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Module name Introduction to Automotive Service Engineering

Module name	Introduction to Automotive Service Engineering
Module level	Undergraduate
Code	3080208225
Courses	Professional Education
Semester	Fall
Contact person	Bai, LiMin
Lecturer	Bai, LiMin, Zhao Yiming
Language	Chinese
Course Nature and Semester Offered	compulsory, 1 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, group discussion, simulation; 2 hours/week		
Work load (Total Weekly Study Hours)	<p>1. Total Workload: 28 hours = 16 lecture hours + 12 self-study hours, to be completed over 8 weeks</p> <p>2. Lectures: 2 hours per week, including theoretical teaching, discussions, etc.</p> <p>3. Self-study: 1.5 hours per week, including online learning, discussions, assignments, etc.</p>		
Credit points ETCS	1		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	None		
	Course Learning Outcome (CLO) (suggested 3-4 items)	Description	Supported Programme Learning Objective (PLOs)

Learning outcomes and their corresponding PLOs			
	CLO-1 Learning Outcome -1	Develop a correct worldview, outlook on life and values; possess good professional ethics and dedication, a strong sense of collective honor, and team spirit.	R7、 R8
	CLO-2 Learning Outcome -2	Be able to explain the content and requirements of the Automotive Service Engineering major’s training plan, and describe the most fundamental concepts and terminology of automotive service engineering.	R7、 R9
	CLO-3 Learning Outcome-3	Be able to explain learning methods for theoretical courses in Automotive Service Engineering, describe learning strategies for practical courses, and introduce extracurricular scientific and technological activities related to the major.	R9、 R10

Content	<p>Introduction to Automotive Service Engineering is a compulsory course for undergraduate students majoring in Automotive Service Engineering. Through the teaching of this course, students will be able to describe the basic introductory knowledge of the Automotive Service Engineering major, the training objectives of the major, a brief history of automobile development, and an overview of the automotive industry; initially identify the basic structure and working principles of automobiles; have a preliminary understanding of cutting-edge technologies in the field of Automotive Service Engineering; and finally gain an initial understanding of learning methods, postgraduate entrance exams, and employment in this major. This course helps students become more proactive in learning professional knowledge.</p> <p>Knowledge Module 1: Understanding the Automotive Service Engineering Major (Weighting Factor 2/16, Level: Understanding)</p> <p>Knowledge Module 2: Overview of Domestic and International Automotive Industry (Weighting Factor 2/16, Level: Memorization)</p> <p>Knowledge Module 3: Introduction to Automobiles (Weighting Factor 4/16, Level: Understanding)</p> <p>Knowledge Module 4: Frontier Automotive Technologies (Weighting Factor 2/16, Level: Understanding)</p> <p>Knowledge Module 5: Service Connotation of the Automotive Service Engineering Major (Weighting Factor 2/16, Level: Memorization + Understanding)</p> <p>Knowledge Module 6: Guidance on University Study Methods (Weighting Factor 2/16, Level: Application)</p> <p>Knowledge Module 7: Employment and Further Studies in Automotive Service Engineering Major (Weighting Factor 2/16, Level: Analysis)</p>
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Study and examination requirements and forms of examination	<p>The course assessment includes process evaluation (50%) and a final project (50%). Among them, the process evaluation includes: class performance 40% + regular assignments 60%. The final project lasts 200 minutes.</p>
Media employed	<p>Multimedia, online websites, Hengxing Capability Platform, Xuexitong</p>
Reading list	<p>[1] Zhang Guofang. Introduction to Automotive Service Engineering [M], Wuhan: Wuhan University of Technology Press, 2008.</p> <p>[2] Lu Zhixiong. Introduction to the Automotive Service Engineering Major [M], Peking University Press, 2009.</p> <p>[3] Qiu Wencai. General Theory of Automotive Services [M], China Machine Press, 2021.</p> <p>[4] Liu Zhen, Wang Minwang, Wu Huawei. Fundamentals of Automotive Service Engineering [M], Nanjing University Press, 2021.</p> <p>[5] Ye Fang, Deng Changyong. Automotive Service Concepts and Skills [M], Chongqing University Press, 2015.</p> <p>[6] Ma Qihua. Exploration and Practice of the “Three-Internship” Model in Automotive Service Engineering [J]. Laboratory Research and Exploration, 2018, 37(01): 223–226.</p> <p>[7] Wei Hui. Constructing a Practice Teaching System for Automotive Service Engineering Based on Project-Based Learning [J]. Vocational Education Forum, 2010(18): 67–70.</p>
Revision Date	<p>July 2024</p>

Module name Engineering Drawing

Module name	Engineering Drawing
Module level	Undergraduate
Code	3080601204
Courses	Professional Education
Semester	Fall
Contact person	Hongwei Cui
Lecturer	Hongwei Cui, Kai Yu, Yi Song
Language	Chinese
Course Nature and Semester Offered	Compulsory , 1th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, group discussion, simulation; 2 hours/week		
Work load (Total Weekly Study Hours)	1. Total Workload: 56 hours = 32 lecture hours + 24 self-study hours, to be completed over 16 weeks 2. Lectures: 2 hours per week, including theoretical teaching, practical teaching, discussions, etc. 3. Self-study: 1.5 hours per week, including online learning, discussions, drawings, etc.		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Introduction to Automotive Service Engineering		
Learning	Course Learning Outcome (CLO) (suggested 3-4 items)	Description	Supported Programme Learning Objective (PLOs)

<p>outcomes and their corresponding PLOs</p>			
	<p>CLO-1 Learning Outcome -1</p>	<p>Be able to apply knowledge of mathematics and natural sciences, integrate content related to engineering drawing, correctly use drawing tools and instruments, analyze commonly used geometric construction methods, and express spatial geometric forms using projection methods as well as illustrate the basic theories and methods for solving spatial geometric problems through graphical representation.</p>	<p>R1</p>
	<p>CLO-2 Learning Outcome -2</p>	<p>Be able to apply knowledge of mathematics and natural sciences, integrate content related to engineering drawing, analyze the drawing, reading, and dimensioning of combined solids; acquire preliminary skills in reading part drawings and assembly</p>	<p>R3、 R7</p>

		<p>drawings. Through the process of drawing, develop a meticulous attitude and a sense of rules.</p>	
	<p>CLO-3 Learning Outcome -3</p>	<p>Be able to analyze various views, simple sectional views (mainly with a single cutting plane), and simple cross-sectional drawings; summarize commonly used simplified drawing methods and other standardized drawing techniques; describe the basic theoretical knowledge of standard and commonly used parts, identify drawing and marking methods of threads, bolts, screws, nuts, washers, and their connections. Be able to explain the standard drawing methods for spur gears and their meshing, and describe the drawing conventions for keys, pins, and springs (compression springs). Drawing processes must strictly follow national drawing and technical standard systems.</p>	<p>R5、 R7</p>

	CLO-4 Learning Outcome -4	Be able to analyze engineering drawings that meet the technical feasibility, economic rationality, and safety/environmental protection requirements of industrial production during the drawing process, while considering design cost and other factors.	R6、R8
Content	<p>This course is a compulsory fundamental course for students majoring in Automotive Service Engineering. Through the study of this course, students are required to learn how to use projection and other methods to solve spatial geometry problems. Starting from actual professional needs, students should be able to analyze the formation and drawing methods of axonometric projection, learn to read and draw combination solids, and apply dimensioning techniques; master the representation of mechanical parts used in actual production and learn the drawing methods of mechanical blueprints, thus laying a solid foundation for future work in the engineering field.</p> <p>Knowledge Module 1: Basic knowledge and skills of drawing (Weighting Factor: 2/32, Level: Remember–Understand)</p> <p>Knowledge Module 2: Basic knowledge of projection (Weighting Factor: 2/32, Level: Remember–Apply)</p> <p>Knowledge Module 3: Projection of points, straight lines, and planes (Weighting Factor: 4/32, Level: Remember–Analyze)</p> <p>Knowledge Module 4: Relative positions of straight lines and planes (Weighting Factor: 4/32, Level: Remember–Understand)</p> <p>Knowledge Module 5: Projection of solids (Weighting Factor: 2/32, Level: Remember–Understand)</p>		

	<p>Knowledge Module 6: Axonometric projection drawings (Weighting Factor: 2/32, Level: Understand)</p> <p>Knowledge Module 7: Common expression methods of machine parts (Weighting Factor: 4/32, Level: Understand + Apply)</p> <p>Knowledge Module 8: Standard and commonly used parts (Weighting Factor: 4/32, Level: Remember–Analyze)</p> <p>Knowledge Module 9: Part drawings (Weighting Factor: 4/32, Level: Remember + Analyze)</p> <p>Knowledge Module 10: Assembly drawings (Weighting Factor: 4/32, Level: Remember–Apply)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and final examination (50%). continuous assessment includes: daily performance 10% + regular assignments 20% + stage tests 20%. The final examination is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Hengxing Capability Platform, Xuexitong</p>

<p>Reading list</p>	<p>[1] Chen Liang, Wu Lingling, Zhang Ruiqiu, et al. Teaching reform and practice of engineering drawing based on system engineering perspective [J]. Journal of Graphics, 2018, 39(06): 1214–1219.</p> <p>[2] Chang Yanyan, Wang Hechun, Xu Guoyu. Design and innovation in engineering graphics—A case study of University of Wollongong [J]. Mechanical Design, 2019, 36(S2): 147–149.</p> <p>[3] Fan Sichong. Descriptive Geometry and Mechanical Drawing (2nd Edition) [M]. Beijing: China Machine Press, 2023.</p> <p>[4] Zheng Jiexiang, Liu Yongtian. Descriptive Geometry and Mechanical Drawing [M]. Inner Mongolia: Inner Mongolia Science and Technology Press, 2002.</p> <p>[5] He Bin. Mechanical Drawing (5th Edition) [M]. Beijing: Higher Education Press, 2005.</p> <p>[6] He Peibin, Li Qimin. Fundamentals of Engineering Drawing [M]. Chongqing University Press, 2021.</p> <p>[7] Cheng Ke. Mechanical Drawing [M]. Chemical Industry Press, 2023.</p>
<p>Revision Date:</p>	<p>July 2024</p>

Module name Electrotechnics

Module name	Electrotechnics
Module level	Undergraduate
Code	3080201204
Courses	Professional Education
Semester	Spring
Contact person	LI Aiqin
Lecturer	LI Aiqin , Yiming Zhao
Language	Chinese
Course Nature and Semester Offered	compulsory , 2th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lectures, demonstrations, simulations, exercises, on-site teaching, 4 hours/week		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 112 hours = 64 lecture hours + 48 self-study hours, to be completed in 16 weeks</p> <p>2. Lectures: 4 hours per week, including lectures, discussions, and Q&A</p> <p>3. Self-study: approximately 3 hours per week, including pre-class preparation, post-class exercises, and review.</p>		
Credit points ETCS	4		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Advanced Mathematics, AI		
Learning	Course Learning Outcome (CLO) suggested 3–4	Description	Supported Programme Learning Objective (PLOs)

**outcomes and
their
corresponding
PLOs**

<p>CLO-1 Learning Outcome-1</p>	<p>Be able to memorize the basic laws and theorems of electric circuits, use various methods to analyze complex circuits, compare single-phase AC circuits with different load characteristics, summarize the characteristics of three-phase symmetrical AC power and the star and delta connections of three-phase loads, describe the basic knowledge of magnetic circuits, the working principles and basic functions of transformers, describe the structure and working principles of three-phase AC motors, as well as the starting, speed regulation, and braking methods of motors, and the basic circuits of relay and contactor control.</p>	<p>R1</p>
<p>CLO-2 Learning Outcome-2</p>	<p>Be able to apply literature retrieval and use electrical engineering knowledge to solve circuit engineering problems, and summarize the results in a written report.</p>	<p>R2</p>

<p>CLO-3 Learning Outcome-3</p>	<p>Possesses a rigorous scientific spirit, innovative awareness, and a sense of national craftsmanship; demonstrates good professional ethics; gradually develops a passion for working in this professional field.</p>	<p>R1</p>
<p>CLO-4 Learning Outcome-4</p>	<p>Be able to anticipate the current state and development trends of this course and related disciplines; has innovation, entrepreneurship, and systems thinking capabilities; possesses lifelong learning ability; demonstrates certain competitiveness in applied fields related to electrical engineering and can perform independently in related professional technical or management areas.</p>	<p>R2</p>

Content	<p>This course is a fundamental required course for students majoring in Automotive Service Engineering. It mainly includes the basics of circuits and circuit analysis methods. The course is highly fundamental, logical, and applicable, and adopts a hybrid online and offline teaching model. Through this course, students will be able to memorize and explain basic circuit knowledge and apply fundamental circuit analysis methods to solve simple circuit problems. It cultivates students' rigorous scientific attitudes, promotes lifelong learning habits, and builds a certain level of professional literacy. The circuit analysis methods, motor, and relay control knowledge covered in this course are essential for subsequent courses.</p> <p>Knowledge Module 1: Basic concepts and basic laws of circuits (Weighting Factor 6/64, Level: Memorization)</p> <p>Knowledge Module 2: Circuit analysis methods (Weighting Factor 6/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 3: Sinusoidal AC circuits (Weighting Factor 6/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 4: Three-phase circuits (Weighting Factor 6/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 5: Magnetic circuits and iron-core coil circuits (Weighting Factor 2/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 6: Common semiconductor devices (Weighting Factor 4/64, Level: Memorization + Understanding)</p> <p>Knowledge Module 7: Basic amplifier circuits (Weighting Factor 4/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 8: Integrated operational amplifier circuits (Weighting Factor 6/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 9: Feedback in amplifier circuits (Weighting Factor 6/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 10: Logic gates and combinational logic circuits (Weighting Factor 10/64, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 11: Flip-flops and sequential logic circuits (Weighting Factor 8/64, Level: Memorization + Understanding + Analysis)</p>
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Study and examination requirements and forms of examination	<p>The course assessment includes process assessment (50%) and a final examination (50%), where process assessment consists of: class participation 15% + homework 15% + experiments and practical training 20%. The final is a 100-minute closed-book exam.</p>
Media employed	<p>Computers, online websites, Hengxing Ability Platform, Xuexitong</p>
Reading list	<p>[1] Electrical Engineering (8th Edition) Volume I, Qin Zenghuang, Higher Education Press, April 2008</p> <p>[2] Electrical Engineering (8th Edition) Volume II, Qin Zenghuang, Higher Education Press, April 2008</p> <p>[3] Digital Electronic Technology (5th Edition), Zhou Liangquan, Fang Xiangqiao, Higher Education Press, December 2023</p> <p>[4] Analog Electronic Technology, Zhang Huirong, Lu Weiqi, Mechanical Industry Press, July 2022</p> <p>[5] Circuits (5th Edition), Qiu Guanyuan, Higher Education Press, 2015</p> <p>[6] Shao Ligeng, Fu Weisheng, Fu Yanping, et al. "Using CADe_SIMU 3.0 Simulation Software to Assist Teaching of Relay Contact Control Circuits" [J]. Experimental Technology and Management, 2023, 40(01):175-179</p> <p>[7] Cheng Jie, Qin Weigang, Ma Xin. "Application of BOPPPS Model in Electrical Engineering Experiment Teaching" [J]. Laboratory Research and Exploration, 2024, 43(09):129-134</p>
Revision Date	<p>July 2024</p>

Module name Fundamentals of Engineering Materials and Mechanical Manufacturing

Module name	Engineering Materials and Fundamentals of Mechanical Manufacturing
Module level	Undergraduate
Code	3080201203
Courses	Professional Education
Semester	Fall
Contact person	Rong He
Lecturer	Rong He, Fang Wang
Language	Chinese
Course Nature and Semester Offered	compulsory, 3 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, case analysis, experiments, discussion — 3 hours/week		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 84 hours = 48 hours of lectures + 36 hours of self-study, completed over 16 weeks</p> <p>2. Lectures: 3 hours per week, including theoretical teaching, discussion, Q&A, and experiments</p> <p>3. Self-study: Approximately 2.25 hours per week, including online learning, discussions, assignments, etc.</p>		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>University Physics, Linear Algebra, Advanced Mathematics A II</i>		
Learning outcomes and	Course Learning Outcomes (CLOs) (suggested: 3–4)	Descriptions	Supported Programme Learning Objective (PLOs)

their corresponding PLOs	Learning Outcome-1	Be able to describe the general properties of commonly used metallic materials; understand the essence and process characteristics of forging production, and thereby make preliminary selections of forging methods for parts or products.	R1
	Learning Outcome-2	Be able to understand the essence and characteristics of casting production; selection of blanks; the essence of welding and the features and application ranges of several common welding methods.	R2
	Learning Outcome-3	Be able to analyze the crystal structure and solidification process of metals; the iron-carbon alloy phase diagram; grades, properties, characteristics, and application scopes of casting alloys; how casting properties of alloys affect the structural manufacturability of castings; the essence and process characteristics of machining, as well as their roles in mechanical manufacturing.	R2

<p>Content</p>	<p><i>Fundamentals of Engineering Materials and Mechanical Manufacturing</i> is a required foundational course for the Automotive Service Engineering major. The main content includes an introduction to engineering materials and manufacturing technologies, basic properties and applications of engineering materials, heat treatment of steel, metallic materials, casting forming technologies, plastic forming processes of materials, welding forming technologies, fundamentals of cutting machining, methods and equipment for metal cutting machining, analysis of typical surface processing methods, basic knowledge of mechanical processing technology, and special processing. Through studying this course, students will be able to explain the classification and properties of engineering materials and the manufacturing processes of parts during machining. This lays a foundation for subsequent courses and further enhances the ability to analyze and solve engineering problems.</p> <p>Knowledge Module 1: Introduction to Engineering Materials and Manufacturing Technologies (Weighting Factor 2/48, Level: Understanding)</p> <p>Knowledge Module 2: Basic Properties and Applications of Engineering Materials (Weighting Factor 6/48, Level: Memorization-Understanding)</p> <p>Knowledge Module 3: Heat Treatment of Steel (Weighting Factor 4/48, Level: Memorization-Analysis)</p> <p>Knowledge Module 4: Metallic Materials (Weighting Factor 6/48, Level: Memorization + Application)</p> <p>Knowledge Module 5: Casting Forming Technologies (Weighting Factor 4/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 6: Plastic Forming Processes of Materials (Weighting Factor 4/48, Level: Memorization-Analysis)</p> <p>Knowledge Module 7: Welding Forming Technologies (Weighting Factor 4/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 8: Fundamentals of Cutting Machining (Weighting Factor 4/48, Level: Memorization-Understanding)</p> <p>Knowledge Module 9: Methods and Equipment for Metal Cutting Machining</p>
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	<p>(Weighting Factor 4/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 10: Analysis of Typical Surface Processing Methods (Weighting Factor 2/48, Level: Analysis)</p> <p>Knowledge Module 11: Basic Knowledge of Mechanical Processing Technology (Weighting Factor 4/48, Level: Memorization-Understanding)</p> <p>Knowledge Module 12: Special Processing (Weighting Factor 4/48, Level: Memorization-Understanding)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and final exam (50%). The continuous assessment consists of: class performance 30%, homework 30%, and laboratory experiments 40%. The final exam is a closed-book exam lasting 100 minutes.</p>

Media employed	Multimedia, laboratory, online websites, Stellar Competency Platform, Xuexitong
Reading list	<p>[1] Tao Yiyi. Fundamentals of Engineering Materials and Mechanical Manufacturing [M]. Beijing: Chemical Industry Press, 2012.</p> <p>[2] Ming Zhe, Yu Donglin, Zhao Liping. Fundamentals of Engineering Materials and Mechanical Manufacturing [M]. Beijing: Tsinghua University Press, 2012.</p> <p>[3] Zhang Lina, Zhang Jianjun, Wang Hong. Engineering Materials [M]. Beijing: Chemical Industry Press, 2024.</p> <p>[4] Liu Dezhi, Li Hao, Li Xuemei. Fundamentals of Engineering Materials and Mechanics [M]. Beijing: Chemical Industry Press, 2022.</p> <p>[5] Wang Shunxing. Mechanical Engineering Materials [M]. Beijing: Chemical Industry Press, 2019.</p> <p>[6] Sui Gang. Exploration on Cultivating Innovative Talents in Polymer Materials and Engineering Based on Integration of Science and Education [J]. Polymer Bulletin, 2025, 38(03): 509-514.</p> <p>[7] Sun Ruixue. Reform Exploration of Practical Teaching in Metal Materials Engineering under the Background of New Engineering [J]. Laboratory Research and Exploration, 2025, 03(11): 4.</p>
Revision Date	July 2024

Module name Engineering Mechanics

Module name	Engineering Mechanics
Module level	Undergraduate
Code	3080208215
Courses	Professional Education
Semester	Fall
Contact person	Tao Liu
Lecturer	Tao Liu , Chengjie Fu
Language	Chinese
Relation to curriculum	compulsory, 3 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, case analysis, and laboratory experiments, 4 class hours per week		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 112 hours = 64 hours of lectures + 48 hours of self-study, completed over 16 weeks 2. Teaching: 4 class hours per week, including theoretical teaching, discussions, and experiments 3. Self-study: approximately 3 hours per week, including online learning, discussions, and assignments 		
Credit points ETCS	4		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>University Physics, Advanced Mathematics A</i>		
	Course Learning Outcome (CLO) (suggested 3–4)	Description	Supported Programme Learning Objective (PLOs)

<p>Learning outcomes and their corresponding PLOs</p>			
	<p>Learning Outcome -1</p>	<p>Students will be able to explain the fundamental concepts, principles, and methods of engineering mechanics, and analyze the basic theories of statics, dynamics, and mechanics of materials.</p>	<p>R1</p>
	<p>Learning Outcome -2</p>	<p>Be able to analyze practical engineering problems using mechanical methods, cultivating students' logical thinking and innovative abilities.</p>	<p>R1、 R4</p>
	<p>Learning Outcome -3</p>	<p>Be able to apply common mechanical structures and their principles, analyze their applications in mechanical design, foster critical thinking and innovation, and enhance problem-solving skills.</p>	<p>R4</p>

