SZÉCHENYI EGYETEM
UNIVERSITY OF GYŐR

Infrastructure Civil Engineering MSc

Thesis guidelines

Dr. Attila Borsos

2024. 11. 28.

Guidelines
https://kep.sze.hu/en_GB/home#

SZÉCHENYI EGYETEM
UNIVERSITY OF GYŐR

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| CURRENT STUDENT INFORMATION

MSC FINAL THESIS GUIDELINES

Thesis documents/Diploma thesis preparation guide and final exam regulations

Master thesis evaluation matrix

Datasheet for MS Diploma Thesis Submission

MS Diploma Thesis Scope Form Content

Sample Design Drawing Title Box

Thesis guidelines presentation

Defended theses

MAP

Defended theses

SZÉCHENYI EGYETEM
UNIVERSITY OF GYŐR

TANSZÉKRŐL | MUNKATÁRSAK | TANTÁRGYAK | ZÁRÓVIZSGA | KUTATÁSI MUNKÁK | LABOROK | SZAKMAI KAPCSOLATOK | KAPCSOLAT

ANGOL NYELVŰ INFRASTRUKTÚRA-ÉPÍTŐMÉRNÖKI MESTERSZAKON MEGVÉDETT DIPLOMAMUNKÁK

Az angol nyelvű infrastruktúra-építőmérnöki mesterszak (MSc) közlekedésépítés szakirányán megvédett diplomamunkák

AZ ANGOL NYELVŰ INFRASTRUKTÚRA-ÉPÍTŐMÉRNÖKI MESTERSZAK (MSC) KÖZLEKEDÉSÉPÍTÉS SZAKIRÁNYÁN MEGVÉDETT DIPLOMAMUNKÁK, 2023 NYÁR

Név	Diplomamunka címe	Belső konzulens	Külső konzulens	Bíráló
Aboud, Amin	The effect of different road surfaces on the vibration of an electric scooter	Dr. Borsos Attila		Dr. Bencze Zsolt
Cebekhulu,Thobani	Comparative seismic assessment of an unreinforced masonry building based on local soil characteristics	Dr Kegyes-Brassai Orsolya		Szilvágyi Zsolt, GEOPLAN
Tawalo, Ali	Parametric Study on the Seismic Behavior of Box Tunnels	Dr. Koch Edina		Mr. Mahmoud Ghanem, University of Delft
				Hóz Erzsébet, KTI (Hungarian

KÖZLEKEDÉSÉPÍTÉSI ÉS VÍZMÉRNÖKI TANSZÉK

KÖZLEKEDÉSÉPÍTÉSI ÉS V...

LVIII. Super Bowl - ELŐ közvetítés a Siegerben
2024. február 11. 22:00 - 2024. február 12. 04:00

SPIN OFF KLUB - A MESTERSÉGES INTELLIGENCIA VÁLLALATI ALKALMAZÁSAI
2024. február 13. 17:30 - 20:30

Diplomaátadó Ünnepély - ÉÉKK
2024. február 17. 14:00 - 16:00

Nagy Vörösborok és Vadak Est
2024. február 23. 19:00 - 22:00

Apátúr Sörház - Sörfőzde látogatás
2024. február 28. 18:00 - 19:00

TOVÁBBI ESEMÉNYEK

Guidelines

- Diploma thesis preparation guide and Final Examination Regulations
- Datasheet for thesis submission
- Thesis guide (scope, form & content)
- Thesis evaluation sheet

- Others (e.g. how to upload final thesis, deadlines etc.)

Master's level thesis criteria

- complex;
- novel,
- international experience;
- innovative, and international in scope,
- professional software-supported modelling,
- optimization or parametric exercises.

Transportation Infrastructure Engineering specialization

Topics to avoid	Better suggestions
X Presentation of the road study plan	✓ Multi-criteria analysis and complex analysis of road study variants using economic-mathematical analysis methods
X Preparing the design documentation for the authorization of the junction	✓ Solving (potentially novel) node type problems based on proposals using complex analysis methods
X Identifying and solving transport problems in the municipality	✓ Developing, modelling and evaluating complex solutions to the transport problems of the municipality according to performance indicators
X Presentation of road-railway construction technology	✓ Analysis of domestic and foreign road and railway construction technology methodologies, analysis of technology measurements (laboratory, on-site) using statistical methods

Geotechnical Engineering specialization

Topics to avoid	Better suggestions
X Presentation of a study design for a geotechnical structure	✓ Multi-objective analysis and complex analysis of structural study designs using geotechnical software
X Preparation of permit design documentation for an existing or planned geotechnical structure	✓ Solving (potentially novel) geotechnical structure problems based on complex analytical methods
X Technology demonstration	✓ Analysis of domestic and foreign technology methodologies, analysis of technological measurements (laboratory, on-site) using statistical methods
	✓ In the field of geotechnics, processing and summarizing own research results
X The evolution of construction costs and risks in the case of geotechnical structures	✓ Analysis of the use and impact of the extent of excavation and/or monitoring systems on construction costs and risks

Water Resources Engineering specialization

Topics to avoid	Better suggestions
X Sizing of municipal water/sewer system	✓ Sizing of municipal water/sewer system using software, problem identification, development and evaluation of proposed solutions, application of blue-green infrastructure elements
X Presenting new technical methods and technologies in water resources engineering	✓ Evaluating, and recommending new design methodologies used in water resources engineering by analytical and numerical methods
X Simple hydraulic study of the riverbed	✓ 1D modelling of time series, network models, water management reaches. 2D hydraulic analysis of riverbeds
X Sizing of water resources structures, assessment of operational design	✓ Developing a water management concept or modelling river basin systems using numerical or statistical techniques.

