of transport systems development;
d. Scientific and methodological bases of conceptual development of transport technologies and systems;
e. Transport modelling;
f. Logistics in cities (road, rail, maritime, air);
g. System analysis of multimodal transport processes for cargo and passengers;
h. *Other.*

Fundamentals of the Ph. D course

Proposed course contents and curriculum

Proposed Seminars for **IV level**:

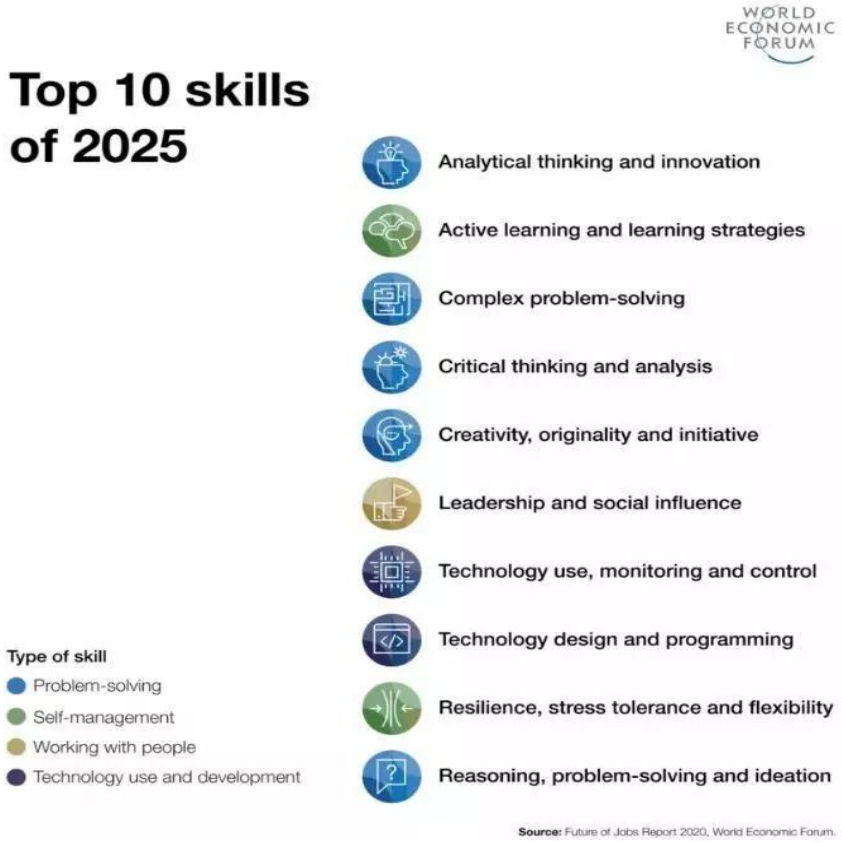
Elective Seminars:

a. Mathematical Programming;
b. Probability Models and Stochastic Processes;
c. Statistical Analysis;
d. Ecological transport: decarbonization, alternative fuels;
e. Autonomous Mobility-on-Demand;
f. Digitalization in Shipping Operations & maritime and nautical systems;
g. Sustainability and green thinking in maritime and nautical industry;
h. Optimization of port, terminal and ship operations;
i. Simulation and emulation of port, terminal, ship operations and container flow/goods flow;
j. Managing risks, ships safety and legal regulation.

Special Topics Seminars, Colloquiums, Workshops, Thematic Seminars with invited professors and experts

Fundamentals of the Ph. D course

Proposed learning outcomes, final output that students have to provide to complete the course



Moreover, on successful completion of the Ph.D. program, graduates will be able to:

- Demonstrate mastery of knowledge in traffic management systems and transportation engineering and technologies;
- Identify scientific and engineering significances in intelligent smart transportation technologies and smart logistics including computational and analytic models, tools, solutions, and techniques;
- Apply cross-disciplinary knowledge and skills to enhance the transportation systems and develop new technologies;
- …

Fundamentals of the Ph. D course

Final exam

The **deadlines** are proposed further:

- **By the end of Semester** - deliver the final thesis version to reviewers,
- **Within 1 month after** - review and (to allow the admission to the final examination and discussion of the thesis or postponement up to a maximum of 6 months from that date);
- **Within 2 weeks after** – preparation of the presentation of the work done to the scientific board;
- **Within 2 weeks after** - the final deadline for the final exam for the degree of Ph.D. with an internal Committee and a commission external to the PhD scientific board.