	Learning Outcome -4	Cultivate students' teamwork spirit and practical problem-solving abilities, and improve their overall competence.	R8
Content	<p>This course is a fundamental professional course for the Automotive Service Engineering major. It not only serves as the theoretical foundation for subsequent courses, but also stands as a discipline with a complete and evolving system, widely applied in many fields of engineering and technology. The purpose of this course is to enable students to apply basic knowledge of statics, mechanics of materials, kinematics, and dynamics, and to initially learn to use these theories and methods to analyze and solve practical engineering problems. It lays a solid foundation in mechanics for follow-up specialized courses.</p> <p>Knowledge Module 1: Fundamentals of Statics (Weighting Factor: 2/64, Level: Understanding)</p> <p>Knowledge Module 2: Coplanar Force Systems (Weighting Factor: 8/64, Level: Understanding–Analysis)</p> <p>Knowledge Module 3: Friction and Spatial Force Systems (Weighting Factor: 6/64, Level: Understanding)</p> <p>Knowledge Module 4: Tension, Compression, and Shear (Weighting Factor: 6/64, Level: Memorization–Application)</p> <p>Knowledge Module 5: Torsion (Weighting Factor: 8/64, Level: Memorization–Analysis)</p> <p>Knowledge Module 6: Internal Forces in Bending (Weighting Factor: 4/64, Level: Understanding–Application)</p> <p>Knowledge Module 7: Bending Stress and Strength Theory (Weighting Factor: 8/64, Level: Memorization–Application)</p> <p>Knowledge Module 8: Combined Deformation and Buckling of Compression</p>		

	<p>Members (Weighting Factor: 4/64, Level: Understanding)</p> <p>Knowledge Module 9: Particle Motion (Weighting Factor: 6/64, Level: Memorization–Application)</p> <p>Knowledge Module 10: Rigid Body Motion (Weighting Factor: 8/64, Level: Understanding–Analysis)</p> <p>Knowledge Module 11: General Theorems of Dynamics (Weighting Factor: 2/64, Level: Understanding–Application)</p> <p>Knowledge Module 12: Methods of Dynamics and Statics (Weighting Factor: 2/64, Level: Memorization)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment consists of continuous assessment (50%) and a final examination (50%). The continuous assessment includes: regular performance (30%) + homework (30%) + laboratory practice (40%). The final examination is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Multimedia, online websites, Xingxing Competency Platform, and Xuexitong Chinese University MOOC website: https://www.icourse163.org</p> <p>Zhihuishu Online Learning Platform: https://www.zhihuishu.com</p> <p>China Machine Press website: http://www.cmpedu.com/index.htm</p> <p>51zxw (Self-learning) website: https://www.51zxw.net/</p>

<p>Reading list</p>	<p>[1] Xi Shaozhong. Engineering Mechanics (4th Edition) [M]. Beijing: Higher Education Press, 2018.6.</p> <p>[2] Tang Jingjing. Engineering Mechanics (3rd Edition) [M]. Beijing: Higher Education Press, 2017.6.</p> <p>[3] Li Hailong. Engineering Mechanics [M]. Beijing: Publishing House of Electronics Industry, 2013.</p> <p>[4] Song Xiaoming. Engineering Mechanics [M]. Beijing: Chemical Industry Press, 2024.</p> <p>[5] Sun Yan, Li Yanjun. Engineering Mechanics [M]. Beijing: Chemical Industry Press, 2022.</p> <p>[6] Zhai Cheng. Ideological and Political Construction and Teaching Practice of “Engineering Mechanics Experiments” Course [J]. Laboratory Science, 2025, 28(01): 194–197.</p> <p>[7] Ding Yuan. Modular Teaching Strategy for Engineering Mechanics Courses in Universities under the Background of Emerging Engineering Education [J]. Modern Vocational Education, 2025(06): 177–180.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Mechanical Engineering Design

Module name	Mechanical Engineering Design
Module level	Undergraduate
Code	3080208202
Courses	Professional Education
Semester	Spring
Contact person	Xuelian Cheng
Lecturer	Xuelian Cheng, Xia Xiu
Language	Chinese
Course Nature and Semester Offered	compulsory, 4 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture-based teaching, case analysis method, and experimental method; 4 class hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total class hours: 112 hours = 64 hours of lectures + 48 hours of self-study, completed over 16 weeks 2. Lectures: 4 class hours per week, including theoretical instruction, discussions, and experiments 3. Self-study: 3 hours per week, including online learning, discussions, and assignments 		
Credit points ETCS	4		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Engineering Mechanics, Fundamentals of Engineering Materials and Mechanical Manufacturing</i>		
Learning	Course Learning Outcome (CLO) (Suggested 3-4 items)	Description	Supported Programme Learning Objective (PLOs)

outcomes and their corresponding PLOs			
	CLO-1 Learning Outcome -1	Be able to analyze the working principles, structural characteristics, structural design, and load-bearing capacity calculations of typical mechanical components; be able to use mechanical component manuals as well as relevant standards and specifications associated with this course to analyze the working principles of mechanical transmission devices and mechanical systems.	R1、 R2
	CLO-2 Learning Outcome -2	Be able to apply common mechanisms' working principles, structural characteristics, basic design theories, and calculation methods according to the requirements of mechanism problems; utilize standards, specifications, manuals, catalogs, and relevant technical materials to analyze and develop solutions for problems.	R2、 R3

	<p>CLO-3 Learning Outcome -3</p>	<p>Be able to apply experimental methods for common mechanisms and typical mechanical parts, acquire basic training in experimental skills, and develop a rigorous scientific attitude and good professional ethics, gradually cultivating a passion for work in the field.</p>	<p>R4</p>
	<p>CLO-3 Learning Outcome -4</p>	<p>Be able to describe maintenance methods related to common parts and mechanisms.</p>	<p>R6</p>
<p>Content</p>	<p><i>Mechanical Engineering Design</i> is a core professional course for the Automotive Service Engineering major. The course mainly introduces the working principles, structural characteristics, basic design theories, and calculation methods of common mechanisms and standard parts in general machinery. It also briefly covers relevant national standards and regulations associated with the course, providing students with the necessary theoretical foundation for studying professional mechanical equipment courses. Through this course, students will be able to describe maintenance methods for common parts, explain the working principles of these parts, analyze the basic characteristics and design methods of various commonly used mechanisms, select types of parts based on specific conditions, and perform simple strength or performance checks. Students will also gain the ability to use mechanical parts handbooks and related standards and regulations, and develop the skills to design simple mechanical devices, fostering good professional attitudes and qualities of innovation and entrepreneurship.</p> <p>Knowledge Module 1: Introduction (Weighting Factor 2/64, Level: Memorization)</p>		

	<p>Knowledge Module 2: Motion Diagrams and Degrees of Freedom of Planar Mechanisms (Weighting Factor 6/64, Level: Memorization-Application)</p> <p>Knowledge Module 3: Planar Linkage Mechanisms (Weighting Factor 6/64, Level: Understanding)</p> <p>Knowledge Module 4: Cam Mechanisms (Weighting Factor 4/64, Level: Memorization + Understanding)</p> <p>Knowledge Module 5: Intermittent Motion Mechanisms (Weighting Factor 2/64, Level: Memorization + Understanding)</p> <p>Knowledge Module 6: Connections (Weighting Factor 6/64, Level: Memorization -Application)</p> <p>Knowledge Module 7: Belt Drives and Chain Drives (Weighting Factor 6/64, Level: Memorization + Understanding)</p> <p>Knowledge Module 8: Gear Transmission (Weighting Factor 14/64, Level: Memorization - Analysis)</p> <p>Knowledge Module 9: Gear Trains (Weighting Factor 4/64, Level: Memorization + Understanding)</p> <p>Knowledge Module 10: Shafts (Weighting Factor 6/64, Level: Memorization - Application)</p> <p>Knowledge Module 11: Bearings (Weighting Factor 6/64, Level: Memorization)</p> <p>Knowledge Module 12: Couplings and Clutches (Weighting Factor 2/64, Level: Memorization)</p>
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Study and examination requirements and forms of examination	<p>Course assessment includes continuous assessment (50%) and final examination (50%). The continuous assessment consists of: daily performance 30%, homework 30%, and laboratory training 40%. The final examination is a closed-book exam lasting 100 minutes.</p>
Media employed	<p>Multimedia, laboratory, online websites, Stellar Competency Platform, Xuexitong</p>
Reading list	<p>[1] Chen Lide. Mechanical Engineering Design [M]. Beijing: Higher Education Press, 2020.</p> <p>[2] Zhu Longying. Mechanical Engineering Design [M]. Beijing: Machinery Industry Press, 2017.</p> <p>[3] Wang Dakang, Gao Guohua. Mechanical Engineering Design [M]. Beijing: Machinery Industry Press, 2020.</p> <p>[4] Sun Huan, Chen Zuomo. Principles of Machinery [M]. Beijing: Machinery Industry Press, 2020.</p> <p>[5] Wang Dakang, Wang Keshe. Mechanical Design Course Design [M]. Beijing: China Railway Publishing House, 2022.</p> <p>[6] Sun Jianfang. Application of Mobile Learning Platforms and Flipped Classroom in Teaching Mechanical Engineering Design [J]. Laboratory Research and Exploration, 2019, 38(05):177-180.</p> <p>[7] Qu Hui. Research and Application of Task-Driven Teaching Method in Mechanical Engineering Design [J]. Mechanical Design, 2018, 35(S2):333-335.</p>
Revision time	<p>July, 2024</p>

Module name Hydraulic and Pneumatic Transmission

Module name	Hydraulic and Pneumatic Transmission
Module level	Undergraduate
Code	3080201209
Courses	Professional Education
Semester	Fall
Contact person	Haitao Wang
Lecturer	Haitao Wang, Yi Song, Zhiyang Lian
Language	Chinese
Course Nature and Semester Offered	compulsory, 5 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, simulation, and laboratory experiment, 2 hours per week		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed in 16 weeks</p> <p>2. Instruction: 2 hours per week, including theoretical teaching, discussions, and experiments</p> <p>3. Self-study: 1.5 hours per week, including online learning, discussions, and assignments</p>		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Advanced Mathematics, Engineering Mechanics, University Physics, Automotive Architecture</i>		
	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>Learning outcomes and their corresponding PLOs</p>			
	<p>Learning Outcome -1</p>	<p>Be able to apply knowledge of advanced mathematics and physics to analyze the statics and dynamics of fluids; capable of analyzing flow rate and pressure calculations of fluids in pipelines, gaps, and other scenarios; able to explain fundamental concepts such as the gas state equation. Additionally, able to use the physical properties of liquids and gases along with formulas for flow rate and pressure to analyze the working principles and characteristics of hydraulic and pneumatic transmission components.</p>	<p>R1</p>
	<p>Learning Outcome -2</p>	<p>Be able to apply knowledge of fluid mechanics and the characteristics of liquid flow to analyze the properties of dynamic components, actuators, and control elements in hydraulic and pneumatic</p>	<p>R2</p>

		transmission systems; able to understand the measures used to improve the performance of components based on their physical characteristics, laying a foundation for the selection of components in hydraulic and pneumatic transmission systems.	
	Learning Outcome -3	Be able to analyze and design basic circuits based on the working principles and characteristics of hydraulic and pneumatic components, while using the features of these basic circuits to deeply understand and analyze the working principles of some complex circuits with specific functions. At the same time, able to innovatively design complex circuits capable of accomplishing certain functional tasks.	R4

<p>Content</p>	<p><i>Hydraulic and Pneumatic Transmission</i> is a compulsory foundational course for undergraduate students majoring in Automotive Service Engineering. This course focuses on the use of pressurized fluids (pressure oil or compressed air) as energy media to achieve various mechanical transmissions and automatic control. The main content includes the basic knowledge of hydraulic and pneumatic transmission, fundamental components of hydraulic and pneumatic systems, and basic hydraulic and pneumatic circuits. Through studying this course, students will apply fundamental knowledge and theories of hydraulic and pneumatic transmission technology, gain a systematic understanding of the hydraulic and pneumatic technologies used in production, lay a foundation for future work related to machinery, and develop the ability to solve transmission problems in automated production.</p> <p>Knowledge Module 1: Basic Knowledge of Hydraulic Transmission (Weighting Factor 2/32, Level: Memorization)</p> <p>Knowledge Module 2: Hydraulic Power Components (Weighting Factor 4/32, Level: Memorization - Understanding)</p> <p>Knowledge Module 3: Hydraulic Actuating Components (Weighting Factor 1/32, Level: Memorization - Understanding)</p> <p>Knowledge Module 4: Hydraulic Control Components (Weighting Factor 4/32, Level: Memorization - Understanding)</p> <p>Knowledge Module 5: Basic Hydraulic Circuits (Weighting Factor 5/32, Level: Memorization - Analysis)</p> <p>Knowledge Module 6: Typical Hydraulic Transmission Systems (Weighting Factor 2/32, Level: Memorization - Application)</p> <p>Knowledge Module 7: Hydraulic Servo and Electro-Hydraulic Proportional Control Technology (Weighting Factor 1/32, Level: Memorization)</p> <p>Knowledge Module 8: Design and Calculation of Hydraulic Systems</p>
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	<p>(Weighting Factor 1/32, Level: Analysis)</p> <p>Knowledge Module 9: Fundamentals of Pneumatic Transmission (Weighting Factor 2/32, Level: Memorization - Understanding)</p> <p>Knowledge Module 10: Air Source Devices and Pneumatic Auxiliary Components (Weighting Factor 1/32, Level: Memorization)</p> <p>Knowledge Module 11: Pneumatic Actuating Components and Pneumatic Control Components (Weighting Factor 3/32, Level: Memorization - Understanding)</p>
<p>Study and examination requirements and forms of examination</p>	<p>Course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: homework 50% + laboratory training 50%. The final exam is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, multimedia, laboratory, online websites, Stellar Competency Platform, Xuexitong</p> <p>China University MOOC website: https://www.icourse163.org</p> <p>Zhihuishu Online Learning Platform: https://www.zhihuishu.com</p> <p>Rain Classroom website: https://www.yuketang.cn</p>

<p>Reading list</p>	<p>[1] Zuo Jianmin. Hydraulic and Pneumatic Transmission, Beijing: Mechanical Industry Press, 2019, 5th Edition.</p> <p>[2] Xu Fuling. Hydraulic and Pneumatic Transmission, Beijing: Mechanical Industry Press, 2018, 4th Edition.</p> <p>[3] Chen Lifang, Meng Hui. Hydraulic and Pneumatic Transmission Technology, Beijing: Mechanical Industry Press, 2023, 2nd Edition.</p> <p>[4] Wang Jie, Su Donghai, Guan Zhongfan. Hydraulic Transmission Systems, Beijing: Mechanical Industry Press, 2024, 5th Edition.</p> <p>[5] Ning Chen, Zhang Wushe. Detailed Examples of Hydraulic Diagrams, Beijing: Chemical Industry Press, 2023, 1st Edition.</p> <p>[6] Li Jiaxue, Liu Mingdi, Yu Zhaoqin. Application of Research Projects and Simulation Technology in Teaching “Hydraulic and Pneumatic Transmission” Course [J]. Journal of Anhui Vocational College of Electronic Information, 2023(3):35-41.</p>
	<p>[7] Zhang Lunjie. Research on Teaching of Hydraulic and Pneumatic Transmission in Secondary Vocational CNC Technology Application Major [J]. Modern Trade Industry, 2023(17): 239-240.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Architecture

Module name	Automotive Architecture
Module level	Undergraduate
Code	3080208203
Courses	Professional Education
Semester	Spring
Contact person	Yu Xia
Lecturer	Yu Xia、 Bai Limin、 Yong Xu
Language	Chinese
Course Nature and Semester Offered	Compulsory, 4th Semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, discussion, and demonstration, 2 hours/week		
Work load (Total Weekly Study Hours)	1. Total hours: 112 hours = 64 hours of lectures + 48 hours of self-study, completed in 16 weeks; 2. Teaching: 4 hours per week, including lectures, discussions, and Q&A; 3. Self-study: 3 hours per week, including preview before class, practice after class, and review for exams.		
Credit points ETCS	4		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Descriptive Geometry and Mechanical Drawing, Mechanical Principles, Mechanical Design</i>		
Learning outcomes and	Course Learning Outcome (CLO)	Description	Supported Programme Learning Objective (PLOs)

**their
corresponding
PLOs**

CLO-1	<p>Be able to describe the basic structures and working principles of various systems in automobile engines and chassis, provide an overview of Automotive Architecture and analyze operating processes; capable of establishing appropriate mathematical or simulation models for complex problems in automobile service engineering systems or processes, and able to solve or analyze them; possesses teamwork awareness and good communication skills.</p>	R1
CLO-2	<p>Be able to summarize the latest technologies in the automotive industry, proficiently use disassembly and assembly tools, locate and verify automotive performance indicator parameters and understand their meanings, possess basic abilities to analyze automotive faults, and have an innovative mindset for designing automotive fault diagnosis and troubleshooting equipment.</p>	R4

CLO-3	<p>Be able to analyze automotive technology innovations based on the demands of automotive technology development and social environmental protection, and select or design new Automotive Architectures that meet social environmental requirements and national technical standards, thereby being able to respond to the continuous technological upgrades, policy changes, and market fluctuations in the automotive industry.</p>	R6
CLO-4	<p>Be able to select effective learning methods, independently research new automotive technologies, expand their own knowledge and skill levels, possess professional ideals and beliefs, and adapt to the talent demands of automotive technology development.</p>	R11

<p>Content</p>	<p>This course is a compulsory core professional course for the Vehicle Engineering and Automotive Service Engineering majors. The main content of the course includes the key technical parameters and performance indicators of automobiles and engines, the functions, compositions, structures, and working principles of the various systems in automobile engines and chassis, as well as the technical performance requirements of major components and assemblies of these systems. Through this course, students will gain a correct understanding of the basic functions, compositions, principles, and working processes of automobile systems, systematically describe the requirements and standards for the coordinated operation of these systems, and develop the ability to identify major components of automobile systems, analyze common faults, and independently disassemble and assemble parts. The course also aims to cultivate professional interest, life ideals and beliefs, patriotism, awareness of moral and legal norms, innovative development concepts, teamwork awareness, and good communication skills.</p> <p>Knowledge Module 1: Overview of Automobiles (Weighting Factor 1/64, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Basic Knowledge of Engines (Weighting Factor 3/64, Level: Knowledge - Analysis)</p> <p>Knowledge Module 3: Crank-Slider Mechanism (Weighting Factor 2/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 4: Valve Mechanism (Weighting Factor 10/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 5: Gasoline Engine Fuel Supply System (Weighting Factor 4/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 6: Diesel Engine Fuel Supply System (Weighting Factor 4/64, Level: Understanding + Application + Creation)</p>
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	<p>Knowledge Module 7: Engine Cooling and Lubrication System (Weighting Factor 4/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 8: Engine Ignition and Starting System (Weighting Factor 4/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 9: Automobile Transmission System (Weighting Factor 12/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 10: Automobile Driving System (Weighting Factor 6/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 11: Automobile Steering System (Weighting Factor 6/64, Level: Understanding + Application + Creation)</p> <p>Knowledge Module 12: Automobile Braking System (Weighting Factor 8/64, Level: Understanding + Application + Creation)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment consists of continuous assessment (50%) and a final examination (50%). The continuous assessment includes: regular performance (10%), assignments (20%), and periodic tests (20%). The final examination is a closed-book exam lasting 100 minutes.</p>
<p>Media employed</p>	<p>https://www.icourse163.org</p> <p>https://www.zhihuishu.com</p> <p>https://www.yuketang.cn</p> <p>http://fanya.chaoxing.com/portal</p>

<p>Reading list</p>	<p>1. Guan Wenda. Automotive Architecture [M]. Mechanical Industry Press, 2016, 4th Edition.</p> <p>2. Li Chunming. Automotive Architecture [M]. Mechanical Industry Press, 2018.</p> <p>3. Wei Qingguo. Automotive Architecture [M]. Central South University Press, 2016.</p> <p>4. Yao Meihong. Automotive Architecture and Disassembly Training Manual [M]. Mechanical Industry Press, 2013.</p> <p>5. Lai, F., & Jiang, C. Y. (2021), 'Establishment and simulation analysis of 18 DOF unified dynamics model of automobile chassis. International Journal of Control', Automation and Systems, 19(7), pp.2323-2342.</p> <p>6. M. Muzakkir Ahamed, L. Natrayan (2022), 'Dynamic analysis and structural simulation of aluminum composite material based automobile chassis', Materials Today: Proceedings, 62(4), pp.2244-2249.</p> <p>7. Shiva Prasad U, Athota Rathan Babu, Bandu Sairaju, Saikrishna Amirishetty, Deepak D. (2020), 'Automotive'Chassis Design Material Selection for Road and Race Vehicles', Journal of Mechanical Engineering Research and Developments, , 43 (3), pp.274-282.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Electrical and Electronic Control Systems

Module name	Automotive Electrical and Electronic Control Systems
Module level	Undergraduate
Code	3080208204
Courses	Professional Education
Semester	Fall
Contact person	Zhuang Xinying
Lecturer	Zhuang Xinying, Zhao Yiming
Language	Chinese
Course Nature and Semester Offered	Compulsory, 5 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site teaching, 3 class hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total class hours: 84 hours = 48 hours of lectures + 36 hours of self-study, completed over 16 weeks 2. Teaching: 3 class hours per week, including lectures, discussions, and Q&A sessions 3. Self-study: Approximately 2.25 hours per week, including pre-class preparation, post-class exercises, and review for exams. 		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Electrotechnics and University Physics</i>		
Learning	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>outcomes and their corresponding PLOs</p>			
	<p>CLO-1 Learning Outcome -1</p>	<p>Be able to describe the structure and function of electrical and electronic control systems, and explain the complete vehicle wiring diagram. Be able to outline the working principles and processes of automotive electrical and electronic control systems, and be able to memorize the fundamental knowledge framework required for an automotive electrical engineer.</p>	<p>R1</p>
	<p>CLO-2 Learning Outcome -2</p>	<p>Be able to practice real-vehicle diagnostics and disassembly/assembly of major electrical components; be able to describe the routing of fuel and electrical circuits as well as the installation positions and connection relationships of various components. Be capable of applying knowledge of electrical and electronic control</p>	<p>R2</p>

		systems to solve practical problems and predict the future development trends of complete vehicle technology.	
	CLO-3 Learning Outcome -3	Be able to outline the basic knowledge of automotive electrical equipment as well as the structural characteristics and working principles of engine, chassis, and body electronic control technologies. Develop preliminary abilities in the inspection and maintenance of automotive electrical equipment and electronic control systems, and foster awareness of improvement, research and development, and innovation.	R1,R6
	CLO-3 Learning Outcome -4	Be able to develop a spirit of independent thinking and collaborative inquiry, and cultivate a craftsman's spirit. Strengthen the sense of collectivism and patriotism, enabling students to possess not only professional skills but also noble moral character.	R7

