



Appendix B - Syllabus - Bachelor Thesis

Competence field	Bachelor Thesis
Module designation	Bachelor Thesis
Code, if applicable	100134
Subtitle, if applicable	
Semester(s) in which the module is taught	8 th semester
Person responsible for the module	Associate Professor LIAO Aihua
Lecturer	Professor YANG Jian Professor ZHENG Shubin Associate Professor LIAO Aihua Associate Professor SHI Wei Associate Professor HU Dingyu
Language	Chinese
Relation to curriculum	The course is scheduled after all core courses and is designed to consolidate the theoretical knowledge acquired and to strengthen the link between theory and practice. As the final major activity, Bachelor Thesis requires students to apply their knowledge to solve a comprehensive and technical problem related to rail vehicle.
Type of teaching, contact hours	Target students: seniors of Process Equipment and Control Engineering program Type of teaching: theoretical teaching; computer practice Contact hours: 12 weeks Theoretical teaching, experiment/practice teaching and computer practice are arranged by instructors on the basis of each student's specific project Size of class: each instructor teaches 3-7 students
Workload	Total workload = 900 hours
Credit points	30.0
Requirements according to the examination regulations	Students complete literature translation and project tasks (experiment, design or calculation) required by instructor; pass mid-term test; complete thesis.
Recommended prerequisites	Complete all theoretical courses
Module objectives/intended learning outcomes	Module objectives/intended learning outcomes The goal and task of the graduation project is to enable students to integrate and apply their theoretical knowledge and skills to analyze and solve practical vehicle engineering related problems. Knowledge: Demonstrate understanding of knowledge learned from the



	<p>program as well as methods of literature review and research.</p> <p>Skills:</p> <ol style="list-style-type: none"> 1. Demonstrate the ability to conduct research and literature search and studies; 2. Demonstrate the ability to analyze theories and design/experiment protocols, and develop hardware and software; 3. Demonstrate the ability to comprehensively process and analyze data; 4. Demonstrate the ability to write thesis, design specifications and abstracts (foreign language). <p>Competence:</p> <p>Students shall acquire the ability to follow the development trend of professional and related fields, to study in depth, to acquire comprehensive interdisciplinary knowledge and skills related to the program, to apply the knowledge and modern engineering tools, to have a certain degree of innovation and engineering literacy in design, to consider economic, environmental, legal, safety, health, ethical and other factors, and to have teamwork and communication skills.</p>
<p>Contents</p>	<p>Bachelor Thesis (16 weeks)</p> <p>Stage 1: Topic and Bachelor Thesis Assignment Letter*</p> <p>Instructor of the graduation project must declare the topic one semester before commencement of the bachelor thesis and fill in the "Topic Review Form of Bachelor Thesis" and submit it to the faculty for approval. On this basis, the "Thesis Assignment Letter" shall be completed and issued to students at the beginning of the graduation project.</p> <p>Stage 2: Project research and literature review* (2 weeks)</p> <p>Under guidance of the instructor, students will conduct research on the topic they are working on, consult relevant Chinese and foreign scientific and technical literature, complete a translation of a foreign document (about 5,000 characters), and prepare a literature review report accordingly.</p> <p>Stage 3: Determination of a general plan of the project** (1 week)</p> <p>According to the requirements of the Assignment Letter, students shall make a general plan under the guidance of instructors. The general plan should contain the following contents: The priorities, difficulties and innovations of the project, basic theories and fundamental skills involved; stages of implementation, tasks, technical indicators and preliminary program for each stage; external conditions required for the implementation: including computers, software, hardware, experimental devices, instruments, equipment and premises, support from departments and units;</p>



	<p>technology outputs to be submitted in order to achieve the ultimate goal of the project include: computer program, experimental setup with data, engineering drawings, and conclusions of theoretical studies.</p> <p>Stage 4: Implementation of the general project plan** (10 weeks)</p> <p>Implementation of the thesis plan marks the most important stage throughout the entire graduation project. It is implemented in stages according to the general plan, which shall be continuously improved according to actual implementation. During this period, due to different sources and nature of the topic, the instructor shall give targeted guidance. For the graduation project of the program, special attention shall be paid to: theoretical research and engineering applications; rigorous evidence seeking and bold innovation, and enhancement of computer applications and hands-on laboratory skills. Students' progress will be reviewed at mid-term.</p> <p>Stage 5: Writing thesis for the graduation project** (2 weeks)</p> <p>The graduation thesis reflects outcome of the graduation project and should be completed independently by the student under guidance of instructor.</p> <p>The format of the thesis must be in strict accordance with the uniform format issued by the Teaching Affairs Office of the University. The bachelor thesis and its attachments shall be submitted in written and electronic version on time.</p> <p>Stage 6: Review and defense of the bachelor thesis (1 week)</p> <p>After completing the bachelor thesis, the instructor will review, revise and grade it. Once submitted, one or two faculty members will be appointed by the departmental thesis defense team to evaluate and grade the thesis.</p>
<p>Study and examination requirements and forms of examination</p>	<p>Final score includes: Attendance (30%), periodic assessment (30%) final assessment (graduation defense) (40%).</p> <ol style="list-style-type: none"> 1. Attendance (30%): Student's initiative and ability throughout the comprehensive design process will be assessed and the instructor will give the grade 2. Periodic assessment (30%): The enterprise and faculty members will review the design reports submitted by the student and give a grade accordingly. 3. Final assessment (40%): Student's defense grade following the comprehensive design process
<p>Media employed</p>	<p>Multimedia computers, projectors, laser pointers, blackboards, chalks</p>



Reading list	<p>1. Required books</p> <p>[1] TAN Fuxing, QIU Weihua, FANG Yu. <i>Introduction to Urban Rail Transit</i>. Beijing: China Railway Publishing House, 2017</p> <p>[2] FANG Yu, SHI Wei, SHI Xuan, et al. <i>Introduction to Urban Railway Vehicle</i>. Beijing: China Railway Publishing House, 2012.</p> <p>[3] WANG Boming. <i>Urban Rail Transit Vehicle Engineering</i>. Chengdu: Southwest Jiaotong University Press, 2007.</p> <p>[4] Edited by XU Guoqing. <i>Electric Power Transmission of Urban Rail Transit Vehicle</i>. Shanghai: Shanghai Science and Technology Press, 2003.</p> <p>[5] ZHENG Shubin, ZHU Wenliang, CHAI Xiaodong. <i>Network Control Technology of Urban Railway Train</i>, Beijing: China Railway Publishing House, 2017</p> <p>[6] YAO Huiming, TAN Fuxing. <i>Braking System of Urban Rail Transit Vehicle</i>, Beijing: China Railway Publishing House, 2018.</p>
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Note: In Contents,** for key knowledge points, * for important knowledge points, and the rest for general information.