The defense itself usually proceeds as follows:

- a few minutes of private discussion by the committee;
- a public presentation presented by the Ph.D. candidate, typically lasting up to 30 minutes;
- questions from the committee, in front of the public;
- questions from the public (if any);
- private discussion by the committee;
- outcome decided and announced to the candidate.

Fundamentals of the Ph. D course

Requirements for Ph. D thesis

During the seminar, the presentation must cover the following aspects:

1. Objectives and scope of the study
2. Literature survey
3. Identification of the research gaps based on literature review
4. Problem formulation
5. Research methodology
6. Experimentation/ Data collection/Analysis General conclusions
7. Specific contributions and conclusions
8. Details of publications in journals and conferences
9. Further scope of research
10. References

Fundamentals of the Ph. D course

Risks and limitations

1. Communication problems between students and teachers
2. Illness and social problems, anxiety, stresses
3. Motivation level low
4. Scheduling/time management problems
5. Lack of required knowledge
6. Unclear requirements
7. Lack of resources
8. Privacy concerns
9. Economic harm
10. Lack of teaching materials and other documentation
11. Unclear criteria of assessment of students

Fundamentals of the Ph. D course

Students' evaluation

First-year and second-year examination.
The Committee provide grades and feedback on the student's exam performance for the evaluation and allowance to continue the course, in case of fail the corresponding measures should be taken.

Final examination.
All course requirements must be fulfilled with no incompletes of any type on record. The Committee review the performance of any student who has not met these considerations and decide, following a simple majority voting rule, whether to retain or dismiss the student. The Committee will solicit input from faculty serving as advisors or readers for the second-year paper, from other faculty involved with the student in collaborative research, and faculty instructors for any classes taken during the third year, as well as information from the first- and second-year evaluations.

Fundamentals of the Ph. D course

QA Process

Quality Assurance (QA) involves the systematic review of educational provision to maintain and improve its quality, equity and efficiency.

Necessary documentation has to be provided:

- Regulations and Guidelines for structured Ph. D programme;
- Internal regulations about quality management (quality assurance regulation etc.);
- Sample information material about the quality management and its results which the higher education institution regularly uses for its internal and external communication (e.g. link to specific web pages, reports, flyer)
- Quantitative and qualitative statistical data from evaluations, study progression statistics, number of graduates etc.

The guidelines applied are the same of QAP for Smalog.

Fundamentals of the Ph. D course

Guidelines to support an involvement of Industry and Society

Ways to involve industry in the delivery of engineering education in universities are:

1. Visiting professorships/visiting teaching fellowships.
2. Sponsored competitions
3. Ad-hoc lectures or participation in projects by industrialists
4. Engineering societies in universities.
5. Young Members' groups within professional engineering institution.
6. Work placements
7. Industrial mentors Provision of free or discounted educational materials.
8. Provision of free or discounted engineering software or equipment.
9. Sponsorship and bursaries.
10. Provision of free or discounted memberships of professional institutions.
11. Site visits — for example to construction sites or factories.
12. Participation in department or faculty industrial advisory boards.
13. Student prizes — for example, in support of academic merit.
14. Careers fair and recruitment talks.

Fundamentals of the Ph. D course

Guidelines to support an involvement of Industry and Society

To foster relationships between industry and academia:

Promote networking

Build a campaign

Make the most of student membership

Enhance the network

Link industrial liaison to accreditation and qualification

Link experience to chartership

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THANK YOU FOR ATTENTION

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