<p>Content</p>	<p><i>Automotive Electrical and Electronic Control Systems</i> is a compulsory course for automotive-related majors. The course is divided into two main parts: automotive electrical equipment and automotive electronic control systems. While emphasizing systematic knowledge, the course appropriately deepens theoretical content and highlights practical skills development, balancing both theory and practice. Through this course, students will be able to describe and explain the basic knowledge of automotive electrical equipment, as well as the structural characteristics and working principles of engine, chassis, and body electronic control technologies. They will initially develop the ability to test and maintain automotive electrical equipment and electronic control systems. Additionally, practical training fosters students' comprehensive professional abilities and concepts, such as critical thinking, observation, communication, and adaptability, helping them better adapt to the evolving new technologies in modern automobiles.</p> <p>Knowledge Module 1: Overview of Automotive Electrical and Electronic Control Systems (Weighting Factor 2/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Automotive Electrical Equipment (Weighting Factor 22/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 3: Engine Electronic Control (Weighting Factor 10/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 4: Chassis Electronic Control (Weighting Factor 8/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 5: Body Electronic Control (Weighting Factor 6/48, Level: Memorization + Understanding)</p>
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<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: class participation 15% + homework 15% + laboratory training 20%. The final closed-book exam lasts 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Stellar Competency Platform, and Xuexitong</p>
<p>Reading list</p>	<p>[1] Ma Youliang. Automotive Electrical and Electronic Control Systems (4th Edition) [M]. Beijing: China Machine Press, 2018.</p> <p>[2] Shu Hua, Yao Guoping. Automotive Electrical Equipment and Maintenance [M]. Beijing: Beijing Institute of Technology Press, 2017.</p> <p>[3] Yu Jingnuo. Automotive Electronic Control Technology [M]. Beijing: China Machine Press, 2014.</p> <p>[4] Chaoxing. Automotive Electrical and Electronic Control Systems (Part 1) [EB/OL]. [2016-08-15]. http://mooc1.chaoxing.com/course/89811410.html</p> <p>[5] Chaoxing. Automotive Electrical and Electronic Control Systems (Part 2) [EB/OL]. [2016-08-15]. http://mooc1.chaoxing.com/course/89810568.html</p> <p>[6] Zhihuishu. Automotive Electrical and Electronic Control Systems [EB/OL]. [2021-08-15]. https://coursehome.zhihuishu.com/courseHome/1000064342#teachTeam</p> <p>[7] Yang Fen, Wang Aiyuan, Jiang Zhijian. Design and Simulation of Automotive Rear-end Collision Warning System [J]. Mechanical Design and Manufacturing, 2024, (11): 47-51.</p> <p>[8] Wang Hao, Wu Zhe, Kang Boyang, Li Bin, Li Shaoling. Power Coordination Control Strategy of AC-DC Hybrid Microgrid Considering Joint Energy Storage of Electric Vehicles and Batteries [J]. Proceedings of the CSEE, 2024, 39(19): 6085-6103.</p>

Revision time	July, 2024
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Module name Automotive Marketing

Module name	Auto Marketing
Module level	Undergraduate
Code	3080208209
Courses	Professional Education
Semester	Fall
Contact person	Yu Xia
Lecturer	Yu Xia, Wang Feng
Language	Chinese
Course Nature and Semester Offered	Compulsory, 5th Semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, discussion, and demonstration, 3 hours per week		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 132 hours = 48 hours of lectures + 84 hours of self-study, completed in 16 weeks 2. Teaching: 3 hours per week, including instruction, discussion, and practice 3. Self-study: Approximately 4 hours per week, including preview before class, exercises after class, and review for exams 		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Automotive Architecture and Automobile Electrical and Electronic Control Systems</i>		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>their</p> <p>corresponding</p> <p>PLOs</p>	<p>CLO-1</p>	<p>Be able to analyze specific automotive marketing environments, evaluate the products of particular automotive companies and their main consumer groups, apply marketing strategies of competing products and competitors, use tools and methods such as STP, develop effective and feasible automotive marketing strategies, and justify their feasibility.</p>	<p>R3</p>
	<p>CLO-2</p>	<p>Be able to apply SWOT analysis and market research and forecasting methods, based on marketing environment analysis theories and literature review, to develop marketing plans that adapt to social constraints, propose innovative solutions to complex engineering problems in automotive market development, and achieve a positive impact on environmental and social sustainable development.</p>	<p>R6</p>

CLO-3	<p>Be able to develop a strong sense of social responsibility, teamwork spirit, and communication skills, as well as innovative and entrepreneurial thinking. In the planning of marketing activities, analyze national development policies, adapt to environmental protection needs, formulate scientific and innovative corporate strategic plans, competitive strategies, and marketing strategies, proactively promote the development of China's automotive industry, and enhance the nation's hard power.</p>	R7
CLO-4	<p>Be able to scientifically apply principles of marketing and management to effectively organize the operation and market promotion activities of automotive enterprises in practice. Possess proactive learning ability, continuously update knowledge, adapt to new environments, and maintain an innovative marketing awareness that meets consumer demands, thereby being capable of responding to the ongoing</p>	R11

	<p>technological upgrades, policy changes, and market fluctuations in the industry.</p>	
<p>Content</p>	<p>This course is a required core professional course designed based on the core competencies of the Automotive Service Engineering major. The course content mainly includes automotive marketing mix theory, automotive marketing concepts, automotive marketing management tasks, automotive marketing environmental factors and analysis methods, market research and forecasting, analysis of automotive consumer purchasing behavior, analysis of automotive enterprise competitors and competitive strategies, automotive enterprise strategic planning, STP marketing strategy, automotive product strategy, automotive pricing strategy, automotive distribution strategy, and automotive promotion strategy. Through the study of this course, students will be helped to correctly understand and recognize the basic theories and concepts of marketing, master methods of marketing environment analysis, consumer purchasing behavior analysis, competitor analysis, strategic planning, and marketing planning, as well as automotive marketing strategy methods. The course aims to cultivate innovative marketing awareness, social research ability, teamwork spirit, and communication skills.</p> <p>Knowledge Module 1: Overview of Automotive Marketing (Weighting Factor 4/48, Level: understanding)</p> <p>Knowledge Module 2: Analysis of Automotive Marketing Environment and Market Research & Forecasting (Weighting Factor 10/48, Level: Memorization + understanding + Application)</p> <p>Knowledge Module 3: Analysis of Automotive Consumer Purchasing Behavior (Weighting Factor 4/48, Level: Application + Analysis)</p> <p>Knowledge Module 4: Analysis of Automotive Enterprise Competitors</p>	

	<p>(Weighting Factor 2/48, Level: understanding + Application)</p> <p>Knowledge Module 5: Strategic Planning of Automotive Enterprises (Weighting Factor 2/48, Level: understanding + Application)</p> <p>Knowledge Module 6: STP Marketing Strategy (Weighting Factor 6/48, Level: understanding + Application)</p> <p>Knowledge Module 7: Automotive Product Strategy (Weighting Factor 4/48, Level: understanding + Application)</p> <p>Knowledge Module 8: Automotive Pricing Strategy (Weighting Factor 4/48, Level: understanding + Application)</p> <p>Knowledge Module 9: Automotive Distribution Strategy (Weighting Factor 2/48, Level: understanding + Application)</p> <p>Knowledge Module 10: Automotive Promotion Strategy (Weighting Factor 10/48, Level: understanding + Application)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and the final exam (50%). The continuous assessment consists of: daily performance (10%) + regular assignments (20%) + practical training (20%). The final closed-book exam lasts 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Stellar Competency Platform, and Xuexitong</p>

<p>Reading list</p>	<ol style="list-style-type: none"> 1. Yang Lijun, Yuan Yufeng. Automobile Marketing [M]. Mechanical Industry Press, 2019, 3rd Edition. 2. Chen Yongge, Xu Wenxia. Principles and Applications of Automobile Marketing [M]. Mechanical Industry Press, 2015. 3. Ma Haiying. Automobile Marketing [M]. Beijing Institute of Technology Press, 2020. 4. Sun Tongming. Practical Automobile Marketing [M]. Chongqing University Press, 2018. 5. Llopis-Albert, C., Rubio, F., & Valero, F. (2021). Impact of digital transformation on the automotive industry. Technological forecasting and social change, pp.162. 6. Rahim, M. A., Rahman, M. A., Rahman, M. M., Asyhari, A. T., Bhuiyan, M. Z. A., & Ramasamy, D. (2021). Evolution of IoT-enabled connectivity and applications in automotive industry: A review. Vehicular Communications, pp.27. 7. Chintalapati, S., & Pandey, S. K. (2022). Artificial intelligence in marketing: A systematic literature review. International Journal of Market Research, 64(1), pp.38-68.
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Theory

Module name	Automotive Theory
Module level	Undergraduate
Code	3080208207
Courses	Professional Education
Semester	Spring
Contact person	Zhang Chenxu
Lecturer	Zhang Chenxu, Yu Kai, Wei Guangyuan
Language	Chinese
Course Nature and Semester Offered	compulsory, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, case study, laboratory experiment, and online learning, 3 hours/week
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 132 hours = 48 hours of lectures + 84 hours of self-study, completed over 16 weeks 2. Teaching: 3 hours per week, including theoretical teaching, discussions, experiments, etc. 3. Self-study: Approximately 4 hours per week, including preview before class, practice after class, and review for exams.
Credit points ETCS	3
Requirements according to the examination Regulations	A student must have registered for the course.
Recommended prerequisites	<i>Automotive Architecture and Principles of Automobile Engines</i>

	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)
Learning outcomes and their corresponding PLOs	CLO-1 Learning Outcome-1	Able to apply the basic principles of fluid mechanics, aerodynamics, and related automotive theories such as vehicle power performance, fuel economy, braking performance, and ride comfort; capable of identifying, articulating, and analyzing issues related to automotive service engineering through literature research; able to justify and explain the rationality of proposed solutions; and possessing a strong sense of teamwork and good communication skills.	R1、 R8、 R9

<p>CLO-2 Learning Outcome -2</p>	<p>Able to analyze automotive service engineering problems, such as how to improve a vehicle's maximum speed, climbing ability, and fuel economy; proficient in utilizing appropriate technologies and resources to propose multiple solutions; skilled in using modern engineering tools and information technology to evaluate the advantages and limitations of each solution; capable of creatively solving problems while fostering innovation awareness and innovative thinking.</p>	<p>R2, R3</p>
<p>CLO-3 Learning Outcome -3</p>	<p>Be able to possess self-directed learning and lifelong learning awareness, apply effective learning methods, continuously explore new knowledge and expand new skills in the automotive field, and creatively open new chapters in the automotive industry.</p>	<p>R11</p>

<p>Content</p>	<p>This course is a core professional course in the Automotive Service Engineering program. Its main content covers the theory of vehicle dynamics, focusing on the fundamental principles of vehicle motion. Through this course, students will learn to use and become familiar with methods for evaluating and analyzing vehicle performance, thereby mastering the theoretical basis for assessing automotive performance. They will also be able to represent each vehicle performance aspect (such as power, fuel economy, braking, handling stability, ride comfort, and passability) using the simplest indicators that are easy to calculate and test. Ultimately, the course aims to cultivate students with strong professional qualities and skills in the automotive field, good teamwork spirit, effective communication abilities, proactive learning habits, professionalism, and innovative capabilities.</p> <p>Knowledge Module 1: Vehicle Power Performance (Weighting Factor 10/48, Level: Understanding)</p> <p>Knowledge Module 2: Vehicle Fuel Economy (Weighting Factor 8/48, Level: Memorization + Understanding + Application)</p> <p>Knowledge Module 3: Selection of Vehicle Powertrain Parameters (Weighting Factor 5/48, Level: Application)</p> <p>Knowledge Module 4: Vehicle Braking Performance (Weighting Factor 10/48, Level: Understanding + Application)</p> <p>Knowledge Module 5: Vehicle Handling Stability (Weighting Factor 5/48, Level: Understanding + Application)</p> <p>Knowledge Module 6: Vehicle Ride Comfort (Weighting Factor 6/48, Level: Understanding + Application)</p> <p>Knowledge Module 7: Vehicle Passability (Weighting Factor 4/48, Level: Understanding + Application)</p>
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Study and examination requirements and forms of examination	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: regular performance (10%) + regular assignments (20%) + laboratory and practical training (20%). The final exam is a closed-book test lasting 100 minutes.</p>
Media employed	<p>Computer, online websites, Stellar Competency Platform, Xuexitong</p>
Reading list	<p>[1] Yu Zhisheng. Automobile Theory [M]. Beijing: Mechanical Industry Press, 2018, 6th Edition.</p> <p>[2] Wu Guangqiang. Automobile Theory [M]. Beijing: People’s Transportation Publishing House, 2007.</p> <p>[3] (USA) Thomas D. Gillespie. Fundamentals of Vehicle Dynamics [M]. Beijing: Tsinghua University Press, 2006.</p> <p>[4] Yang Zhihua. Automobile Theory [M]. Beijing: Mechanical Industry Press, 2020.</p> <p>[5] Xu Liyou, Zhang Wenchun. Automobile Theory [M]. Beijing: Mechanical Industry Press, 2025.</p> <p>[6] Li Song. Research on Stability Control of Drive-by-Wire Steering Based on Sliding Mode Theory [J]. Modern Manufacturing Engineering, 2021(04): 87-93.</p> <p>[7] Lai Fan. Reform Ideas of “School-Enterprise Joint Construction” Curriculum in Application-Oriented Higher Education—Taking Automobile Theory as an Example [J]. Internal Combustion Engine and Parts, 2024(24):149-151.</p>
Revision time	<p>July, 2024</p>

Module name Automotive Insurance and Claims

Module name	Automotive Insurance and Claims
Module level	Undergraduate
Code	3080208212
Courses	Professional Education
Semester	Spring
Contact person	Zhuang Xinying
Lecturer	Wang Feng
Language	Chinese
Course Nature and Semester Offered	Compulsory , 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Teacher-centered methods (lecture method) and practice-based methods (simulation and games, exercises, role-playing, field teaching), 2 hours per week.		
Work load (Total Weekly Study Hours)	1. Total hours: 88 hours = 32 hours of lectures + 56 hours of self-study, completed over 16 weeks 2. Teaching: 2 hours per week, including practical teaching, discussions, experiments, etc. 3. Self-study: Approximately 4 hours per week, including preview before class, exercises after class, and review for exams.		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Introduction to the Profession, Automobile Marketing, Automotive Architecture</i>		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>their</p> <p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome -1</p>	<p>Be able to describe the basic types of automobile insurance, the coverage scope of each type, the basic terms of automobile insurance, the fundamental underwriting process, the claims process, and the key legal regulations and precautions related to automobile insurance.</p>	<p>R1</p>
	<p>CLO-2 Learning Outcome -2</p>	<p>Be able to solve practical real-life problems, handle automobile insurance policies including policy issuance, cancellation, renewal, and claims processing in practice, thereby developing one's own professional advantages.</p>	<p>R1</p>
	<p>CLO-3 Learning Outcome -3</p>	<p>Be able to possess comprehensive skills required for professional work in automobile insurance and claims, capable of solving practical problems in enterprises, enhancing personal innovation abilities, and leveraging overall strengths.</p>	<p>R2、 R3</p>

	CLO-3 Learning Outcome -4	Be able to demonstrate teamwork and coordination skills, engineering management capabilities, as well as a strong sense of responsibility, professionalism, and a rigorous and meticulous work ethic.	R8
Content	<p><i>Automobile Insurance and Claims</i> is a compulsory course for automotive-related majors. The course covers an overview of automobile insurance, principles of automobile insurance, automobile insurance contracts, types of automobile insurance, underwriting practices, and claims handling. It enables students to master the relevant knowledge and skills of automobile insurance and claims, and to acquire the basic ability to handle automobile insurance and claims. The course cultivates students' ability to introduce insurance to customers during automobile sales, calculate insurance premiums, and manage damage assessment and claims for accident vehicles. Students will grasp the basic types of automobile insurance, the fundamental processes of underwriting and claims, and, combined with practical operations of insurance companies in automobile insurance and claims, engage in project-based training guided by work tasks. This enhances students' mastery of theoretical knowledge and practical operation skills.</p> <p>Knowledge Module 1: Overview of Automobile Insurance (Weighting Factor 4/32, Level: Comprehension)</p> <p>Knowledge Module 2: Principles of Automobile Insurance (Weighting Factor 4/32, Level: Memorization + Comprehension + Application)</p> <p>Knowledge Module 3: Automobile Insurance Contracts (Weighting Factor 2/32, Level: Application)</p> <p>Knowledge Module 4: Types of Automobile Insurance (Weighting Factor</p>		

	<p>8/32, Level: Comprehension + Application)</p> <p>Knowledge Module 5: Automobile Insurance Underwriting Practices (Weighting Factor 6/32, Level: Comprehension + Application)</p> <p>Knowledge Module 6: Automobile Insurance Claims Practices (Weighting Factor 8/32, Level: Comprehension + Application)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: daily performance (15%) + regular assignments (15%) + periodic tests (20%). The final exam is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Superstar Ability Platform, Xuexitong</p>

<p>Reading list</p>	<p>[1] Zhao Changli, Li Jingzhi. Automobile Insurance and Claims [M]. Beijing: Mechanical Industry Press, 2020.</p> <p>[2] Qi Cuiqin. Automobile Insurance and Claims [M]. Beijing: Beijing Institute of Technology Press, 2009.</p> <p>[3] Fu Tiejun, Yang Xuekun. Automobile Insurance and Claims [M]. Beijing: Beijing Institute of Technology Press, 2012.</p> <p>[4] Zhihuishu. Automobile Insurance and Claims [EB/OL]. [2019-04-01]. https://coursehome.zhihuishu.com/courseHome/2075543#teachTeam</p> <p>[5] Xuexitong. Automobile Insurance and Claims [EB/OL]. [2022-12-14]. https://mooc1.chaoxing.com/course-ans/courseportal/223575899.html</p> <p>[6] Shi Wen. Research on Insurance Claims Issues of New Energy Vehicle Power Battery Spontaneous Combustion Events [J]. China Management Informatization, 2023, 26(12): 170-172.</p> <p>[7] Li Ce, Wan Pupeng, Peng Zhanglin. Exploration of Internet Technology to Resolve Automobile Insurance Claims Disputes [J]. Automotive Practical Technology, 2021, 46(19): 179-181.</p> <p>[8] Hu Yanbin, Zhou Wenhui. Research on Comprehensive Factor Investigation Methods of Assisted Driving Vehicle Traffic Accidents [J]. China Safety Production Science and Technology, 2024, 20(09): 181-187.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Appraisal and Evaluation

Module name	Automotive Appraisal and Evaluation
Module level	Undergraduate
Code	3080208211
Courses	Professional Education
Semester	Spring
Contact person	Yu Kai
Lecturer	Yu Kai,Yu Xia,Wang Feng,Liu Hong
Language	Chinese
Course Nature and Semester Offered	compulsory, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, case analysis, online learning, 2 hours/week
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Work load (Total Weekly Study Hours)	<p>1. Total hours: 88 hours = 32 hours of lectures + 56 hours of self-study, completed over 16 weeks</p> <p>2. Lectures: 2 hours per week, including theoretical teaching, discussions, etc.</p> <p>3. Self-study: About 4 hours per week, including preview before class, exercises after class, and review for exams.</p>
Credit points ETCS	2
Requirements according to the examination Regulations	A student must have registered for the course.
Recommended prerequisites	<i>Automotive Architecture, Automobile Electrical and Electronic Control Technology</i>

Learning outcomes and their corresponding PLOs	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)
	CLO-1 Learning Outcome -1	Be able to list comprehensive, integrated automotive service engineering solutions that meet social development needs, and incorporate innovative thinking throughout the service process.	R2, R3
	CLO-2 Learning Outcome -2	<p>Be able to apply scientific methods to research problems in automotive service engineering.</p> <p>Be able to use skills in experimental design, data collection and analysis, and information synthesis to draw reasonable and effective conclusions, thereby analyzing problems in automotive service engineering.</p>	R4
	CLO-3 Learning Outcome -3	Be able to demonstrate communication skills for complex engineering problems, including writing professional reports and design documents, delivering effective	R9

	presentations, and clearly expressing and responding to instructions. Capable of cross-cultural communication, understanding, and respecting linguistic and cultural differences.	
CLO-4 Learning Outcome -4	Be able to apply management principles and economic decision-making methods relevant to the field of automotive service engineering, in order to enhance management capabilities and economic decision-making skills in automotive service engineering practice.	R10
Content	<p>This course is a highly practical professional course that focuses on methods for assessing the technical condition and value evaluation of used vehicles. Through the study of this course, students will be able to analyze the relevant practices of used car appraisal and evaluation, initially acquiring the competencies of an intermediate used car appraiser. This lays a solid foundation for obtaining an appraiser certificate and for competence in used car-related work after graduation. From an applied perspective, the course enables students to describe the structural characteristics, working principles, and fault analysis methods of various automotive components; explain the essential knowledge of vehicle inspection, evaluation, appraisal, and claims; and develop the ability to perform performance testing and evaluation of vehicles, as well as damage assessment and evaluation of accident vehicles. Graduates will be qualified as high-quality skilled professionals competent in key positions such as automotive insurance, accident vehicle damage</p>	

	<p>assessment, used car transaction evaluation, vehicle damage assessment, and claims handling.</p> <p>Knowledge Module 1: Basic Knowledge of Vehicle Appraisal and Evaluation (Weighting Factor 4/32, Level: Understanding)</p> <p>Knowledge Module 2: Technical Condition Appraisal of Used Motor Vehicles (Weighting Factor 7/32, Level: Understanding + Application)</p> <p>Knowledge Module 3: Depreciation Indicators and Calculation of Vehicles (Weighting Factor 5/32, Level: Application)</p> <p>Knowledge Module 4: Basic Methods of Used Car Appraisal and Evaluation (Weighting Factor 6/32, Level: Understanding + Application)</p> <p>Knowledge Module 5: Automotive Collision Damage Assessment (Weighting Factor 4/32, Level: Understanding + Application)</p> <p>Knowledge Module 6: Used Vehicle Appraisal Practice (Weighting Factor 2.5/32, Level: Understanding + Application)</p> <p>Knowledge Module 7: Used Vehicle Market and Operations (Weighting Factor 3.5/32, Level: Understanding + Application)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: usual performance (10%) + regular assignments (20%) + chapter tests (20%). The final exam is a 100-minute closed-book test.</p>
<p>Media employed</p>	<p>Computer, online websites, Superstar Ability Platform, and Xuexitong</p>

<p>Reading list</p>	<p>[1] Du, Xiujv. Used Car Appraisal and Evaluation [M]. Beijing: China Machine Press, 2018.</p> <p>[2] Li, Min. Used Car Appraisal and Evaluation [M]. Nanjing: Nanjing University Press, 2022.</p> <p>[3] Qiao, Wenshan, Ai, Feng, Zhu, Guiying, Wu, Amin. Used Car Appraisal and Evaluation [M]. Beijing: Tsinghua University Press, 2013.</p> <p>[4] Sun, Jianjing. Used Car Appraisal and Evaluation [M]. Beijing: Tsinghua University Press, 2015.</p> <p>[5] Xiao, Dongling, Yang, Ming. Used Car Appraisal and Evaluation [M]. Beijing: China Machine Press, 2023.</p> <p>[6] Wang, Guihuai, Xia, Wei, Liu, Fangxin. Used Car Appraisal and Evaluation [M]. Tianjin: Tianjin University Press, 2020.</p> <p>[7] Hu, Zongmei. Discussion on Difficulties and Countermeasures of Pure Electric Used Car Appraisal [J]. Times Auto, 2020, (16): 39-44.</p> <p>[8] Liu, Lihua; Xu, Xiaoyue; Shu, Hui. Current Challenges and Countermeasures in New Energy Vehicle Appraisal and Evaluation [J]. Changchun Automotive Vocational College, 2024, (4): 39-44.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Testing and Fault Diagnosis Technology