Graduation process

- Choice of topic and supervisor (deadline June 15 or January 15)
- Thesis writing, consultations (min. 5 with the university advisor)
- Interim report (approx. 1.5 months before the submission deadline)
- Thesis submission (1 hardback copy + electronically through library) (deadline December 15 or May 15)
- Review
- Final examination

Final year project (20 credits)

- Final year project 20 credits:
  - University advisor gives the grade
  - This grade represents the research competences of the student, it is NOT the evaluation of the thesis!
  - The programme committee recommended evaluation criteria (responsibility, communication, independence, planning, open-mindedness)

Final year project (20 credits)

- Responsibility
  (no responsibility ↔ took leadership)
- Communication
  (severe difficulties communicating with the supervisor ↔ proactive, convincing team player)
- Independence
  (heavily relies on supervision ↔ very competent, hardly needs any supervision)
- Planning
  (unrealistic planning, plan not followed ↔ perfect planning, executed according to the plan)
- Open-mindedness
  (cannot handle criticism ↔ open to criticism to improve him/herself)

Thesis grading

- Evaluation matrix, used by:
  - University & outside (optional) advisor
  - Reviewer
  - Final exam committee
- Points for each criterion (0-3 points)
- Reviewer can also assess in writing

Master thesis evaluation matrix

- Thesis content elements
- Thesis writing style, clarity, format
- Oral defense (presentation and professional discussion)

		Evaluation criteria				Assessment Scores			
Components	Viewpoints	0	1	2	3	University advisor	Outside advisor (optional)	Reviewer	Final Exam Committee
Thesis content elements	Task difficulty	The level of difficulty falls short of what is expected at the MSc level.	Degree of difficulty is simple, easy at the MSc level.	Average difficulty at the MSc level.	Complex and degree of difficulty above average at the MSc level.	3	3	3	
	Problem, goals	Not included in the thesis.	The author deals with it only tangentially.	The author touches on it, but not in sufficient detail.	The author deals with it in sufficient detail.	3	3	3	
	Use of literary sources	No literature sources.	There are occasional literature sources, but they are either inadequate or not closely related to the topic of the thesis.	The author uses literature sources and supports his claims accordingly. Uses standard sources. A critical analysis related to the cited literature is omitted.	The author uses literature sources and uses them organically during his argument. The range of literature used is wide, the author also covers a critical analysis of the literature.	3	3	3	
	Method, data collection	Not included in the thesis.	The author deals with it only tangentially.	The author touches on it, but not in sufficient detail.	The author deals with it in sufficient detail.	3	3	3	
	Results	The presentation of results is confusing and relevance of the figures/tables is questionable.	The presentation of the results is difficult to follow and not obvious, the figures/tables help understanding to a limited extent.	The results are properly presented by the author, the figures/tables partly help the interpretation of the results.	The presentation of the results is structured logically by the author, with adequate detail. The figures/tables used greatly aid interpretation.	3	3	3	
	Evaluation and critical review of results (discussion)	Not included in the thesis.	The author deals only tangentially with the evaluation of the results.	The author touches on the evaluation of the results, but not in sufficient detail.	The author evaluates (interprets) the results in sufficient detail.	3	3	3	
	Summary (conclusions)	Not included in the thesis.	The author deals only tangentially with the description of the main conclusions.	The author covers his main conclusions, but not in sufficient detail.	The author provides a systematic presentation of the main conclusions, referring back to the problem and objectives raised in the introduction.	3	3	3	
Thesis writing style, clarity, format	Structure and scope of the thesis	The structure of the thesis is confusing, the length of the chapters is disproportionate, and the length of the thesis is inadequate.	The thesis structure is adequate, the length of the thesis is not.	The structure of the thesis is adequate, with minor disproportions in terms of its structure, and the length of the thesis is adequate.	The structure of the thesis is clear and proportionate, with possible minor errors, the length of the thesis is adequate.	3	3	3	
	Readability, style	Incorrect style, spelling mistakes.	The style is acceptable, scattered typos and spelling errors.	Proper style, few typos.	Readable style, negligible number of spelling errors.	3	3	3	
	Figures, tables, equations, references	The quality of the figures/tables/equations is not adequate, their numbering and references in the text are missing.	The quality of the figures/tables/equations is acceptable, their numbering and references in the text are incorrect or incomplete.	The quality of the figures/tables/equations, their numbering and references in the text are appropriate.	The quality of the figures/tables/equations, their numbering and references in the text are good, with negligible errors.	3	3	3	
	Formatting: page breaks, list of figures and tables, table of contents, Harvard references	Incorrect formatting, missing lists, missing references.	Formatting errors, incomplete lists, incomplete references.	Formatting is correct, only minor errors in the list and references.	Neat formatting, minor errors in the list and references.	3	3	3	
Oral defense (presentation and professional discussion)	Presentation skills	Bad presenter (lack of confidence, confused presentation).	Acceptable, but below average.	Average.	Good.				3
	Structure, content quality of presentation	The lecture does not help the understanding of the topic, the content elements are confused.	The presentation helps to understand the topic, some content elements are incomplete.	The presentation helps to understand the topic, the structure and content of the presentation are of an average standard.	Clean, clearly structured performance, good quality with content.				3
	Discussion skills closely related to the thesis	Presenter cannot answer basic questions.	Presenter gives an answer, but it is either partially wrong or does not answer the question.	Presenter gives satisfactory answers to the questions asked.	Presenter gives good answers to the questions asked, and supports the points of discussion with appropriate professional arguments.				3