Module name	Automotive Testing and Fault Diagnosis Technology
Module level	Undergraduate
Code	3080208208
Courses	Professional Education
Semester	Fall
Contact person	Kuang Enpeng
Lecturer	Kuang Enpeng
Language	Chinese
Course Nature and Semester Offered	compulsory, 7 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Teacher-centered methods (lecturing), practical methods (simulation, exercises, on-site teaching), 2 hours per week.		
Work load (Total Weekly Study Hours)	1. Total hours: 84 hours = 48 hours of lectures + 36 hours of self-study, completed in 12 weeks 2. Lectures: 4 hours per week, including theoretical teaching, discussions, etc. 3. Self-study: 3 hours per week, including online learning, discussions, assignments, etc.		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Automotive Architecture, Automotive Engine in Theory, Automotive Electrical and Electronic Control Systems, etc.</i>		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome -1</p>	<p>Be able to list the general principles and methods for selecting and designing automotive testing technologies, analyze common automotive fault phenomena and their causes, and summarize methods for detecting, diagnosing, and troubleshooting automotive faults.</p>	<p>R6</p>
	<p>CLO-2 Learning Outcome -2</p>	<p>Be able to accurately analyze and diagnose common automotive fault symptoms and possess practical skills for troubleshooting and resolving faults.</p>	<p>R8</p>
	<p>CLO-3 Learning Outcome -3</p>	<p>Summarize good professional ethics and a strong sense of discipline; possess the ability to work collaboratively and an innovative practical spirit; demonstrate a rigorous and meticulous work style and a serious and responsible work attitude.</p>	<p>R9、R10</p>

<p>Content</p>	<p>Automotive Testing and Fault Diagnosis Technology is a course focused on automotive fault diagnosis, performance testing, and maintenance techniques. It systematically introduces the basic theories, testing methods, and diagnostic principles of automotive testing and fault diagnosis, highlighting the new technologies, new equipment, and new methods in modern automotive testing and fault diagnosis. In summary, this course teaches how to use advanced testing equipment and diagnostic tools to perform accurate and efficient fault diagnosis and performance testing on automobiles.</p> <p>Knowledge Module 1: Overview (Weighting Factor 3/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Engine Fault Diagnosis and Testing (Weighting Factor 21/48, Level: Understanding – Evaluation)</p> <p>Knowledge Module 3: Chassis Fault Diagnosis and Testing (Weighting Factor 12/48, Level: Understanding – Evaluation)</p> <p>Knowledge Module 4: Body Fault Diagnosis and Testing (Weighting Factor 12/48, Level: Understanding – Evaluation)</p>
<p>Study and examination requirements and forms of examination</p>	<p>Course assessment includes ongoing assessment (50%) and final exam (50%). The ongoing assessment consists of: regular performance 40% + regular assignments 60%. The final exam is a 100-minute closed-book test.</p>
<p>Media employed</p>	<p>Classroom, laboratory, computers, online platforms</p>

<p>Reading list</p>	<p>[1] Automotive Testing and Fault Diagnosis, edited by Zhao Yingxun, Mechanical Industry Press, 2023, 2nd edition.</p> <p>[2] Automotive Testing and Diagnostic Technology, edited by Chen Huanjiang, People's Transportation Publishing House, 2022, 3rd edition.</p> <p>[3] Automotive Diagnosis and Testing Technology, edited by Zhang Jianjun, People's Transportation Publishing House, 2021, 5th edition.[4] Automotive Testing and Diagnostic Technology, edited by Zhao Yingxun, Mechanical Industry Press, 2020.</p> <p>[5] Kuang Enpeng, Fault Analysis and Repair of Electric Air Conditioning Compressors for BAIC New Energy Vehicles [Dissertation]. Qingdao: Hengxing University, 2023.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name: Automobile Professional English

Module name	Automobile Professional English
Module level	Undergraduate
Code	3080208206
Courses	Professional Courses
Semester	Fall
Contact person	Guangyuan Wei
Lecturer	Guangyuan Wei;Feng Wang
Language	Chinese and English
Course Nature and Semester Offered	restricted elective, 6th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, discussion, and exercises, 2 hours per week		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Contact hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed over 16 weeks 2. Teaching: 2 hours per week, including lectures, discussions, and Q&A 3. Self-study: About 1.5 hours per week, including preview before class, exercises after class, and review for exams 		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Car Construction; Automobile Theory		
Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)	

<p>Learning outcomes and their corresponding PLOs</p>			
	<p>CLO-1 Learning Outcome-1</p>	<p>Be able to describe the structure and operation process of each system of a car in English;</p>	<p>R1</p>
		<p>translate a certain number of commonly used automotive English vocabulary and professional terms; translate professional English expressions related to car maintenance and repair; analyze the correlation between professional English content and courses such as Automotive Architecture and automotive electrical equipment.</p>	

	<p>CLO-2 Learning Outcome -2</p>	<p>Be capable of using relevant tools to search for books and literature related to automotive professional English and translate them appropriately; be able to read English literature to analyze the development history of China's automotive industry and establish confidence in the automotive industry to strive for excellence.</p>	<p>R1、R5、R7</p>
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	CLO-3 Learning Outcome -3	<p>Be able to apply the learned knowledge to the context of automotive services, and become talents with solid theoretical foundation and strong practical ability as well as bilingual quality; be capable of analyzing and solving problems in different language environments, and form a meticulous and rigorous working style; be able to discuss and learn advanced technologies from other countries, and inspire students to have the awareness of doing scientific and technological innovation and being self-reliant and strong.</p>	R1、 R2、 R7、 R9
	CLO-4 Learning Outcome -4	<p>By constantly absorbing knowledge of the development laws of the automotive industry and enhancing the ability to innovate and start businesses, a solid foundation can be laid for future employment and</p>	R3、 R11

		<p>entrepreneurship; students are encouraged to break through conventional thinking and propose new solutions to problems in automotive service engineering.</p>	
<p>Content</p>	<p>Automotive Technical English is a professional direction course for the four-year undergraduate program in vehicle engineering. Its main content includes:①the overall structure of a vehicle;②the six major systems of an engine;③the five major systems of a chassis;④the automotive navigation system.Through the study of this course, students can memorize certain basic vocabulary and grammar knowledge of automotive professional English, discuss the usage scenarios and precautions of vocabulary and grammar, and thereby be able to summarize the grammatical structure and stylistic knowledge of scientific and technological articles, improving their ability to read and retrieve foreign language materials.</p>		

Study and examination requirements and forms of examination	<p>The course assessment consists of process evaluation (50%) and a final course paper (50%). The process evaluation includes: unit tests (40%) + after-class assignments (30%) + individual presentations (30%). The final assessment is a course paper.</p>
Media employed	<p>Computer, online websites, Superstar Ability Platform, and Xuexitong</p>
Reading list	<p>[1] Liu Xuan. Practical Automotive English (2nd Edition) [M]. Beijing: Beijing Institute of Technology Press, 2018.1.</p> <p>[2] Chen Jia, Liang Yafeng, Wang Yanghe. English for Automotive Engineering [M]. Beijing: China Machine Press, 2023.2.</p> <p>[3] Shen Binbin. English for Automotive Engineering [M]. Shanghai: Shanghai Jiao Tong University Press, 2014.12.</p> <p>[4] Wang Fengli. English for Automotive Engineering [M]. Beijing: People's Posts and Telecommunications Press, 2019.7.</p> <p>[5] Huang Xing, Huang Qichi. Automotive English (3rd Edition) [M]. Beijing: People's Posts and Telecommunications Press, 2014.2.</p> <p>[6] Wang Mian, Zhou Duo. Automotive English [M]. Beijing: China Machine Press, 2017.5.</p> <p>[7]Feng J ,Hu Y ,Yuan X , et al.Autonomous-rail rapid transit tram: System architecture, design and applications[J].Green Energy and Intelligent Transportation,2024,3(6):100161-100161.</p> <p>[8]Hermansson F ,Edgren F ,Xu J , et al.Correction: Climate impact and energy use of structural battery composites in electrical vehicles—a comparative prospective life cycle assessment[J].The International Journal of Life Cycle Assessment,2024,30(2):1-3.</p>

Revision time	July, 2024
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Module name Electrical Technology of New Energy Vehicles

Course Name	Electrical Technology of New Energy Vehicles
Course level	Undergraduate
Course code	3080208218
Course Group Name	Professional Education
Semester	Fall
Course Leader	Lian Zhiyang
Lecturing Teacher	Lian Zhiyang, Zhao Yiming
Language	Chinese
Course Nature and Semester Offered	restricted elective, 5th Semester
Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site instruction, 2 class hours per week.

Work load (Total Weekly Study Hours)	<p>1. Total Hours: 56 hours = 32 hours of lectures + 24 hours of self-study, to be completed in 16 weeks</p> <p>2. Lectures: 2 hours per week, including lectures, discussions, and Q&A</p> <p>3. Self-study: Approximately 1.5 hours per week, including pre-class preparation, post-class exercises, and exam review.</p>		
Credit points ETCS	<p>2</p>		
Requirements of the Examination Rules	<p>A student must have registered for the course.</p>		
Recommended prerequisites	<p>Electrotechnics, Automotive Architecture</p>		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Program Learning Objective (PLOs)

<p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Students will be able to describe the development overview and general structure of automotive electrical equipment, summarize the fault mechanisms and troubleshooting methods of automotive electrical systems, and outline the usage and diagnostic methods of automotive instruments and meters.</p>	<p>R1</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Be able to understand and explain the structural principles of core components:</p> <ol style="list-style-type: none"> 1. Power battery system, including battery types (such as lithium iron phosphate, ternary lithium), and the functional principles of the Battery Management System (BMS), such as battery status monitoring and charge/discharge control. 2. Drive motor system, including motor types (such as permanent magnet synchronous motors), motor control principles, and the cooling system of the drive motor. 3. Charging system, including 	<p>R3</p>

		the principles of AC slow charging and DC fast charging, as well as the structure and operation of charging equipment.	
	CLO-3 Learning Outcome-3	Be able to summarize the control and communication technologies of the electrical system. This includes the functions of the Vehicle Control Unit (VCU) in new energy vehicles, with a focus on understanding how the VCU coordinates the operation of various components; and mastering how CAN bus communication technology is applied to transmit information between different Electronic Control Units (ECUs).	R3
	CLO-3 Learning Outcome-4	Be able to identify diagnostic tool codes for electrical system faults, recognize common electrical faults (such as battery faults, motor faults, charging faults, etc.), and	R6

		summarize diagnostic approaches and repair methods.	
<p>Content Introduction</p>	<p>Electrical Technology of New Energy Vehicles is a core professional course for the Automotive Service Engineering program in application-oriented universities, specifically designed for the training of talents in the field of new energy vehicle operation and maintenance. It is based on a “work-integrated learning” model to enhance students' comprehensive analytical abilities. This course is centered around typical cases from real-world maintenance and adopts a task-driven teaching approach, emphasizing the concept of "learning by doing." Through the study of this course, students will acquire fundamental knowledge and essential skills for the maintenance of new energy vehicle electrical control systems. Additionally, it aims to cultivate students’ abilities in reading circuit diagrams, logical thinking, problem analysis and problem-solving. The course also helps students develop a strong sense of professional responsibility and gradually form a rigorous and disciplined work ethic.</p> <p>Knowledge Module 1: Introduction (Weighting Factor: 2/32, Level: memorization)</p> <p>Knowledge Module 2: Power Supply System (Weighting Factor: 3/32, Level: memorization + understanding)</p> <p>Knowledge Module 3: Starting System and Gasoline Engine Ignition System (Weighting Factor: 2/32, Level: memorization + understanding)</p> <p>Knowledge Module 4: Automotive Lighting and Signaling System (Weighting Factor: 3/32, Level: memorization + understanding)</p> <p>Knowledge Module 5: Instrument and Warning System (including Microcomputer-Controlled Instruments) (Weighting Factor: 2/32, Level: memorization + understanding)</p> <p>Knowledge Module 6: Automotive Electric and Automatic Adjustment Devices (Weighting Factor: 2/32, Level: memorization + understanding)</p>		

	<p>Knowledge Module 7: Automotive Safety and Anti-theft System (Weighting Factor: 2/32, Level: memorization + understanding)</p> <p>Knowledge Module 8: Cruise Control System and Electronic Throttle (Weighting Factor: 2/32, Level: memorization + understanding)</p> <p>Knowledge Module 9: Automotive Audio-Visual and Navigation System (Weighting Factor: 2/32, Level: memorization + understanding + application)</p> <p>Knowledge Module 10: Automotive Air Conditioning System (Weighting Factor: 2/32, Level: memorization + understanding + analysis)</p> <p>Knowledge Module 11: Circuit Principles and Troubleshooting of Engine Electronic Control System (Weighting Factor: 2/32, Level: memorization + understanding + analysis)</p> <p>Knowledge Module 12: Circuit Principles and Troubleshooting of Chassis Electronic Control System (Weighting Factor: 4/32, Level: memorization + understanding + analysis)</p> <p>Knowledge Module 13: Automotive Electrical Power Distribution, Main Wiring, Circuit Diagrams, and Vehicle Bus Systems (Weighting Factor: 4/32, Level: memorization + understanding + analysis)</p>
<p>Study and Examination Requirements , Forms of Examination</p>	<p>The course assessment consists of continuous assessment (50%) and a final examination (50%). The continuous assessment includes: class participation (15%), homework (15%), and laboratory/practical training (20%). The final examination is a closed-book exam lasting 100 minutes.</p>

Media Used	Computer, online websites, Hengxing Capability Platform, and Xuexitong
Reading List	<p>[1] Electric Technology of New Energy Vehicles, Chief Editor: Shi Zhe, China Machine Press, 2020, 4th Edition.</p> <p>[2] Electric Technology of New Energy Vehicles, Chief Editor: Wu Shulong, China Machine Press, 2020, 2nd Edition.</p> <p>[3] Electric Drive Technology of New Energy Vehicles, Chief Editors: He Yibin, Hou Zhihua, China Machine Press, 2020.</p> <p>[4] Power Battery Technology of New Energy Vehicles, Chief Editors: Du Huiqi, Li Jinghua, China Machine Press, 2021.</p> <p>[5] Chinese University MOOC Website: https://www.icourse163.org</p> <p>[6] Zhihuishu Website: https://www.zhihuishu.com</p> <p>[7] Rain Classroom Website: https://www.yuketang.cn</p> <p>[8] Zhao Ying. Special Topic on Advanced Power Battery Technology for New Energy Vehicles [J]. Journal of Southwest University (Natural Science Edition), 2024, 46(12):1.</p> <p>[9] Zhao Ying. Special Topic on Advanced Power Battery Technology for New Energy Vehicles [J]. Journal of Southwest University (Natural Science Edition), 2024, 46(12):1.</p>
Revision time	July, 2024

Module name Management of Automotive Service Enterprises

Module name	Management of Automotive Service Enterprises
Module level	Undergraduate
Code	3080208213
Courses	Professional Education
Semester	Spring
Contact person	Wang Feng
Lecturer	Wang Feng
Language	Chinese
Relation to curriculum	restricted elective , 6 th semester
Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, practice, discussion, and case analysis, 2 class hours per week.

Work load (Total Weekly Study Hours)	<p>1. Total class hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed over 16 weeks.</p> <p>2. Teaching: 2 class hours per week, including lectures, discussions, and Q&A.</p> <p>3. Self-study: Approximately 1.5 hours per week, including pre-class preparation, post-class exercises, and exam review.</p>		
Credit points ETCS	<p>2</p>		
Requirements according to the examination Regulations	<p>A student must have registered for the course.</p>		
Recommended prerequisites	<p>Automotive Marketing, Case Analysis of Innovation and Entrepreneurship in Automotive Services</p>		
	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

Learning outcomes and their corresponding PLOs	CLO-1 Learning Outcome-1	Be able to understand the basic concepts, principles, and methods of automotive service enterprise management, and identify the fundamental needs of managing automotive service enterprises; through literature research, analyze the current market environment, technological development trends, and changes in customer demands in the context of automotive service enterprise management.	R1、R2
	CLO-2 Learning Outcome-2	Be able to apply the learned theories of automotive service enterprise management to solve practical problems; through the analysis of real enterprise cases, be able to summarize the key steps in the automotive service process and identify the core technologies in automotive service enterprise management.	R2、R3、R4

	CLO-3 Learning Outcome-3	Be capable of independent learning and lifelong learning; students are encouraged to break through traditional thinking patterns, actively explore new management concepts and technological applications; emphasis is placed on the cultivation of students' fundamental knowledge and skills, inspiring innovation and broadening their international perspective.	R6、 R7、 R11
Content	<p><i>Management of Automotive Service Enterprises</i> is a specialized course offered in the Automotive Service Engineering program. The course mainly covers topics such as an introduction to enterprise management, business operation management, human resource management, quality management, financial management, equipment management, information management, and corporate culture. It aims to cultivate high-quality, application-oriented talents who possess technical knowledge, business acumen, managerial skills, and an innovative spirit. Through classroom-based theoretical learning and practical skills training, students will develop the competencies required for management positions in automotive service enterprises. This prepares them to better adapt to the constantly changing business and market environment, thereby enhancing their career development opportunities.</p> <p>Knowledge Module 1: Introduction to Automotive Service Enterprise Management (Weighting Factor: 4/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Business Operation Management in Automotive Service Enterprises (Weighting Factor: 2/32, Level: Knowledge – Analysis)</p> <p>Knowledge Module 3: Quality Management in Automotive Service</p>		

	<p>Enterprises (Weighting Factor: 4/32, Level: Knowledge – Analysis)</p> <p>Knowledge Module 4: Human Resource Management in Automotive Service Enterprises (Weighting Factor: 4/32, Level: Knowledge – Analysis)</p> <p>Knowledge Module 5: Material Management in Automotive Service Enterprises (Weighting Factor: 2/32, Level: Knowledge – Analysis)</p> <p>Knowledge Module 6: Financial Management in Automotive Service Enterprises (Weighting Factor: 4/32, Level: Knowledge – Analysis)</p> <p>Knowledge Module 7: Automotive After-Sales Service (Weighting Factor: 4/32, Level: Knowledge – Analysis)</p> <p>Knowledge Module 8: Information Management in Automotive Service Enterprises (Weighting Factor: 4/32, Level: Knowledge – Analysis)</p> <p>Knowledge Module 9: Corporate Culture (Weighting Factor: 4/32, Level: Knowledge – Analysis)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment consists of process evaluation (50%) and a final term paper (50%). The process evaluation includes: unit tests (40%) + homework assignments (30%) + individual presentations (30%). One final term paper is required at the end of the course.</p>

Media employed	Computer, Online Websites, Xuexitong, Hengxing Capability Certification Platform
Reading list	<p>[1] Chen Jiamei. R&D Background of Executive Teams, Corporate Management Reform, and Ambidextrous Innovation [D]. Wuhan: Wuhan Textile University, 2024.</p> <p>[2] Luo Yufeng. Government Supervision Research on Taxi Service Quality in City G from the Perspective of Total Quality Management [D]. Guangzhou: South China University of Technology, 2023.</p> <p>[3] Gao Qing. Automotive Service Enterprise Management [M]. Beijing: Machinery Industry Press, 2020.</p> <p>[4] Wang Sumei. Modern Enterprise Management [M]. Beijing: Machinery Industry Press, 2014.</p> <p>[5] Li Jianfeng. Practical Enterprise Management [M]. Beijing: Beijing Institute of Technology Press, 2016.</p> <p>[6] Du Rui. Intelligent Management System of Electric Vehicle Charging Piles [J]. China Automotive Market, 2024, (06): 88-89.</p> <p>[7] Cao Kejing, Li Hang. Innovation Measures of the “Five Elements” in Course Evaluation of Automotive Service Enterprise Management Based on “FT” [J]. Shanxi Youth, 2024, (06): 66-68.</p>
Revision time	July, 2024

Module name Control Technology of New Energy Vehicles

Module name	Control Technology of New Energy Vehicles
Module level	Undergraduate
Code	3080208219
Courses	Professional Education
Semester	Spring
Contact person	Xia Fuzhi
Lecturer	Xia Fuzhi
Language	Chinese
Relation to curriculum	restricted elective, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site teaching, 2 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed in 16 weeks 2. Instruction: 2 hours per week, including lectures, discussions, and Q&A 3. Self-study: Approximately 1.5 hours per week, including preview, practice, and review for exams 		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Electrotechnics, Automotive Electrical and electronic control system		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Be able to understand the basic concepts of new energy vehicle control technology, explain the logical principles of new energy vehicle control technology, and outline the working processes of new energy vehicle control technology.</p>	<p>R2</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Be able to systematically explore and research new energy vehicle control technology and provide suggestions for innovative improvements based on existing technologies.</p>	<p>R3</p>
	<p>CLO-3 Learning Outcome-3</p>	<p>Be able to list current problems caused by automobiles to social life, such as environmental pollution, safety hazards, and low technological advancement, and describe new energy vehicle control technologies with higher intelligence levels and better safety.</p>	<p>R6</p>

Content	<p>This course is an elective professional course for students majoring in Automotive Service Engineering. It follows courses such as <i>Electric Vehicles</i> and <i>Automotive Electrical and Electronic Control Systems</i> and precedes courses like <i>New Energy Vehicle Fault Diagnosis Training</i>.</p> <p>The course analyzes the structure and control logic of electric vehicle control systems, including the Vehicle Control Unit (VCU), Motor Control Unit (MCU), Battery Management System (BMS), charging system, and air conditioning control system. It aims to cultivate students' ability to integrate fundamental knowledge of new energy vehicles with practical vehicle models, achieving the goal of applying what they have learned.</p> <p>Knowledge Module 1: Vehicle Control Unit (VCU) (Weighting Factor: 6/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Motor Control Unit (MCU) (Weighting Factor: 6/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 3: Battery Management System (BMS) (Weighting Factor: 6/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 4: Charging System (Weighting Factor: 6/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 5: Air Conditioning Control System (Weighting Factor: 8/32, Level: Memorization + Understanding)</p>
Study and examination requirements and forms of examination	<p>Course assessment includes continuous assessment (50%) and final exam (50%). The continuous assessment includes: online learning 10%, class participation 20%, and homework 20%. The final exam is a closed-book exam lasting 100 minutes.</p>

Media employed	Computer, online websites, Hengxing Capability Platform, and Xuexitong
Reading list	<ol style="list-style-type: none"> 1. Li Jianwei. New Energy Vehicle Drive Motor and Control Technology [M]. Beijing: Chemical Industry Press, 2022. 2. Zeng Xiaohua. Key Technologies of New Energy Vehicles [M]. Beijing: Chemical Industry Press, 2023. 3. Luo Shi, Tian Jinyue. Domain Control Technology for New Energy Vehicles [M]. Beijing: Chemical Industry Press, 2023. 4. Rüpel. Automotive Construction Atlas [M]. Beijing: Chemical Industry Press, 2023. 5. Liu Chunhui, He Hongyan. Illustrated Principles of Electric Vehicle Structure [M]. Beijing: Chemical Industry Press, 2018. 6. Li Rui. Motor Drive Control Technology of New Energy Vehicles [J]. Laboratory Research and Exploration, 2024, 7(03): 36-39. 7. Wang Dandan. Analysis of Key Issues in Electronic Control Technology for New Energy Vehicles [J]. Internal Combustion Engine Engineering, 2023, 44(05): 110.
Revision time	July, 2024

Module name Electric Vehicles

Module name	Electric Vehicles
Module level	Undergraduate
Code	3080208210
Courses	Professional Education
Semester	Spring
Contact person	LiMin Bai
Lecturer	LiMin Bai, FuZhi Xia
Language	Chinese
Relation to curriculum	restricted elective, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecturing, demonstration, simulation, practice, and on-site teaching, 2 class hours per week		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed over 16 weeks</p> <p>2. Teaching: 2 class hours per week, including lectures, discussions, and Q&A</p> <p>3. Self-study: about 1.5 hours per week, including preview before class, exercises after class, and review for exams</p>		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Automotive Architecture, Automotive Electrical and electronic control system		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Be able to summarize design proposals based on design requirements; able to explain the feasibility of design solutions under real-world constraints such as social, health, safety, legal, cultural, and environmental conditions.</p>	<p>R3</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Be able to implement design proposals or technical processes; able to predict design outcomes through drawings and design reports, demonstrating innovative awareness.</p>	<p>R3</p>
	<p>CLO-3 Learning Outcome-3</p>	<p>Be able to explain the basic principles and methods of natural science experiments; able to apply fundamental experimental skills.</p>	<p>R4</p>
	<p>CLO-4 Learning Outcome-4</p>	<p>Be able to predict and understand the impact of automotive service engineering practice on environmental and social sustainability; clearly recognize the responsibilities involved in implementing automotive service engineering practices and their solutions.</p>	<p>R6</p>

Content	<p>This course is an elective specialized course for students majoring in Automotive Service Engineering. It serves as both an application and deepening of the prerequisite courses Electrical Engineering and Automotive Electrical and Electronic Control Systems, and lays a foundation for students to continue studying automotive new technologies such as Intelligent Connected Vehicles. Through this course, students will be able to explain the basic knowledge of electric vehicles, master related knowledge of onboard energy source systems, electric motor drive systems, electric auxiliary systems, and charging stations of electric vehicles, and cultivate awareness of improvement, research and development, and innovation.</p> <p>This course is committed to serving regional economic development and adheres to the student-centered principle. Guided by the development needs of the electric vehicle industry, it emphasizes teaching knowledge of electric vehicle structure and principles, onboard energy source systems, and more. The course content is delivered in a progressive, step-by-step manner to fully integrate knowledge, skills, and qualities, thereby improving students' comprehensive abilities and enabling seamless connection between students and society.</p> <p>Knowledge Module 1: Introduction (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Pure Electric Vehicles (Weighting Factor: 2/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 3: Hybrid Electric Vehicles (Weighting Factor: 4/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 4: Fuel Cell Electric Vehicles (Weighting Factor: 4/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 5: Electric Motor Drive Systems of Electric Vehicles (Weighting Factor: 4/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 6: Onboard Energy Source Systems (Batteries) of Electric Vehicles (Weighting Factor: 6/32, Level: Memorization + Understanding + Analysis)</p>
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	<p>Knowledge Module 7: Electric Auxiliary Systems of Electric Vehicles (Weighting Factor: 6/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 8: Electric Vehicle Charging Stations (Weighting Factor: 4/32, Level: Memorization + Understanding + Analysis)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes a process assessment (50%) and a final exam (50%). The process assessment consists of: class participation 15%, homework 15%, and laboratory training 20%. The final exam is a 100-minute closed-book test.</p>
<p>Media employed</p>	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>
<p>Reading list</p>	<ol style="list-style-type: none"> 1. He Hongwen. Principles and Structure of Electric Vehicles [M]. Beijing Jiaotong University Press, 2018. 2. Zhao Lijun, Tong Qinzhi. Structure and Principles of Electric Vehicles [M]. Peking University Press, 2012. 3. Jiang Jiuchun. Application Technology of Electric Vehicle Power Batteries [M]. Mechanical Industry Press, 2017. 4. Wei Jiabei. Design of Power Distribution Systems for Electric Vehicle Charging Stations [M]. Beijing Jiaotong University Press, 2015. 5. Zhu Shenggao, Feng Jian, Zhang Dejun. Structure Principles and Maintenance of Electric Vehicles [M]. Mechanical Industry Press, 2021. 6. Liu Shuangyuan, Wu Kerui. Integrated Fault Diagnosis Strategy for Electric Vehicle Motor Drive and Sensor Systems [J]. Mechanical Design and Manufacturing, 2024, (06): 223-228+233. 7. Cao Yongsheng, Liu Yang, Wang Yongquan, et al. Online Charging

	Scheduling Algorithm for Electric Vehicles under Carbon Peak Constraints [J]. Computer Science, 2024, 51(03): 265-270.
Revision time	July, 2024

Module name Power Batteries for New Energy Vehicles

Module name	Power Batteries for New Energy Vehicles
Module level	Undergraduate
Code	3080208216
Courses	Professional Education
Semester	Spring
Contact person	LiMin Bai
Lecturer	Li Min Bai, FuZhi Xia
Language	Chinese
Course Nature and Semester Offered	restricted elective, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site teaching, 2 class hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total Hours: 56 hours = 32 hours of lectures + 24 hours of self-study, to be completed over 16 weeks 2. Lectures: 2 class hours per week, including lectures, discussions, and Q&A 3. Self-study: Approximately 1.5 hours per week, including pre-class preparation, post-class exercises, and exam review. 		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Automotive Architecture, Automotive Electrical and Electronic Control Systems</i>		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>their</p> <p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome -1</p>	<p>Through this course, students will meet the requirements of the talent cultivation program for the Automotive Service Engineering major. They will be able to describe the current state of electric vehicle development both domestically and internationally, recall theoretical knowledge of electric vehicles, apply electric vehicle maintenance skills, and develop the ability to perform fault diagnosis and maintenance of electric vehicles.</p>	<p>R2</p>
	<p>CLO-2 Learning Outcome -2</p>	<p>Be able to describe the basic theories of electric vehicle battery fault diagnosis and detection, as well as the current development status both domestically and internationally; be able to explain common battery fault phenomena in electric vehicles and the causes of these faults; be capable of practicing methods for detecting, diagnosing, and troubleshooting electric vehicle battery faults.</p>	<p>R3</p>

	CLO-3 Learning Outcome -3	Enable students to develop a strong sense of professional ethics and strict discipline; foster the ability to work collaboratively in teams and cultivate an innovative and practical spirit; instill a rigorous and meticulous work style as well as a serious and responsible work attitude.	R6
Content	<p>This course, “Power Batteries for New Energy Vehicles” is a specialized course for majors such as Automotive Service Engineering and Vehicle Engineering. While traditional batteries like lead-acid, nickel-cadmium, and nickel-metal hydride are relatively mature in technology, they pose significant problems when used as power batteries in vehicles. Currently, more and more automakers are choosing lithium batteries as the power source for new energy vehicles, making this course a foundational component for other electric vehicle-related courses.</p> <p>The prerequisite courses for this subject include “Automotive Architecture” and “Automotive Electrical and Electronic Control Systems”; the follow-up courses are “Electrical Technology of New Energy Vehicles” and “Control Technology of New Energy Vehicles”.</p> <p>Knowledge Module 1: Electric Vehicles and Power Batteries (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Classification of Power Batteries (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 3: Performance Testing and Evaluation of Power Batteries (Weighting Factor: 2/32, Level: Memorization + Understanding + Analyzing)</p> <p>Knowledge Module 4: Modeling and Simulation of Power Batteries</p>		

	<p>(Weighting Factor: 2/32, Level: Memorization + Understanding + Applying)</p> <p>Knowledge Module 5: State Estimation Techniques for Power Batteries (Weighting Factor: 2/32, Level: Memorization + Understanding + Analyzing)</p> <p>Knowledge Module 6: Power Battery Management Systems (Weighting Factor: 2/32, Level: Memorization + Understanding + Analyzing)</p> <p>Knowledge Module 7: Battery Pack Application Technology (Weighting Factor: 2/32, Level: Memorization + Understanding)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and final examination (50%). The continuous assessment consists of: class participation 15%, homework 15%, and lab training 20%. The final exam is a closed-book exam lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Hengxing Capability Platform, Xuexitong</p>
<p>Reading list</p>	<ol style="list-style-type: none"> 1. Jiang Jiuchun. Application Technology of Electric Vehicle Power Batteries [M]. Beijing Jiaotong University Press, 2017. 2. He Hongwen. Principles and Construction of Electric Vehicles [M]. Beijing Jiaotong University Press, 2018. 3. Jiang Jiuchun. Charging Technology and Systems for Electric Vehicles [M]. Beijing Jiaotong University Press. 4. Jiang Jiuchun. Electric Vehicle Drive Motors and Control Technology [M]. Beijing Jiaotong University Press, 2018. 5. Fu Songqiao, Chang Jian'e. Application of Virtual Simulation Technology in Teaching Power Battery Courses [J]. Battery, 2024, 54(03): 435-437. 6. Li Zhiyuan, Lu Ruihua, Yu Qinghua, et al. Research and Analysis on Thermal Runaway Characteristics and Prevention

	<p>Technologies of Power Batteries [J]. Automotive Engineering, 2024, 46(01): 139-150.</p> <p>7. Yang Shichun, Lu Yu, Zhou Sida, et al. Research and Analysis on the Standard System of Vehicle Power Batteries [J]. Journal of Mechanical Engineering, 2023, 59(22): 3-19.</p>
Revision time	July, 2024

Module name Drive Motors for New Energy Vehicles

Module name	Drive Motors for New Energy Vehicles
Module level	Undergraduate
Code	3080208217
Courses	Professional Education
Semester	Spring
Contact person	Zhao Yiming
Lecturer	Zhao Yiming
Language	Chinese
Course Nature and Semester Offered	restricted elective, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site teaching, 2 class hours per week.		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed over 16 weeks</p> <p>2. Teaching: 2 class hours per week, including lectures, discussions, and Q&A</p> <p>3. Self-study: Approximately 1.5 hours per week, including pre-class preparation, post-class exercises, and exam review.</p>		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Advanced Mathematics, University Physics, Electrical Engineering, Automotive Architecture, Automotive Electrical and Electronic Control Systems.</i>		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

their corresponding PLOs	CLO-1 Learning Outcome -1	Be able to describe and explain the composition of high-voltage electric drive systems, as well as the structure, principles, and applications of various types of electric motors including DC motors, AC induction motors, AC permanent magnet motors, and switched reluctance motors. Additionally, be able to explain the structure and control methods of drive motors used in new energy vehicles.	R2
	CLO-2 Learning Outcome -2	Be able to troubleshoot common faults in new energy vehicle drive motor systems. Be capable of solving practical problems related to the maintenance, servicing, and repair of drive motors.	R5
	CLO-3 Learning Outcome -3	Be able to analyze the operating conditions of new energy vehicle drive motor systems.	R6

<p>Content</p>	<p><i>New Energy Vehicle Motors</i> is a specialized course in the Automotive Service Engineering program. Taking new energy vehicles as the learning object and building upon courses such as <i>New Energy Vehicle Motors</i>, <i>Power Batteries for New Energy Vehicle</i>, and <i>Electrical Technology of New Energy Vehicles</i>, the course aims to enable students to summarize the structures, principles, and applications of the main types of motors used in new energy vehicles—such as DC motors, AC induction motors, AC permanent magnet motors, and switched reluctance motors—as well as the control methods of drive motors in new energy vehicles. This course lays a solid foundation for future work in equipment management, marketing, service, and maintenance in the new energy vehicle industry.</p> <p>Knowledge Module 1: Introduction (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Power Converters for New Energy Vehicles (Weighting Factor: 4/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 3: Control Technology of Power Converters for New Energy Vehicles (Weighting Factor: 4/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 4: Overview of Motors for New Energy Vehicles and DC Drive Motors (Weighting Factor: 6/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 5: Asynchronous Drive Motors for New Energy Vehicles (Weighting Factor: 8/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 6: Permanent Magnet Synchronous Drive Motors for New Energy Vehicles (Weighting Factor: 6/32, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 7: Switched Reluctance Drive Motors for New Energy Vehicles (Weighting Factor: 2/32, Level: Memorization + Understanding + Analysis)</p>
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Study and examination requirements and forms of examination	<p>The course assessment consists of continuous assessment (50%) and a final examination (50%). The continuous assessment includes: class participation (15%) + homework (15%) + laboratory and practical training (20%). The final examination is a 100-minute closed-book exam.</p>
Media employed	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>
Reading list	<p>[1] Jiang Jiuchun, ed. Electric Vehicle Drive Motors and Control Technology. Beijing Jiaotong University Press, 1st edition, 2018.</p> <p>[2] Guo Huachao et al., eds. New Energy Vehicle Drive Motors and Control Technology. Mechanical Industry Press, 1st edition, 2023.</p> <p>[3] Li Zhuo et al., eds. Principles and Maintenance of New Energy Vehicles. Mechanical Industry Press, 2nd edition, 2024.</p> <p>[4] Cheng Chaoyang, Zhong Bailin, Ni Zhengxuan, et al. Research Progress on High-Strength Non-Oriented Silicon Steel Magnetic and Mechanical Property Regulation for New Energy Vehicle Drive Motors. Journal of Engineering Science, 2023, 45(09): 1482-1492.</p> <p>[5] Cui Gang, Xiong Bin, Gu Guobiao. Analysis and Calculation of Equivalent Thermal Conductivity of Slot Insulation in Flat Copper Wound Motors for New Energy Vehicles. Journal of Electrical Machines and Control, 2022, 26(11): 1-13.</p> <p>[6] Wang Zhifu, Sun Qingle, Li Haolong, et al. Review of Hardware-in-the-Loop Simulation Technology for New Energy Vehicle Drive Motors. Electrical Drive, 2022, 52(01): 3-12.</p> <p>[7] Zhu Chengyi, Bao Yuankai, Wang Yong, et al. Application Status and Performance Regulation Research Progress of Non-Oriented Silicon Steel for New Energy Vehicle Drive Motors. Materials Review, 2021, 35(23): 23089-23096.</p>

Revision time	July, 2024
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Module name Automotive Parts

Module name	Automotive Parts
Module level	Undergraduate
Code	3080208214
Courses	Professional Courses
Semester	Fall
Contact person	Wei Guangyuan
Lecturer	Wei Guangyuan
Language	Chinese
Course Nature and Semester Offered	restricted elective, 7 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture and discussion, 2 hours per week		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 88 hours = 32 hours of lectures + 56 hours of self-study, completed in 16 weeks 2. Teaching: 2 hours per week, including lectures, discussions, etc. 3. Self-study: About 4 hours per week, including preview before class, exercises after class, and review for exams. 		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Car Construction; Automotive Electrical and Electronic Control Systems; Car Marketing</i>		
Learning	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>outcomes and their corresponding PLOs</p>	<p>CLO-1 Learning Outcome -1</p>	<p>Be able to explain the names, functions, and management knowledge of automotive parts, as well as the theoretical knowledge and marketing strategies related to automotive parts marketing and management; able to apply pricing management and pricing strategies for automobiles and their parts. Able to apply knowledge of automobile inventory in and outflow and warehouse management, independently complete parts ordering and procurement tasks. Able to implement determination of automotive parts inventory levels and conduct stocktaking.</p>	<p>R1</p>
	<p>CLO-2 Learning Outcome -2</p>	<p>Be able to list the development trends of new energy vehicles, explain the structure, advantages, and limiting factors of electric vehicles. Able to analyze the demand for automotive parts. Furthermore, able to propose solutions to address automotive parts demand issues to ensure vehicle safety, environmental protection, and other requirements, with particular</p>	<p>R6</p>

		insights into intelligent connected vehicles and automotive batteries.	
	CLO-3 Learning Outcome -3	Be able to maintain a rigorous work ethic, a spirit of serving the people, and a responsible attitude toward vehicle safety; able to possess good professional ethics and gradually develop a passion for their professional work.	R8
	CLO-4 Learning Outcome -4	Be able to carry out management and marketing operations in automotive parts marketing enterprises; able to apply the basic methods, procedures, and business concepts of automotive parts marketing enterprise management. Through training, understands the current development status of the automotive industry, can independently conduct investigations and analyses, and possesses the ability for	R10

		independent innovation and entrepreneurship.	
Content	<p>“Automotive Parts Management” is a required specialized course for students majoring in Automotive Service Engineering. Building on prior courses such as “Automotive Architecture” and “Automotive Marketing”, which provide students with a basic understanding of vehicle structure, component composition, and automotive marketing, this course aligns with the development of China’s automotive aftermarket and the demand for specialized talent in automotive parts markets. It aims to cultivate students’ knowledge and skills in automotive parts coding, procurement, inventory management, and sales, helping students develop awareness of cost, environmental protection, safety, and quality, thereby improving their overall quality and laying a solid foundation for future employment.</p> <p>Knowledge Module 1: Overview (Weighting Factor 2/32, Level: Understanding)</p> <p>Knowledge Module 2: Basic Knowledge of Automotive Parts (Weighting Factor 4/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 3: Automotive Parts Numbering Rules and Catalog Retrieval (Weighting Factor 4/32, Level: Application)</p> <p>Knowledge Module 4: Automotive Parts Procurement and Order Management (Weighting Factor 6/32, Level: Understanding + Application)</p> <p>Knowledge Module 5: Automotive Parts Inbound and Outbound Logistics and Warehouse Management (Weighting Factor 6/32, Level: Understanding + Application)</p> <p>Knowledge Module 6: Automotive Parts Pricing, Sales Skills, and</p>		

	<p>Marketing Mix (Weighting Factor 6/32, Level: Understanding + Application)</p> <p>Knowledge Module 7: Automotive Parts Management and Business Planning (Weighting Factor 4/32, Level: Understanding + Application)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: class performance (15%) + regular assignments (15%) + regular tests (20%). The final exam is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, XingNeng platform, and Xuexitong</p>

<p>Reading list</p>	<p>[1] Automotive Parts and Marketing (Second Edition), Sun Fengying, Mechanical Industry Press, September 2016.</p> <p>[2] Marketing of Automobiles and Auto Parts, Li Gang, Beijing University of Technology Press, December 2013.</p> <p>[3] Training Course for Automotive Parts Marketing Staff, Zhang Guofang, People's Traffic Publishing House, March 2012.</p> <p>[4] Management and Marketing of Automotive Parts, Liu Ying, Mechanical Industry Press, July 2022.</p> <p>[5] Song Qing;. Strategies for Optimizing Inventory from the Perspective of Automotive Parts Supply Chain [J]. China Storage and Transportation, 2020(11):134-135.</p> <p>[6] Zhao Yanan. Research on Optimization of W Company's Warehouse Layout [D]. Beijing Jiaotong University, March 2021.</p> <p>[7]Romanuke Vadim.Arima Model Optimal Selection for Time Series Forecasting[J].Maritime Technical Journal,2022(1):28-40.</p> <p>[8]Guo Lina.Prediction Method of Short-Term Demand for e-Commerce Goods Based on Deep Neural Network[J].Advances in Multimedia,2022.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Engine in Theory

Module name	Automotive Engine in Theory
Module level	Undergraduate
Code	3080208205
Courses	Professional Education
Semester	Fall
Contact person	Guo Haibing
Lecturer	Guo Haibing
Language	Chinese
Course Nature and Semester Offered	Optional,7 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Goal-oriented teaching method, heuristic teaching method; 2 hours per week		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed over 16 weeks</p> <p>2. Teaching: 2 lecture hours per week, including theoretical teaching, discussions, etc.</p> <p>3. Self-study: 3 hours per week, including online learning, discussions, assignments, etc.</p>		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended Prerequisites	<i>Automotive Architecture, Automotive Theory</i>		
Learning outcomes and	Course Learning Outcome (CLO)	Description	Supported Programme Learning Objective (PLOs)

<p>their corresponding PLOs</p>	<p>CLO-1</p>	<p>Be able to apply scientific methods to study complex engineering issues such as engine dynamics, fuel efficiency, and emissions; develop experimental plans; build experimental setups to conduct tests; accurately collect experimental data; and perform scientific and reasonable analysis of the results to draw valid and effective conclusions.</p>	<p>R1、R2、R4</p>
	<p>CLO-2</p>	<p>Be able to apply theoretical knowledge of automotive engine principles to reasonably analyze and evaluate the impact of complex engine performance issues on society, health, safety, and other aspects, as well as understand the responsibilities involved; comprehend and assess the effects of improving engine performance on the environment and sustainable development, and select or design new engines that meet social and environmental requirements as well as national technical standards.</p>	<p>R6</p>

	CLO-3	Be able to apply scientifically sound learning methods to independently research new engine technologies, expand personal knowledge and skills, possess professional ideals and beliefs, and adapt to the talent demands of automotive engine technology development.	R11
Content	<p>Automotive Engine Principles is a specialized expansion course in Vehicle Engineering. It mainly covers the basic knowledge of automotive engine principles, engine performance, engine scavenging process, formation and combustion process of engine mixture, and engine characteristics. Through this course, students will systematically describe the fundamental theories and methods for improving engine power and fuel economy, summarize the basic theories and adjustment methods of fuel supply systems for gasoline and diesel engines, and apply experimental methods such as mechanical loss measurement, speed characteristics, load characteristics, and universal characteristics of automotive engines. This enables students to meet the talent demands of automotive engine technology development.</p> <p>Knowledge Module 1: Introduction (Weighting Factor 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Engine Performance (Weighting Factor 6/32, Level: Memorization – Application)</p> <p>Knowledge Module 3: Engine Working Cycle (Weighting Factor 6/32, Level: Understanding – Analysis)</p> <p>Knowledge Module 4: Formation and Combustion of Engine Mixture (Weighting Factor 6/32, Level: Understanding – Evaluation)</p> <p>Knowledge Module 5: Engine Characteristics and Matching (Weighting Factor 12/32, Level: Understanding – Creation)</p>		