Master thesis evaluation matrix

- Weights
  - University advisor and outside advisor (optional) – 25%
  - Reviewer – 25 %
  - Final exam committee – 50 %
- Evaluation matrix will be provided for the student
- Results based on the evaluation matrix are recommended
- Final decision made by the final exam committee

Thesis content elements

- Evaluated by: university/outside (optional) advisor, reviewer
- Criteria:

Task difficulty
Problem, goals
Use of literary sources
Method, data collection
Results
Evaluation and critical review of results (discussion)
Summary (conclusions)

Thesis writing style, clarity, format

- Evaluated by: university/outside (optional) advisor, reviewer
- Criteria:

Structure and scope of the thesis
Readability, style
Figures, tables, equations, references
Formatting: page breaks, list of figures and tables, table of contents, Harvard references

Oral defense (presentation and professional discussion)

- Evaluated by: Final exam committee
- Criteria

Presentation skills
Structure, content quality of presentation
Discussion skills closely related to the thesis

Example
Results

0 - The presentation of results is confusing and relevance of the figures/tables is questionable.

1 - The presentation of the results is difficult to follow and not obvious, the figures/tables help understanding to a limited extent.

2 - The results are properly presented by the author, the figures/tables partly help the interpretation of the results.

3 - The presentation of the results is structured logically by the author, with adequate detail. The figures/tables used greatly aid interpretation.

Diploma certificate grading

- Final thesis grade (40%)
- GPA (40%)
- Complex exam (20%)
  - 5 topics will be determined by the university advisor in advance
  - 2 topics will be randomly picked at the final exam

Recommendations

- Read the literature!
- Get acquainted with the current issues that professionals are dealing with!
- Start working on the thesis in time!
- Leave some time for „digesting” the results!
- Your name will be on the cover page! You’re the author!

Topic areas and advisors
Transportation Infrastructure Engineering
Roads

Advisor	Topic
Attila Borsos	Traffic safety, Car/bicycle simulation studies
Emese Makó	Bicycle and pedestrian safety, infrastructure design
Csaba Koren	Traffic safety, road design
Gabriella Kosztolányi-Iván	Road design
Dániel Miletics	Traffic safety, traffic engineering
Richárd Nagy	Pavement design, Road construction materials
Petra Szakonyi	Sustainable settlements

Topic areas and advisors
Transportation Infrastructure Engineering
Railways

Advisor	Topic
Szabolcs Fischer	1. Investigation of the fragmentation of granular materials for transport construction 2. Investigation of the inner shear resistance of granular materials for transport construction 3. Investigation of energy consumption of electric and diesel locomotives and multiple units 4. Driver Assistant System (DAS) in rail transportation 5. Effects of the driving habitus of drivers on energy consumption of electric and diesel rail locomotives and multiple units 6. The application of DIC (Digital Image Correlation) in civil engineering 7. Application of GCCMs (Geosynthetic Cementitious Composite Mats) in transport construction

Topic areas and advisors
Water Resources Engineering

Advisor	Topic
Katalin Bene	Watershed hydrological modeling Modeling water movement, water budget, recharge, and plant impact in the unsaturated zone
Gergely Ámon	Channel flow modeling Flood protection modeling, flood risk analyses
Máté Chappon	Lake water budget determination using traditional and new technologies Ecosystem services in floodplains and their potential to improve water quality
Attila Kálmán	Multi-purpose utilization of rainwater Blue-green infrastructure design, economic evaluation, and lifetime impact assessment

Topic areas and advisors
Geotechnical Engineering

Advisor	Topic
Ákos Tóth	Tunnels
Orsolya Kegyes-Brassai	Earthquake risk assessment
Edina Koch	Geotechnical finite element modeling Design and modeling of ground improvement Geotechnical aspects and modeling of levees
Ákos Wolf	Design of retaining structures Design of foundation Geotechnical finite element modelling Analysis of behaviour of geotechnical structure, parameter study
Richard Ray	Developing a laboratory procedure to determine SWCC in low-suction soils. Applying p-y/t-z analysis software to field tests to back calculate p-y and t-z curves for Hungarian soils. Resonant Column/Torsional Simple Shear testing of compacted soils.

Thank you for your attention!