Study and examination requirements and forms of examination	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of regular performance (40%) and homework (60%). The final exam lasts 100 minutes.</p>
Media employed	<p>Computer, online websites</p>
Reading list	<p>[1] Yan Fuwu. Principles of Automotive Engines, 4th ed. Beijing: China Machine Press, 2019.</p> <p>[2] Lin Xuedong. Principles of Engines, 3rd ed. Beijing: China Machine Press, 2019.</p> <p>[3] Liu Shenghua, Zhou Longbao (eds.). Internal Combustion Engines (4th edition). Beijing: China Machine Press, 2019.</p> <p>[4] Chen Guotang. Engineering Thermodynamics. Beijing: Beijing Institute of Technology Press, 1998.</p> <p>[5] Yang Yong, Zou Fuyang. Comparative Study on the Performance of Gasoline and Methanol in Spark-Ignition Engines. Equipment Manufacturing Technology, 2024, (05): 58-61.</p> <p>[6] Zhong Congcheng, Zou Minghu. Internal Combustion Engines and Components, 2024, (08): 81-83.</p>
Revision time	<p>July, 2024</p>

Module name Automotive Design

Module name	Automotive Design
Module level	Undergraduate
Code	3080207202
Courses	Professional Education
Semester	Fall
Contact person	Qin Jingjing
Lecturer	Qin Jingjing
Language	Chinese
Course Nature and Semester Offered	compulsory, 7 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, exercises, and on-site teaching, 2 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 56 hours = 32 hours of lectures + 24 hours of self-study, completed over 16 weeks 2. Lectures: 2 hours per week, including theoretical teaching and discussions 3. Self-study: 1.5 hours per week, including online learning, discussions, and assignments 		
Credit points ETCS	2		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Automotive Architecture and Introduction to Automotive Service Engineering		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

their corresponding PLOs	CLO-1 Learning Outcome -1	Be able to summarize and proficiently master the theoretical knowledge required for professional qualifications in vehicle engineering, apply fundamental professional knowledge in engineering management, and complete corresponding design tasks.	R1
	CLO-2 Learning Outcome -2	Possesses basic abilities in reading, writing, and translating foreign language literature related to the vehicle engineering field; is capable of using design software to solve design-related problems; has skills in professional literature retrieval and scientific research, reaching the professional level of an automotive designer.	R5
	CLO-3 Learning Outcome -3	Apply target vehicle design parameters to select or design technically feasible, economically reasonable, safe, and environmentally friendly design solutions that meet the requirements, thereby being able to respond to the continuously changing industrial	R7、R8

	technological upgrades, policies, and market changes.	
CLO-3 Learning Outcome -4	Be able to summarize the current status and development trends of the discipline in their major and related fields; possess innovation, entrepreneurship, and systems thinking abilities, as well as lifelong learning skills; demonstrate core competitiveness in the field of vehicle engineering; and be capable of independently handling tasks in related technical or management areas.	R2、 R3、 R6

<p>Content</p>	<p>This course is a core module in the vehicle engineering curriculum focused on automotive structural design and plays a crucial role in the vehicle engineering program. It introduces new design concepts and methods during the automotive design process, conducting comprehensive technical analysis and calculations on products, assemblies, and components. The scope of automotive design includes overall vehicle design, assembly design, and component design. The goal is to ensure that the designed product meets the vehicle parameters and performance indicators specified in the design brief, and to decompose these vehicle parameters and performance indicators into relevant assembly parameters and functions. Through this course, students will enhance their abilities in automotive structural design and performance analysis and be capable of independently completing automotive design tasks.</p> <p>Knowledge Module 1: Overall Vehicle Design (Weighting Factor 4/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Clutch Design (Weighting Factor 4/32, Level: Understanding - Creation)</p> <p>Knowledge Module 3: Transmission Design (Weighting Factor 4/32, Level: Understanding - Creation)</p> <p>Knowledge Module 4: Universal Joint and Drive Shaft Design (Weighting Factor 4/32, Level: Understanding - Creation)</p> <p>Knowledge Module 5: Drive Axle Design (Weighting Factor 5/32, Level: Understanding - Creation)</p> <p>Knowledge Module 6: Suspension Design (Weighting Factor 4/32, Level: Understanding - Creation)</p> <p>Knowledge Module 7: Steering System Design (Weighting Factor 4/32, Level: Understanding - Creation)</p> <p>Knowledge Module 8: Brake System Design (Weighting Factor 3/32, Level: Understanding - Creation)</p>
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Study and examination requirements and forms of examination	<p>The course assessment consists of continuous assessment (50%) and a final exam (50%). The continuous assessment includes: regular performance 10%, homework 20%, and periodic tests 20%. The final closed-book exam lasts 100 minutes.</p>
Media employed	<p>Computer, online websites: China University MOOC website: https://www.icourse163.org Zhihuishu Online Learning Platform: https://www.zhihuishu.com Rain Classroom website: https://www.yuketang.cn</p>
Reading list	<p>[1] Min Haitao, Wang Jianhua. Automotive Design. Beijing: Mechanical Industry Press, 1998.</p> <p>[2] Zhang Hongxin. Automotive Design. Beijing: Mechanical Industry Press, 1998.</p> <p>[3] Liu Xinxin. Automotive Design. Beijing: Tsinghua University Press, 2001.</p> <p>[4] Luo Yongge, Feng Ying. Automotive Design. Beijing: Mechanical Industry Press, 2011.</p> <p>[5] Ban Lu, Liu Boqian, Wei Yi, et al. Simulation Analysis and Optimization of Electric Vehicle Chassis Layout Based on ADAMS Car. Times Auto, 2024, (23): 139-141.</p> <p>[6] Jin Hui, Wang Jianmei, Pan Yulong, et al. Research on Automotive Virtual Simulation Training Platform Based on VR Technology. Science and Innovation, 2024, (22): 54-56+60.</p>
Revision time	<p>July, 2024</p>

Module name Case Analysis of Innovation and Entrepreneurship in Automotive Services

Module name	Case Analysis of Innovation and Entrepreneurship in Automotive Services
Module level	Undergraduate
Code	3080208303
Courses	Professional Education
Semester	Fall
Contact person	LiMin Bai
Lecturer	LiMin Bai, Kai Yu
Language	Chinese
Course Nature and Semester Offered	compulsory, 5 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture method, case study method, discussion method, 2 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 28 hours = 16 hours of lectures + 12 hours of self-study, completed in 8 weeks 2. Teaching: 2 hours per week, including lectures, discussions, and Q&A 3. Self-study: About 1.5 hours per week, including preview before class, exercises after class, and review for exams 		
Credit points ETCS	1		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Fundamentals of Entrepreneurship		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome -1</p>	<p>By completing this course, students will be able to analyze automotive service innovation and entrepreneurship cases from a systematic perspective; possess the ability to correctly apply theories to solve practical problems; and be capable of designing related planning schemes.</p>	<p>R2、 R3</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Through this course and independent inquiry, students will develop the ability to use modern tools to collect and analyze automotive innovation and entrepreneurship cases; they will be able to study and evaluate the strengths and weaknesses of different cases and perform improved designs based on their analysis.</p>	<p>R2、 R3、 R5</p>
	<p>CLO-3 Learning Outcome-3</p>	<p>Through this course, students will gain a deep understanding of the impact of innovation and entrepreneurship in the automotive industry on social progress and human life. As a result, they will be encouraged to face challenges bravely in their studies and life, emphasize teamwork, and effectively solve problems encountered in practical production systems.</p>	<p>R8</p>

	CLO-3 Learning Outcome-4	Through this course, students will develop a bold yet meticulous mindset, as well as decisiveness and resilience. They will cultivate professional qualities in entrepreneurial management, along with the ability for continuous learning and adaptability to ongoing development.	R11
Content	<p>The course “Case Analysis of Innovation and Entrepreneurship in Automotive Services” is a compulsory practical course for students majoring in Automotive Service Engineering. It follows the prerequisite course "Basics of Entrepreneurship" and precedes "College Student Employment Guidance." Building on the theoretical knowledge of innovation and entrepreneurship, the course involves in-depth study and analysis of outstanding innovation and entrepreneurship cases within the automotive service sector. This broadens students’ innovative and entrepreneurial thinking specifically in the automotive field, enhances their practical knowledge, and strengthens their professional innovation and entrepreneurship capabilities, laying a solid foundation for future entrepreneurial practice. The course is organized around different case studies related to various automotive service sectors, guiding students to learn how to identify innovation and entrepreneurship opportunities within their specialty, how to conduct practical entrepreneurial operations, and to improve their mastery and application of business establishment and management knowledge. After graduation, students are expected to become innovative and entrepreneurial talents in the industry.</p> <p>Knowledge Module 1: Overview of the Automotive Service Sector (Weighting Factor: 2/16, Level: Memorization + Understanding)</p>		

	<p>Knowledge Module 2: Innovation and Entrepreneurship Cases in Automotive Leasing (Weighting Factor: 4/16, Level: Understanding – Evaluating)</p> <p>Knowledge Module 3: Innovation and Entrepreneurship Cases in Automotive After-Sales Maintenance (Weighting Factor: 6/16, Level: Understanding – Evaluating)</p> <p>Knowledge Module 4: Innovation and Entrepreneurship Cases in Automotive Sales (Weighting Factor: 4/16, Level: Understanding – Evaluating)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final non-written exam(50%). The continuous assessment consists of regular performance (50%) and homework (50%). The final non-written exam is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>

<p>Reading list</p>	<p>[1] Zhan, Y., Yu, X., Xia, C., et al. Fundamentals of College Students' Innovation and Entrepreneurship [M]. Chongqing University Press, 2021.</p> <p>[2] Zhang, J. Case Studies on College Students' Innovation and Entrepreneurship [M]. Social Sciences Academic Press, 2017.</p> <p>[3] Jin, N., Liu, W. Report on Chinese College Students' Entrepreneurship [M]. Renmin University of China Press, 2017.</p> <p>[4] Yin, X. Research on the Integration of Entrepreneurship Education and Professional Education in American Universities [M]. Shanghai Jiao Tong University Press, 2023.</p> <p>[5] Wei, L., Wang, H. Fundamentals of College Students' Innovation and Entrepreneurship [M]. Chemical Industry Press, 2022.</p> <p>[6] Zhao, F. Innovative Applications of Automotive Sensor Technology in Intelligent Driving Systems [J]. Automotive Test Report, 2024, (23): 29-31.</p> <p>[7] Wang, Y. Application and Innovation Research of Mechatronics Technology in Modern Automobile Manufacturing [J]. Automotive Maintenance Technician, 2024, (24): 123-124.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Innovative Technology of Intelligent Connected Vehicles

Module name	Innovative Technology of Intelligent Connected Vehicles
Module level	Undergraduate
Code	3080208305
Courses	Innovation and Entrepreneurship Education
Semester	Spring
Contact person	FuZhi Xia
Lecturer	FuZhi Xia
Language	Chinese
Course Nature and Semester Offered	compulsory, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, exercises, discussions, and case analysis, 3 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 84 hours = 48 hours of lectures + 36 hours of self-study, completed over 16 weeks. 2. Teaching: 3 hours per week, including lectures, discussions, and Q&A. 3. Self-study: Approximately 2.25 hours per week, including preview before class, exercises after class, and review for exams. 		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Case Analysis of Innovation and Entrepreneurship in Automotive Services		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Be able to understand the basic concepts of intelligent connected vehicle technology; able to comprehend the logical principles of intelligent connected vehicle technology; able to summarize the working processes of intelligent connected vehicle technology.</p>	<p>R1</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Be able to systematically analyze and research intelligent connected vehicle technology; able to propose innovative improvements based on existing intelligent connected vehicle technologies and design implementation pathways.</p>	<p>R2、R3</p>
	<p>CLO-3 Learning Outcome-3</p>	<p>Be able to analyze current issues such as environmental pollution, safety risks, and low technological integration caused by automobiles in society, and design intelligent connected vehicle technologies with higher levels of intelligence and improved safety.</p>	<p>R2、R3</p>

<p>Content</p>	<p>Innovative Technology of Intelligent Connected Vehicles is a compulsory professional course for the four-year undergraduate program in Automotive Service Engineering. This practice-oriented course aims to cultivate students' hands-on skills and innovative abilities through a combination of theory and practical application. The course emphasizes interdisciplinary integration, covering fields such as vehicle engineering, communication technology, and computer science. Through this course, students will understand the key technologies and system architectures of intelligent connected vehicles, grasp the fundamental principles of related technologies, and be able to explain the basic structural logic of new energy vehicle control technologies. The course also aims to foster scientific thinking and technological innovation spirit in students. The core mission of this course is to integrate foundational discipline knowledge with modern automotive technologies. Through immersive learning, it enhances students' ability to comprehensively apply knowledge, ultimately improving their overall professional competence.</p> <p>Knowledge Module 1: Intelligent Connected Vehicle Sensor Technology and Applications (Weighting Factor: 12/48, Level: Memorization to Evaluating)</p> <p>Knowledge Module 2: Intelligent Connected Vehicle Chassis Drive-by-Wire Technology and Applications (Weighting Factor: 16/48, Level: Memorization to Evaluating)</p> <p>Knowledge Module 3: Intelligent Connected Vehicle Smart Cockpit Technology and Applications (Weighting Factor: 16/48, Level: Memorization to Evaluating)</p> <p>Knowledge Module 4: Intelligent Connected Vehicle Internet of Vehicles (IoV) Technology and Applications (Weighting Factor: 4/48, Level: Memorization to Evaluating)</p>
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Study and examination requirements and forms of examination	<p>The course assessment includes continuous assessment (50%) and final project defense (50%). The continuous assessment consists of class participation (40%), homework assignments (30%), and individual presentations (30%). There will be one final project defense.</p>
Media employed	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>
Reading list	<p>[1] Cui Shengmin. Intelligent Connected Vehicle Technology [M]. Beijing: Mechanical Industry Press, March 2021.</p> <p>[2] Xingyun Xinneng Technology (Shenzhen) Co., Ltd. Internet of Vehicles Technology and Applications [M]. Beijing: Mechanical Industry Press, November 2023.</p> <p>[3] Xingyun Xinneng Technology (Shenzhen) Co., Ltd. Intelligent Connected Vehicle Sensor Technology and Applications [M]. Beijing: Mechanical Industry Press, November 2023.</p> <p>[4] Shen Baozhi, Wang Shulong, Cai Haihong. Principles and Applications of Intelligent Connected Vehicle Technology [M]. Beijing: Mechanical Industry Press, 2025.</p> <p>[5] Guo Wanghu. Release of Intelligent Connected Vehicle Technology Roadmap 2.0 [J]. Intelligent Connected Vehicles, 2020, (06):10-13.</p> <p>[6] Sun Jian. Exploration on the Development of Intelligent Connected Vehicle Technology and Standards [J]. Automotive Practical Technology, 2018, (20):46-48.</p> <p>[7] Peng Fuguan. Research on Cultivating Students' Innovation Ability Based on Automotive Mold Design [J]. Automotive Knowledge, 2024, 24(12):211-213.</p>

Revision time	July, 2024
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Module name Labor Practice

Module name	Labor Practice
Module level	Labor practice
Code	3080208514
Courses	Concentrated practice
Semester	Spring
Contact person	Fang Wang
Lecturer	Fang Wang
Language	Chinese
Course Nature and Semester Offered	compulsory, 2th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, practice, and field teaching, 2 class hours per week.		
Work load (Total Weekly Study Hours)	1. Total Hours: 42 hours = 16 hours of lectures + 26 hours of self-study, completed over 8 weeks. 2. Lectures: 2 hours per week, including lectures and discussions. 3. Self-study: 3.25 hours per week, including pre-class preparation, post-class exercises, and exam review.		
Credit points ETCS	1.5		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Education on Outstanding Traditional Chinese Culture</i>		
Learning	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>outcomes and their corresponding PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Be able to understand the connotations and implementation paths of the spirit of labor, model workers, and craftsmanship; be able to identify practical approaches to labor activities in society, schools, and families, and develop hands-on skills; continuously innovate and enrich labor education through activities such as entering military camps, participating in public services, engaging in volunteer work, and inheriting the red gene, thereby enhancing creative labor abilities.</p>	<p>R1、R8</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Develop hands-on and problem-solving abilities through labor practices in society, school, and family settings; understand the value of labor through physical effort and practical experiences, and foster a correct attitude toward work; cultivate standardized operational habits and develop good professional behavior in students.</p>	<p>R7</p>

<p>Content</p>	<p>The course <i>Labor Practice</i> is a compulsory intensive practical teaching component for undergraduate students in universities. The main content includes social labor practice, school labor practice, family labor practice, public service and volunteer work, military training, and the inheritance of the red gene. Focusing on the popularization of scientific knowledge about labor and the improvement of labor-related scientific literacy, the course integrates the development of labor science with the practical needs of labor. It is designed in line with the characteristics of contemporary university students and covers multiple dimensions, including cultivation of labor ethics, promotion of the model worker spirit, fostering of craftsmanship, social labor practice, school and family-based labor practice, military training, public service awareness, volunteerism, and the inheritance of red revolutionary traditions. Through this course, students are guided to firmly establish a Marxist view of labor, truly understand the values of labor, its role in creating value, and its connection to a fulfilling life. The course also aims to enhance students' ability to participate in society and strengthen their team collaboration skills.</p> <p>Knowledge Module 1: Social Labor Practice</p> <p>Weighting Factor: 2/16; Level: Understanding + Application + Evaluation</p> <p>Knowledge Module 2: School Labor Practice</p> <p>Weighting Factor: 4/16; Level: Understanding + Application + Evaluation</p> <p>Knowledge Module 3: Family Labor Practice</p> <p>Weighting Factor: 4/16; Level: Understanding + Application + Evaluation</p> <p>Knowledge Module 4: Public Service and Volunteer Work</p> <p>Weighting Factor: 2/16; Level: Understanding + Application + Evaluation</p> <p>Knowledge Module 5: Military Training and Inheriting the Red Gene</p> <p>Weighting Factor: 4/16; Level: Understanding + Application + Evaluation</p>
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Study and examination requirements and forms of examination	<p>The course assessment consists of continuous assessment (50%) and a course paper (50%). The continuous assessment includes: regular performance (40%) + attendance (30%) + assignments (30%). One course paper is required.</p>
Media employed	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>
Reading list	<p>[1] Liu Xiangbing. General Theory of Labor [M]. Beijing: Higher Education Press, 2020.</p> <p>[2] Zeng Tianshan, Gu Jianjun, et al. General Theory of Labor Education [M]. Beijing: Educational Science Publishing House, 2020.</p> <p>[3] Liu Xiangbing, et al. Outline of Labor Education in the New Era [M]. Beijing: Social Sciences Academic Press, 2018.</p> <p>[4] Li Ke. Spirit of Model Workers [M]. Beijing: CPC Party History Publishing House, 2020.</p> <p>[5] Zheng Yinfeng. A Study on Labor Values Education for Post-95 College Students [M]. Beijing: China Social Sciences Press, 2020.</p> <p>[6] Ban Jianwu. Analysis of the Relationship Between Labor and Labor Education and Its Practical Significance [J]. Journal of Guangxi Normal University (Philosophy and Social Sciences Edition), 2021(02).</p> <p>[7] Huang Lirong, Ban Jianwu. A Review of the Goals in Developing Labor Education Resources [J]. Educational Science Research, 2020(10).</p>
Revision time	<p>July, 2024</p>

Module name Metalworking Practice

Module name	Metalworking Practice
Module level	Undergraduate
Code	3080201522
Courses	Concentrated Practice
Semester	Spring
Contact person	Bing Cuiying
Lecturer	Xu Shengjie, Ji Yuanjing
Language	Chinese
Course Nature and Semester Offered	Compulsory, 3th Semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	On-site teaching, 2 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 84 hours = 32 hours of lectures + 52 hours of self-study, completed in 16 weeks; 2. Teaching: 2 hours per week, including lectures, discussions, and Q&A; 3. Self-study: 3.25 hours per week, including preview before class, exercises after class, review, and exam preparation. 		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Descriptive Geometry and Mechanical Drawing</i> , Electrical Engineering, Engineering Drawing Practice		
	Course Learning Outcomes (CLO)	Descriptions	Supported Programme Learning Objective (PLOs) (Public Science Library)

Learning outcomes and their corresponding PLOs	CLO-1 Learning Outcome1	Through training and learning via hands-on projects, students will be able to integrate relevant theoretical knowledge with the structure and performance of various metal processing equipment, describe the processing procedures for different metal materials, and select or design reasonable control processes to solve complex engineering problems encountered during the control process.	R2
	CLO-2 Learning Outcome-2	Through training and learning via hands-on projects, students can develop practical skills, summarize the fundamental knowledge of commonly used metal materials in mechanical processing and manufacturing technology, cultivate modern engineering qualities, and enhance their abilities in visual thinking, observation, analysis, and solving practical problems.	R2

<p>CLO-3 Learning Outcome-3</p>	<p>Through training and learning in project operations, combined with the relevant working principles of components, students can design alternative forms according to requirements, demonstrate optimized and technologically advanced process flows, and practically solve engineering problems.</p>	<p>R3</p>
<p>CLO-4 Learning Outcome-4</p>	<p>Through hands-on project training and learning, students develop practical skills, memorize fundamental knowledge of commonly used metal materials in mechanical processing and manufacturing technology, cultivate imaginative thinking as well as the abilities to observe, analyze, and solve real-world problems. They also acquire the capability to proactively identify and raise issues and develop an awareness and commitment to lifelong learning.</p>	<p>R11</p>

<p>Content</p>	<p>This course is an internship designed for science and engineering students. The syllabus applies to students majoring in mechanical and electrical engineering. Through hands-on metalworking practice, students become familiar with the general manufacturing processes, main machining methods of mechanical parts, and initially build engineering concepts and an intuitive understanding of mechanical manufacturing technology. Students learn the characteristics and scope of various machining operations, the structural principles of commonly used equipment, and their safety operating procedures. The course demonstrates basic operation methods of machining equipment, and students independently complete the machining of simple parts through practical exercises. The internship cultivates students' awareness of safe production, product quality, production cost, and energy-saving environmental protection. It encourages diligent thinking, innovation, practical spirit, integration of theory and practice, adherence to rules and discipline, care for public property, a love of labor, and teamwork. It broadens professional horizons and enhances employability.</p> <p>Knowledge Module 1: Fitting (Weighting Factor 16/48, Level: Understanding to Creating)</p> <p>Knowledge Module 2: Welding (Weighting Factor 8/48, Level: Understanding to Creating)</p> <p>Knowledge Module 3: Turning (Weighting Factor 6/48, Level: Understanding to Creating)</p> <p>Knowledge Module 4: CNC Machining (Weighting Factor 4/48, Level: Understanding to Creating)</p> <p>Knowledge Module 5: Casting (Weighting Factor 3/48, Level: Understanding to Creating)</p> <p>Knowledge Module 6: Forging and Pressing (Weighting Factor 3/48, Level: Understanding to Creating)</p>
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	<p>Knowledge Module 7: Machining Center (Weighting Factor 8/48, Level: Understanding to Creating)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: regular performance 25% + regular assignments 25%. The final project lasts 200 minutes.</p>
<p>Media employed</p>	<p>Computer, Online Websites</p>

<p>Reading list</p>	<p>Teaching Materials</p> <p>[1] Guide to Metalworking Practice, edited by Bing Cuiying, Hengxing University Press, 4th Edition, 2021.</p> <p>Reference Books</p> <p>[2] Metalworking Practice, compiled by Li Yongzeng, Higher Education Press, 1996.</p> <p>[3] Metalworking Practice, compiled by Jin Xide, Higher Education Press, 2000.</p> <p>[4] Metalworking Practice, chief editor Shen Jianbiao, Beijing Mechanical Industry Press, 1999.</p> <p>[5] Metalworking Practice, Xu Yongli and Tian Peilin, South China University of Technology Press, Guangzhou, 2006.</p> <p>Online Resources</p> <p>[1] China University MOOC website: https://www.icourse163.org</p> <p>[2] Zhihuishu Online Learning Platform: https://www.zhihuishu.com</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name 3D Modeling Design Practice

Module name	3D Modeling Design Practice
Module level	Undergraduate
Code	3080201520
Courses	Concentrated Practice
Semester	Spring
Contact person	Huili Sun
Lecturer	Jun Liu、Lixuan Gao、Zaohao Feng
Language	Chinese
Course Nature and Semester Offered	compulsory, 2th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture method, group discussion method, case study method, and demonstration method, 4 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 168 hours = 64 hours of lectures + 104 hours of self-study, completed over 16 weeks. 2. Teaching: 4 hours per week, including practical teaching, discussions, and hands-on activities. 3. Self-study: 6.5 hours per week, including online learning, discussions, assignments, and practical exercises. 		
Credit points ETCS	6		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Engineering Drawing, Engineering Drawing Practice</i>		
	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>Learning outcomes and their corresponding PLOs</p>			
	<p>CLO-1 Learning Outcome-1</p>	<ol style="list-style-type: none"> 1. Be able to explain the usage scenarios of commonly used UG operation buttons. 2. Be able to use appropriate commands to draw 2D sketches in the sketch interface. 3. Be able to use appropriate commands to create 3D solid models. 4. Be able to analyze the methods for 3D modeling design, assembly design, and engineering drawing of mechanical parts according to drawing requirements. 	<p>R1、R5、R10</p>
	<p>CLO-2 Learning Outcome-2</p>	<ol style="list-style-type: none"> 1. Cultivate students' understanding of the concepts and methods of computer 3D modeling; 2. Develop students' ability to independently analyze and solve problems; 3. Foster students' self-learning 	<p>R2、R11</p>

	abilities.	
CLO-3 Learning Outcome-3	<ol style="list-style-type: none"> 1. Cultivate students' strong spirit of teamwork; 2. Foster a pragmatic academic attitude and innovative spirit in students; 3. Develop a serious, meticulous work ethic in students. 	R7、R8
Content	<p>This course is an important tool for engineering design. It uses computers to carry out three-dimensional parametric modeling and combines practical engineering applications for product shape design, which is an inevitable trend in engineering practice. The course adopts a combination of engineering case analysis and task-driven teaching, organized modularly and in groups, comprehensively cultivating students' engineering practice and innovation abilities to lay a solid foundation for employment.</p> <p>Knowledge Module 1: Overview of UG (Weighting Factor 4/64, Level: Comprehension)</p> <p>Knowledge Module 2: Sketching (Weighting Factor 8/64, Level: Recall to Application)</p> <p>Knowledge Module 3: Feature Modeling (Weighting Factor 12/64, Level: Recall to Analysis)</p> <p>Knowledge Module 4: Assembly (Weighting Factor 12/64, Level: Comprehension to Application)</p> <p>Knowledge Module 5: Dynamic Simulation (Weighting Factor 8/64, Level: Recall + Comprehension)</p>	

	<p>Knowledge Module 6: Engineering Drawing (Weighting Factor 8/64, Level: Comprehension to Analysis)</p> <p>Knowledge Module 7: Freeform Features (Weighting Factor 8/64, Level: Comprehension to Analysis)</p> <p>Knowledge Module 8: Comprehensive Exercises (Weighting Factor 8/64, Level: Recall to Analysis)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of regular performance (50%) and regular assignments (50%). The final exam is a major project lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Xuexitong, and Yuketang</p>

<p>Reading list</p>	<p>[1] Zhan Diyou. UG NX 10.0 Mechanical Design Tutorial (Undergraduate Textbook) [M], Mechanical Industry Press, 2018.</p> <p>[2] Xu Jiazong. UG NX 10.0 3D Modeling and Automatic Programming Project Tutorial [M], Mechanical Industry Press, 2016.</p> <p>[3] Zheng Zhenping. UG NX 10.0 Basic Tutorial [M], Mechanical Industry Press, 2017, 2nd Edition.</p> <p>[4] Zhao Bo, Gong Mian, Tu Jianzhong. Practical UG Tutorial [M], Tsinghua University Press, 2010.</p> <p>[5] Shen Chungen, Xu Honglong, Zhou Liping. UG Surface Modeling Case Tutorial [M], Chemical Industry Press, 2012.</p> <p>[6] Cheng Qisen. Analysis on the Reform of Mechanical CAD/CAM Technology UG Software Application Course Teaching [J], China Educational Technology Equipment, 2022(10).</p> <p>[7] Ye Nan. Research on the Reform of CAD/CAM (UG) Course Online and Offline Blended Flipped Teaching Based on OBE Concept [J], Paper Equipment and Materials, 2024, 53(09).</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Engineering Drawing Practice

Module name	Engineering Drawing Practice
Module level	Undergraduate
Code	3080201519
Courses	Concentrated Practice
Semester	Spring
Contact person	Xuelian Cheng
Lecturer	Xuelian Cheng,Hongwei Cui, Kai Yu
Language	Chinese
Course Nature and Semester Offered	compulsory, 2 nd semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, group discussion, case analysis, demonstration, and field teaching, 2 hours per week.		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 84 hours = 32 hours of lectures + 52 hours of self-study, completed over 16 weeks</p> <p>2. Lectures: 2 hours per week, including practical teaching, discussions, and hands-on operations</p> <p>3. Self-study: 3.25 hours per week, including online learning, discussions, assignments, and practical operations</p>		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Engineering Drawing		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

corresponding PLOs			
	CLO-1 Learning Outcome-1	Be able to apply basic operational skills of AutoCAD software according to user requirements, and manage software and files by consulting relevant literature.	R2
Learning outcomes and their corresponding PLOs	CLO-2 Learning Outcome-2	Be able to analyze the required commands and drawing methods based on the requirements of two-dimensional graphics, and skillfully use various drawing and modification commands in AutoCAD software to accurately create the required 2D drawings.	R3、R5
	CLO-3 Learning Outcome-3	Be able to analyze the dimensions of each graphic element in a drawing based on the dimensioning requirements, and apply AutoCAD software to create text styles and dimension styles, input and edit text, and use various dimensioning methods to correctly annotate the drawing.	R3、R5

	CLO-4 Learning Outcome-4	Be able to analyze the methods of view representation and drawing for part drawings and assembly drawings based on their requirements, apply mechanical drawing standards, and produce the required technical drawings.	R9、 R10
Content	<p><i>Engineering Drawing Practice</i> is a concentrated practice course for the Automotive Service Engineering major. This course mainly introduces the common drawing and modification commands in AutoCAD software, integrated throughout with content on engineering drawing methods and drawing standards. The specific content includes AutoCAD basics, drawing 2D plane graphics, text and dimension annotation, drawing three views, and creating part and assembly drawings. Through this course, students will be able to operate common AutoCAD drawing and modification commands, developing strong digital drawing application skills. They will learn to produce accurate and efficient drawings according to national standards, and improve their design operation skills through various training exercises. The course also cultivates students' rigorous, meticulous, and conscientious work style and a spirit of excellence to meet future professional demands.</p> <p>Knowledge Module 1: Basics of AutoCAD Drawing (Weighting Factor 2/32, Level: Understanding)</p> <p>Knowledge Module 2: Drawing 2D Plane Graphics (Weighting Factor 16/32, Level: Memorization to Analysis)</p> <p>Knowledge Module 3: Text and Dimension Annotation (Weighting Factor 4/32, Level: Memorization to Application)</p> <p>Knowledge Module 4: Drawing Orthographic Views (Weighting Factor 2/32, Level: Understanding)</p> <p>Knowledge Module 5: Drawing Part and Assembly Drawings (Weighting Factor 8/32, Level: Memorization to Application)</p>		

Study and examination requirements and forms of examination	<p>The course assessment includes continuous assessment (50%) and final exam (50%). The continuous assessment consists of: regular performance 50% + homework 50%. The final project lasts 100 minutes.</p>
Media employed	<p>Computer, online websites, AutoCAD software, Xuexitong and Yuketang</p>
Reading list	<p>[1] Liu Wenlian. AutoCAD Engineering Drawing Case Tutorial [M]. Beijing Institute of Technology Press, 2023, 4th Edition.</p> <p>[2] Ouyang Quanhui. Basic Tutorial and Practice of AutoCAD Mechanical Drawing [M]. Peking University Press, 2023.</p> <p>[3] Miao Jun, Zhang Guimei. Computer Drawing [M]. Mechanical Industry Press, 2020.</p> <p>[4] Dong Xiangguo, Pan Jing. AutoCAD 2020 Application Tutorial [M]. Southeast University Press, Nanjing, 2020.</p> <p>[5] CAD Assisted Design Education Research Group. Practical Tutorial for AutoCAD 2015 [M]. People's Posts and Telecommunications Press, 2017.</p> <p>[6] Jiang Daochuan. Exploration and Practice of Engineering Drawing and CAD Course Teaching Reform [J]. Plastics Industry, 2024, 52(04).</p> <p>[7] Mu Haozhi. Research and Practice of “Internet+” Based CAD Hands-on Experiment Teaching in Engineering Drawing Course [J]. Journal of Graphic Science, 2017, 38(05).</p>
Revision time	<p>July, 2024</p>

Module name Vehicle Appraisal and Evaluation Practice

Module name	Vehicle Appraisal and Evaluation Practice
Module level	Undergraduate
Code	3080208516
Courses	Concentrated Practice
Semester	Fall
Contact person	Yu Kai
Lecturer	Yu Kai,Yu Xia,Wang Feng
Language	Chinese
Course Nature and Semester Offered	compulsory /3th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Practical Methods (Simulation, Practice, On-site Teaching), 3 class hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total Class Hours: 174 hours = 48 lecture hours + 126 self-study hours, to be completed over 16 weeks 2. Lectures: 3 hours per week, including instruction, discussion, and practical activities 3. Self-study: Approximately 8 hours per week, including pre-class preparation, post-class exercises, and exam review. 		
Credit points ETCS	4.5		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Automotive Architecture, Automotive Electrical & Electronic Control Systems		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>corresponding PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Be capable of applying mathematics, natural sciences, engineering fundamentals, and professional knowledge to solve practical problems in motor vehicle appraisal and evaluation. Able to analyze vehicle technical conditions, assess vehicle value, and propose reasonable repair or improvement solutions.</p>	<p>R1</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Be able to carry out professional engineering practices in the process of motor vehicle appraisal and evaluation, and capable of proposing appropriate solutions. Be able to explain the impact of practice on society, health, safety, law, and culture, and clarify the responsibilities to be assumed in practice, as well as its impact on environmental and social sustainability.</p>	<p>R6</p>
	<p>CLO-3 Learning Outcome-3</p>	<p>Be able to demonstrate a rigorous work ethic, a commitment to serving the people, and a responsible attitude toward vehicle safety; possess strong professional ethics, and</p>	<p>R7</p>

	gradually develop a passion for and dedication to their chosen profession.	
CLO-3 Learning Outcome-4	Be able to apply management principles and economic decision-making methods relevant to the field of automotive service engineering, and utilize this knowledge in multidisciplinary environments. Possess management and economic analysis capabilities in the field of motor vehicle appraisal and evaluation, enabling effective decision-making, resource optimization, and economic efficiency improvement within team collaboration and project management.	R10

<p>Content</p>	<p><i>Vehicle Appraisal and Evaluation Practice</i> is a practical course focused on cultivating professional talent for the automotive industry. The course is designed to teach students how to accurately assess the technical condition of motor vehicles and apply professional methods to evaluate their market value. Course content includes vehicle structure principles, market trend analysis, legal and regulatory compliance, and practical evaluation techniques. Through this course, students will master inspection techniques related to vehicle appearance, performance, and safety, and will be able to independently complete vehicle valuation reports. Emphasizing hands-on experience, the course combines case studies and field practice, enabling students to apply their knowledge in real-world settings and laying a solid foundation for future careers in vehicle trading, auctions, and insurance claims assessment.</p> <p>Knowledge Module 1: Use of Tools and Equipment (Weighting Factor: 4/48, Level: Memorization)</p> <p>Knowledge Module 2: Exterior and Interior Inspection (Weighting Factor: 4/48, Level: Understanding + Application)</p> <p>Knowledge Module 3: Performance Testing (Weighting Factor: 4/48, Level: Application)</p> <p>Knowledge Module 4: Technical Condition Evaluation (Weighting Factor: 6/48, Level: Understanding + Application)</p> <p>Knowledge Module 5: Value Assessment (Weighting Factor: 6/48, Level: Understanding + Application)</p> <p>Knowledge Module 6: Report Writing and Communication (Weighting Factor: 8/48, Level: Understanding + Application)</p> <p>Knowledge Module 7: Market Internship and Transaction Procedures (Weighting Factor: 8/48, Level: Understanding + Application)</p>
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	<p>Knowledge Module 8: Accident Damage Assessment and Legal Regulations (Weighting Factor: 8/48, Level: Application)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment consists of continuous assessment (50%) and a project report (50%). The continuous assessment includes regular performance (20%) and regular assignments (30%). The project report lasts 200 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>

<p>Reading list</p>	<p>[1] Zhang Hongyu. Theory and Practice of Motor Vehicle Appraisal and Evaluation [M]. Beijing: People's Public Security University of China Press, 2021.</p> <p>[2] Du Xiujv. Used Vehicle Appraisal and Evaluation [M]. Beijing: Machinery Industry Press, 2018.</p> <p>[3] Department of Automotive Engineering, Jilin University. Automotive Architecture [M]. Beijing: Machinery Industry Press, 2020.</p> <p>[4] Wang Jianxin. Vehicle Performance and Evaluation [M]. Beijing: Tsinghua University Press, 2019.</p> <p>[5] Li Ming. Automotive Maintenance and Appraisal Technology [M]. Beijing: Chemical Industry Press, 2022.</p> <p>[6] Chen Zhiheng. Automotive Testing and Fault Diagnosis Technology [M]. Beijing: Machinery Industry Press, 2021.</p> <p>[7] Zhang Ruijun. Case-Oriented Used Vehicle Appraisal and Evaluation [J]. Times Auto, 2022.</p> <p>[8] Chen Shaoquan, Huang Baoyang. Construction and Application of Skill Talent Assessment System for Motor Vehicle Appraisers [J]. Popular Auto, 2024.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Marketing Practice

Module name	Automobile marketing practice
Module level	Undergraduate
Code	3080208517
Courses	Concentrated Practice
Semester	Spring
Contact person	Yu Xia
Lecturer	Yu Xia, Wang Feng
Language	Chinese
Course Nature and Semester Offered	Compulsory, 4th Semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Practice, 5 hours/week		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 174 hours = 80 hours of lectures + 168 hours of self-study, completed in 16 weeks</p> <p>2. Teaching: 5 hours per week, including online learning, discussions, and practice</p> <p>3. Self-study: Approximately 10 hours per week, including preview before class, exercises after class, and review for exams</p>		
Credit points ETCS	6		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Automotive Architecture, Automotive Electrical & Electronic Control Systems</i>		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>their corresponding PLOs</p>	<p>CLO-1</p>	<p>Be able to summarize automotive marketing analysis data and apply theoretical research to solve practical automotive marketing engineering problems.</p>	<p>R5</p>
	<p>CLO-2</p>	<p>Be able to complete comprehensive practical training in automotive marketing services through hands-on practice, improving practical skills in automotive marketing operations, and independently handle tasks such as car sales reception, product introduction, and business negotiations.</p>	<p>R6</p>
	<p>CLO-3</p>	<p>Be able to integrate theory with practice and collaborate with a team to summarize market change investigations and analyses, as well as plan and implement automotive marketing organizational activities in practice.</p>	<p>R8</p>
	<p>CLO-4</p>	<p>Be able to communicate effectively with personnel in the automotive industry, actively participate in industry meetings with independent thinking and insights, write work summaries and reports,</p>	<p>R9</p>

		<p>and deliver presentations or report to leadership during meetings.</p>	
<p>Content</p>	<p>This course is an elective Concentrated Practice course designed to develop practical skills for the Automotive Service Engineering major. The course content mainly includes fundamental principles and techniques of car sales, consumer psychology, business etiquette, customer service management, methods of automotive product presentation, standardized sales processes, and planning and execution of automotive marketing activities. Through the course, students will become proficient in basic automotive marketing skills, familiarize themselves with the sales process, apply consumer psychology, business etiquette, and customer service management, and be able to independently handle customer reception, product introduction, and closing sales. Additionally, students will work in teams to analyze and justify market conditions, and to plan and execute marketing campaigns.</p> <p>Knowledge Module 1: Automotive Sales Practice (Weighting Factor: 8/80, Level: Memorization)</p> <p>Knowledge Module 2: Automotive Business Etiquette (Weighting Factor: 16/80, Level: Understanding + Applying)</p> <p>Knowledge Module 3: Automotive Consumer Psychology (Weighting Factor: 18/80, Level: Applying)</p> <p>Knowledge Module 4: Automotive Customer Service Management (Weighting Factor: 18/80, Level: Understanding + Applying)</p> <p>Knowledge Module 5: Automotive Marketing Activity Planning and Execution (Weighting Factor: 20/80, Level: Understanding + Applying)</p>		

Study and examination requirements and forms of examination	<p>The course assessment includes continuous assessment (50%) and a project report (50%). The continuous assessment consists of: regular performance (20%) and regular assignments (30%). The project report lasts 200 minutes.</p>
Media employed	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>
Reading list	<ol style="list-style-type: none"> 1. Yang Lijun, Yuan Yufeng. Automotive Marketing [M]. Mechanical Industry Press, 2019, 3rd edition. 2. Chen Yongge, Xu Wenxia. Principles and Applications of Automotive Marketing [M]. Mechanical Industry Press, 2015. 3. Wang Ying. Automotive Consumer Psychology [M]. Tsinghua University Press, 2019. 4. Sun Tongming. Practical Automotive Marketing [M]. Chongqing University Press, 2018. 5. Li Xianguo, Cao Xiancun. Customer Service Management [M]. Tsinghua University Press, 2012. 6. Rahim, M. A., Rahman, M. A., Rahman, M. M., Asyhari, A. T., Bhuiyan, M. Z. A., & Ramasamy, D. (2021). Evolution of IoT-enabled connectivity and applications in automotive industry: A review. Vehicular Communications, pp.27. 7. Chintalapati, S., & Pandey, S. K. (2022). Artificial intelligence in marketing: A systematic literature review. International Journal of Market Research,64(1), pp.38-68.

Revision time	July, 2024
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Module name Automotive Service Operations

Module name	Automotive Service Operations
Module level	Undergraduate
Code	3080208518
Courses	Concentrated Practice
Semester	Spring
Contact person	Yu Xia
Lecturer	Yu Xia, Wang Feng
Language	Chinese
Course Nature and Semester Offered	Compulsory, 4th Semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Practice, 2hours per week		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 116 hours = 32 hours of lectures + 84 hours of self-study, completed over 16 weeks. 2. Lectures: 2 hours per week, including practical sessions. 3. Self-study: Approximately 5 hours per week, including preview before class, exercises after class, and review for exams. 		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Automotive Architecture, Automotive Electrical & Electronic Control Systems</i>		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

their corresponding PLOs	CLO-1	Be able to collect information and conduct literature searches related to automotive service analysis, and capable of solving practical engineering problems in automotive services.	R5
	CLO-2	Be able to complete comprehensive automotive service practice through hands-on training, improve automotive customer reception skills, proficiently handle automotive insurance operations, and provide customers with professional services such as insurance sales, claims, and renewals.	R6
	CLO-3	Be able to understand the professional qualities required in the automotive service industry, including professional ethics, service attitude, and safety awareness. Capable of possessing innovative thinking and problem-solving skills to adapt to the constantly changing market demands, industry technological upgrades, and align with national policy directions.	R3、R7

	CLO-4	Be able to communicate effectively with customers to improve customer satisfaction and loyalty; possess the ability to communicate and interact with personnel in the automotive industry; actively participate in industry meetings with independent thinking and insights; capable of writing work summaries and reports; and deliver thematic presentations or report to leadership during meetings.	R9
Content	<p>This course is a required Concentrated Practice course designed to develop practical skills in the Automotive Service Engineering program. Its main purpose is to train students to learn and become familiar with front desk reception, automotive customer service, and automotive insurance operations within a 4S dealership. The course content primarily includes basic automotive service principles and techniques, business etiquette, customer service management, introduction to automotive insurance products, insurance business consultation, insurance plan customization, claims processing, and customer relationship maintenance. Through this course, students will master essential automotive service skills, understand the automotive service process, grasp customer service business etiquette and management, and be capable of independently handling customer reception, automotive insurance product introduction, insurance plan customization, and claims procedures, while also managing customer relationships and marketing promotion tasks.</p> <p>Knowledge Module 1: Automotive Customer Service Practice (Weighting Factor 5/32, Level: Memorization)</p>		

	<p>Knowledge Module 2: Automotive Business Etiquette (Weighting Factor 5/32, Level: Understanding + Applying)</p> <p>Knowledge Module 3: Basics of Automotive Insurance (Weighting Factor 2/32, Level: Memorization)</p> <p>Knowledge Module 4: Automotive Insurance Practice (Weighting Factor 11/32, Level: Understanding + Applying)</p> <p>Knowledge Module 5: Automotive Customer Service Management (Weighting Factor 9/32, Level: Understanding + Applying)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a project report (50%). The continuous assessment consists of regular performance (20%) and regular assignments (30%). The project report has a duration of 200 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>

<p>Reading list</p>	<ol style="list-style-type: none"> 1. Qiu Wencai. Overview of Automotive Services [M]. Mechanical Industry Press, 2021. 2. Wang Linchao. Introduction to Automotive Service Engineering [M]. People's Transportation Publishing House, 2021, 2nd Edition. 3. Lu Zhixiong. Automotive Service Engineering [M]. Peking University Press, 2010. 4. Li Xianguo, Cao Xiancun. Customer Service Management [M]. Tsinghua University Press, 2012. 5. Wang Ying. Automotive Consumer Psychology [M]. Tsinghua University Press, 2019. 6. Rahim, M. A., Rahman, M. A., Rahman, M. M., Asyhari, A. T., Bhuiyan, M. Z. A., & Ramasamy, D. (2021). Evolution of IoT-enabled connectivity and applications in automotive industry: A review. Vehicular Communications, pp.27. 7. Chintalapati, S., & Pandey, S. K. (2022). Artificial intelligence in marketing: A systematic literature review. International Journal of Market Research, 64(1), pp.38-68.
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Fault Diagnosis Practice

Module name	Automotive Fault Diagnosis Practice
Module level	Undergraduate
Code	3080208519
Courses	Concentrated Practice
Semester	Fall
Contact person	Kuang Enpeng
Lecturer	Kuang Enpeng
Language	Chinese
Course Nature and Semester Offered	compulsory, 5th Semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Teacher-centered methods (lectures) and practical methods (simulation, exercises, on-site teaching), 5 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 252 hours = 80 hours of lectures + 172 hours of self-study, completed in 16 weeks; 2. Teaching: 5 hours per week, including lectures, discussions, and Q&A; 3. Self-study: about 10.75 hours per week, including preview, exercises, and exam preparation. 		
Credit points ETCS	9		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Automotive Architecture, Automotive Engine in Theory, and Automotive Electrical and Electronic Control Systems, etc.</i>		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

corresponding PLOs	CLO-1 Learning Outcome-1	Be able to list the general principles and methods for selecting and designing automotive testing technologies; analyze common automotive fault symptoms and their causes; and summarize methods for detecting, diagnosing, and eliminating automotive faults.	R6
	CLO-2 Learning Outcome-2	Be able to accurately analyze and diagnose common automotive fault symptoms, and possess practical skills to troubleshoot and resolve these faults.	R8
	CLO-3 Learning Outcome-3	Summarize good professional ethics and a strict sense of discipline; possess the ability to work collaboratively and an innovative spirit in practice; demonstrate a rigorous and meticulous work style as well as a serious and conscientious work attitude.	R9、R10

<p>Content</p>	<p><i>Automotive Testing and Fault Diagnosis Technology</i> is a course focused on vehicle fault diagnosis, performance testing, and maintenance technology. It systematically introduces the fundamental theories, testing methods, and diagnostic principles of automotive testing and fault diagnosis, with a particular emphasis on the latest technologies, new equipment, and innovative methods in modern automotive diagnostics. This course will teach students how to use advanced testing equipment and diagnostic tools to perform accurate and efficient fault diagnosis and performance testing on vehicles.</p> <p>Knowledge Module 1: Overview (Weighting Factor: 3/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Engine Fault Diagnosis and Testing (Weighting Factor: 21/48, Level: Understanding - Analyzing)</p> <p>Knowledge Module 3: Chassis Fault Diagnosis and Testing (Weighting Factor: 12/48, Level: Understanding - Analyzing)</p> <p>Knowledge Module 4: Body Fault Diagnosis and Testing (Weighting Factor: 12/48, Level: Understanding - Analyzing)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment includes continuous assessment (50%) and a final exam (50%). The continuous assessment consists of: daily performance 10%, regular assignments 20%, and periodic tests 20%. The final exam is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Classroom, laboratory, computer, online websites</p>
<p>Reading list</p>	<ol style="list-style-type: none"> 1. Du Wensuo, Feng Bin (Eds.). <i>Automotive Fault Diagnosis and Testing Technology</i>. Chemical Industry Press, 2024, 1st edition, 5th printing. 2. Chen Huanjiang (Ed.). <i>Automotive Testing and Diagnostic Technology</i>. People's Transportation Publishing House, 2022, 3rd edition.

	<p>3. Zhang Jianjun (Ed.). Automotive Diagnosis and Testing Technology. People's Transportation Publishing House, 2021, 5th edition.</p> <p>4. Zhao Yingxun (Ed.). Automotive Testing and Diagnostic Technology. Mechanical Industry Press, 2020.</p> <p>5. Kuang Enpeng. Fault Analysis and Maintenance of Electric Air Conditioning Compressor in BAIC New Energy Vehicles [Dissertation]. Qingdao: Hengxing University, 2023.</p>
Revision time	July, 2024

Module name Electric Vehicle Three-Electricity Comprehensive Practice

Module name	Electric Vehicle Three-Electricity Comprehensive Practice
Module level	Undergraduate
Code	3080207510
Courses	Concentrated Practice
Semester	Spring
Contact person	Ge Jiali
Lecturer	Xia Fuzhi, Limin Bai
Language	Chinese
Course Nature and Semester Offered	compulsory, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site teaching, 3 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 126 hours = 48 hours of lectures + 78 hours of self-study, completed in 16 weeks. 2. Teaching: 3 hours per week, including lectures, discussions, and Q&A. 3. Self-study: Approximately 4.9 (4.875) hours per week, including preview before class, exercises after class, and review for exams. 		
Credit points ETCS	4.5		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	<i>Automotive Architecture, Automotive Electrical & Electronic Control Systems</i>		
Learning outcomes and their	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>corresponding</p> <p>PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Be able to explain the basic principles and structure of electric vehicles, including the composition and working principles of the "three-electric" systems (electric motor, electric controller, and battery), and able to perform practical skills for the daily maintenance and care of electric vehicles.</p>	<p>R1, R2</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Be able to analyze fault codes of electric vehicles, apply the basic processes and methods of fault diagnosis, and effectively solve practical fault problems.</p>	<p>R3,R4</p>
	<p>CLO-3 Learning Outcome-3</p>	<p>To cultivate high-quality technical talents with noble professional ethics, capable of performing installation, commissioning, performance testing, maintenance, and technical management of new energy vehicles.</p>	<p>R7</p>
	<p>CLO-3 Learning Outcome-4</p>	<p>Be able to develop systematic approaches and implement solutions when solving various engineering problems of vehicles, with an awareness of environmental protection, social responsibility, and</p>	<p>R6,R7</p>

	sustainable development.	
Content	<p>This course is a required Concentrated Practice course for the Automotive Service Engineering major, with strong theoretical and practical components. It serves as an application and deepening of the foundational course Automobile Construction and lays a solid foundation for students to continue studying Innovative Technologies in Intelligent Connected Vehicles and applying new automotive technologies in the future. Through this course, students will be able to explain the basic principles and structures of electric vehicles, including the composition and working principles of the "three-electric" systems (motor, battery, and electronic control), and practice the daily maintenance and upkeep skills of electric vehicles. The course also aims to cultivate students' awareness of improvement, research, development, and innovation.</p> <p>Knowledge Module 1: Introduction (Weighting Factor: 4/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Pure Electric Vehicles (Weighting Factor: 6/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 3: Hybrid Electric Vehicles (Weighting Factor: 6/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 4: Fuel Cell Electric Vehicles (Weighting Factor: 6/48, Level: Memorization + Understanding)</p> <p>Knowledge Module 5: Electric Motor Drive Systems of Electric Vehicles (Weighting Factor: 8/48, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 6: Onboard Energy Source Systems of Electric Vehicles (Battery) (Weighting Factor: 6/48, Level: Memorization + Understanding + Analysis)</p> <p>Knowledge Module 7: Electric Auxiliary Systems of Electric Vehicles (Weighting Factor: 6/48, Level: Memorization + Understanding + Analysis)</p>	

	<p>Knowledge Module 8: Electric Vehicle Charging Stations (Weighting Factor: 6/48, Level: Memorization + Understanding + Analysis)</p>
<p>Study and examination requirements and forms of examination</p>	<p>The course assessment consists of continuous assessment (50%) and a final exam (50%). The continuous assessment includes: class participation (15%), homework assignments (15%), and laboratory/practical training (20%). The final exam is a closed-book test lasting 100 minutes.</p>
<p>Media employed</p>	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>

<p>Reading list</p>	<p>[1] Principles and Structure of Electric Vehicles, He Hongwen, Beijing Jiaotong University Press, 2018.2</p> <p>[2] Structure and Principles of Electric Vehicles, Zhao Lijun, Tong Qinzhi (Editors), Peking University Press, 2012</p> <p>[3] Application Technology of Electric Vehicle Power Batteries, Jiang Jiuchun, Mechanical Industry Press, 2017.12</p> <p>[4] Design of Electric Vehicle Charging Station Distribution Systems, Wei Jiabei, Beijing Jiaotong University Press, 2015.6</p> <p>[5] Structure, Principles, and Maintenance of Electric Vehicles, Zhu Shenggao, Feng Jian, Zhang Dejun, Mechanical Industry Press, 2021.12</p> <p>[6] China University MOOC Website: https://www.icourse163.org</p> <p>[7] Zhihuishu Online Learning Platform: https://www.zhihuishu.com</p> <p>[8] Chen Shan. Research on Fault Diagnosis Methods and State Evaluation Models of Electric Vehicle Three-Electric Systems Driven by Data [D]. Guangxi University, 2024.</p> <p>[9] Du Juan, Liao Wei, Wang Shanglin. Research on Three-Parameter Shift Control Strategy for Pure Electric Vehicles [J]. Modern Automotive Power, 2024, (01): 7-12+29.</p>
<p>Revision time</p>	<p>July, 2024</p>

Module name Automotive Sheet Metal and Painting Practice

Module name	Automotive Sheet Metal and Painting Practice
Module level	Undergraduate
Code	3080208520
Courses	Concentrated Practice
Semester	Spring
Contact person	Cheng Xuelian
Lecturer	Cui Hongwei, Liu Hongyan, Yu Kai
Language	Chinese
Course Nature and Semester Offered	compulsory, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Teacher-centered methods (lecturing) and practice methods (simulation, exercises, on-site teaching), 2 hours per week.		
Work load (Total Weekly Study Hours)	1. Total hours: 84 hours = 32 hours of lectures + 52 hours of self-study, completed over 16 weeks; 2. Teaching: 2 hours per week, including lectures, discussions, and Q&A; 3. Self-study: 3.25 hours per week, including preview before class, practice after class, and review for exams.		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	None		
	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

Learning outcomes and their corresponding PLOs	CLO-1 Learning Outcome-1	Be able to apply the core technical principles of automotive sheet metal repair and painting processes, and formulate repair plans based on the types of body damage (dents, rust, fractures).	R2
	CLO-2 Learning Outcome-2	Be able to properly handle spray painting waste (such as waste paint sludge and solvents) and implement green maintenance practices along with VOCs (volatile organic compounds) reduction requirements.	R5
	CLO-3 Learning Outcome-3	Able to cultivate a spirit of craftsmanship and quality control skills through quality inspection of repair results (e.g., flatness $\leq 1\text{mm}$, no color difference, no runs).	R10
	CLO-4 Learning Outcome-4	Able to complete complex vehicle body repair tasks in teamwork (such as full-body painting and structural damage repair), enhancing communication and organizational coordination abilities.	R10

<p>Content</p>	<p>This course is a core practical skills course focused on automotive body repair, designed to cultivate versatile talents proficient in modern automotive sheet metal repair and painting technologies. Guided by the principle of "theory supports practice, practice enhances skills," and aligned with industry standards and professional demands, the course systematically teaches vehicle body structure recognition, damage assessment, sheet metal repair, and the full process of painting technology. The course content is divided into two main modules: 1. Sheet Metal Repair Technology: Focuses on the characteristics of automotive metal materials and repair processes, including manual shaping, welding (spot welding, MIG welding), body measurement, and correction techniques. Through realistic case simulations such as door dent repairs and fender replacements, students master the use of professional tools like shaping machines and 3D measuring instruments. 2. Painting Technology: Covers surface pretreatment (rust removal, putty application), base and topcoat painting, and polishing. Students learn spray gun operation, color matching, and defect handling (e.g., runs, orange peel texture). Environmental concepts are integrated, promoting the use of water-based paints and VOCs reduction technologies, with an emphasis on standardized operations and occupational safety awareness.</p> <p>Knowledge Module 1: Understanding of Automotive Architectures and Materials (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Sheet Metal Repair Process (Weighting Factor: 16/32, Level: Understanding - Application)</p> <p>Knowledge Module 3: Surface Pretreatment Technology (Weighting Factor: 4/32, Level: Understanding - Creation)</p> <p>Knowledge Module 4: Painting Process Operation (Weighting Factor: 2/32, Level: Understanding - Creation)</p> <p>Knowledge Module 5: Quality Inspection and Environmental Safety (Weighting Factor: 8/32, Level: Understanding - Analysis)</p>
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Study and examination requirements and forms of examination	<p>The course assessment includes continuous assessment (50%) and a final major project (50%). The continuous assessment consists of regular performance (40%) and regular assignments (60%). The final major project lasts 200 minutes.</p>
Media employed	<p>Computer, China University MOOC, Zhihuishu, and Yuketang</p>
Reading list	<p>[1] Liu Tao, ed. <i>Automotive Sheet Metal and Painting</i>. People's Transportation Publishing Co., Ltd., 2018, 1st edition.</p> <p>[2] Liu Chunhui, ed. <i>Automotive Sheet Metal Repair: From Beginner to Expert</i>. Chemical Industry Press, 2015.</p> <p>[3] Huang Jinglin and Xia Kun, eds. <i>Automotive Body Sheet Metal Repair Technology</i>. People's Transportation Publishing Co., Ltd., 2019.</p> <p>In addition to fully utilizing the textbooks and reference books, this course will also provide students with online resources (such as China University MOOC, Chaoxing, etc.), which students may choose to use for expanding their knowledge and broadening their perspectives based on their individual circumstances.</p> <p>https://www.icourse163.org/course/DLPU-1003047003 http://fanya.chaoxing.com/portal</p>
Revision time	<p>July, 2024</p>

Module name Engineering Simulation Practice

Module name	Engineering Simulation Practice
Module level	Undergraduate
Code	3080201530
Courses	Concentrated Practice
Semester	Spring
Contact person	Liu Juan
Lecturer	Gao Luxuan, Liu Tao
Language	Chinese
Course Nature and Semester Offered	compulsory, 6 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Teacher-centered methods (lecturing) and practical methods (simulation, exercises, on-site teaching), 2 hours per week.		
Work load (Total Weekly Study Hours)	<p>1. Total hours: 84 hours = 32 hours of lectures + 52 hours of self-study, completed in 16 weeks;</p> <p>2. Instruction: 2 hours per week, including lectures, discussions, and Q&A;</p> <p>3. Self-study: 3.25 hours per week, including preview before class, practice after class, and review for exams.</p>		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	3D Modeling Design Practice		
Learning	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>outcomes and their corresponding PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Through practical training in engineering simulation, students will be able to comprehensively apply SolidWorks software along with fundamental principles and methods of mechanical engineering to perform simulation analysis of problems in the mechanical field. They will also be able to use literature research to analyze issues in mechanical engineering and address general engineering problems in areas such as product design, manufacturing, development, and applied research, ultimately obtaining valid and effective conclusions.</p>	<p>R2</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Through engineering simulation practice training, students will be able to proficiently simulate the actual motion of mechanisms, analyze their motion laws, study the forces acting on mechanisms when stationary or in operation, and finally summarize the analyzed data to propose improvements and further optimize the mechanism design.</p>	<p>R3</p>

<p>CLO-3 Learning Outcome-3</p>	<p>Students will also be capable of analyzing and evaluating practical activities and solutions to complex problems in the field of mechanical engineering, selecting or designing mechanical structures that are technically feasible, economically reasonable, safe, and environmentally friendly to meet industrial production requirements, thereby adapting to continuous changes in industrial technology upgrades, policies, and market dynamics.</p>	<p>R6</p>
<p>CLO-4 Learning Outcome-4</p>	<p>Students will be able to summarize and apply principles and methods of engineering management to conduct techno-economic analyses of mechanical engineering projects; propose reasonable solutions; and possess certain organizational, management, and leadership skills.</p>	<p>R10</p>

<p>Content</p>	<p>This course is a fundamental professional course for the Mechanical Engineering major. It provides a comprehensive and systematic introduction to the processes, methods, and techniques for performing product motion simulation and finite element analysis using SolidWorks software. The content includes animation creation with the SolidWorks Motion module, basic motion and motion analysis, an overview of finite element analysis with the SolidWorks Simulation module, analysis procedures, mesh control, contact types, symmetry settings, shell elements, beam elements, mixed elements, and comprehensive examples of motion simulation and analysis.</p> <p>The course focuses on developing students' abilities to solve engineering problems using simulation technology. Through systematic study of the simulation modules in SolidWorks software, students will master key skills in modern engineering analysis.</p> <p>Knowledge Module 1: Overview of SolidWorks Motion (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: Fundamentals of SolidWorks Motion Simulation (Weighting Factor: 4/32, Level: Understanding + Application)</p> <p>Knowledge Module 3: Overview of SolidWorks Simulation (Weighting Factor: 4/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 4: Finite Element Analysis with SolidWorks Simulation (Weighting Factor: 6/32, Level: Understanding - Creation)</p> <p>Knowledge Module 5: Mesh Control (Weighting Factor: 5/32, Level: Understanding - Analysis)</p> <p>Knowledge Module 6: Contact Settings (Weighting Factor: 5/32, Level: Understanding - Analysis)</p> <p>Knowledge Module 7: Symmetry and Self-Balancing Assemblies (Weighting Factor: 4/32, Level: Understanding - Creation)</p> <p>Knowledge Module 8: Mesh Types (Weighting Factor: 2/32, Level: Understanding - Analysis)</p>
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Study and examination requirements and forms of examination	<p>The course assessment includes continuous assessment (50%) and a final major project (50%). The continuous assessment consists of regular performance (40%) and assignments (60%). The final major project lasts 200 minutes.</p>
Media employed	<p>Computer, Chinese University MOOC, Zhihuishu, Yuketang</p>
Reading list	<p>[1] <i>SOLIDWORKS Simulation Basic Tutorial (2018 Edition)</i>, edited by Chen Chaoxiang and Hu Qideng, China Machine Press, 2020.</p> <p>[2] <i>Mechanical Design with SOLIDWORKS 2018: From Beginner to Expert</i>, authored by Hu Renxi et al., China Machine Press, 2019.</p> <p>[3] Li Huimin. Simulation Design of Industrial Robot Palletizing Based on SolidWorks [J]. <i>Modern Information Technology</i>, 2024, 8(22):194–198.</p> <p>[4] Xu Yingmei, Fan Yichen, Yang Zirun. Design of Intelligent Cleaning Machine Based on SolidWorks [J]. <i>Science, Technology Innovation and Productivity</i>, 2024, 45(11):110–112.</p> <p>[5] Yao Zhifeng, Shi Jing. Exploration and Practice of 3D Modeling for Industrial Robots Based on SolidWorks [J]. <i>China Machinery</i>, 2024, (31):39–42.</p> <p>[6] Wang Haiming. Design Technology of Crane Mechanical Structure Combining SolidWorks and Mechanical Simulation [J]. <i>Mechanical Management and Development</i>, 2024, 39(10):122–124.</p> <p>[7] Meng Na. Design and Motion Simulation of a New Lock Body Structure Based on SolidWorks [J]. <i>Automobile Pictorial</i>, 2024, (06):92–94.</p>
Revision time	<p>July, 2024</p>

Module name Automotive Care Practice

Module name	Automotive Care Practice
Module level	Undergraduate
Code	3080208521
Courses	Concentrated Practice
Semester	Fall
Contact person	Wang Feng
Lecturer	Wang Feng, Xia Fuzhi, Zhang Baiqi, Ding Wenyong, Gao Lixuan
Language	Chinese
Course Nature and Semester Offered	Compulsory, 7 th semester
Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lectures, demonstrations, simulations, hands-on practice, and on-site teaching, 3 class hours per week.

Work load (Total Weekly Study Hours)	<p>1. Total Hours: 126 hours = 48 hours of lectures + 78 hours of self-study, completed over 16 weeks.</p> <p>2. Lectures: 3 class hours per week, including lectures, demonstrations, and on-site teaching.</p> <p>3. Self-Study: Approximately 4.875 hours per week, including simulations, hands-on practice, discussions, etc.</p>		
Credit points ETCS	<p>4.5</p>		
Requirements according to the examination Regulations	<p>A student must have registered for the course.</p>		
Recommended prerequisites	<p>Automotive Service Engineering Production Internship</p>		
	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

Learning outcomes and their corresponding PLOs	CLO-1 Learning Outcome-1	Students will be able to identify problems encountered in automotive detailing practice, select appropriate tools, and apply suitable techniques to independently complete detailing tasks such as exterior cleaning, interior cleaning and care, as well as vehicle design and modification.	R5
	CLO-2 Learning Outcome-2	Students will be able to understand customer needs and the concept of humanistic care, and apply engineering ethics by adhering to professional conduct, standards, and relevant laws in engineering practice while fulfilling their responsibilities.	R7
	CLO-3 Learning Outcome-3	Students will understand and master the principles and methods involved in automotive detailing, and be able to analyze the key factors affecting automotive detailing services, proposing effective solutions and measures accordingly.	R10

Content	<p><i>Automotive Care Practice</i> is a compulsory course for students majoring in Automotive Service Engineering. The course aims to equip students with practical skills in automotive care and decoration, enhance their professional quality, and improve their competitiveness in the job market. The primary objective is to help students become familiar with the use of common accessories, tools, and equipment in automotive care processes; understand the basic principles and operational techniques of vehicle care; and gain knowledge of the features, functions, and applications of automotive care products. The course also guides students in understanding market trends and entrepreneurship opportunities within the automotive care industry.</p> <p>Practical Project Module 1: Overview (Weighting Factor: 2/48, Level: Memorization + Understanding)</p> <p>Practical Project Module 2: Automotive Care Materials and Tools (Weighting Factor: 6/48, Level: Memorization + Understanding)</p> <p>Practical Project Module 3: Exterior Automotive Care Techniques (Weighting Factor: 10/48, Level: Understanding + Application)</p> <p>Practical Project Module 4: Interior Cleaning and Maintenance (Weighting Factor: 10/48, Level: Understanding + Application + Creation)</p> <p>Practical Project Module 5: Automotive Design and Modification (Weighting Factor: 12/48, Level: Understanding + Application + Creation)</p> <p>Practical Project Module 6: Automotive Care Business and Management (Weighting Factor: 8/48, Level: Understanding + Analysis)</p>
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Study and examination requirements and forms of examination	<p>The course assessment includes process evaluation (50%) and a practical non-written exam in automotive care (50%). The process evaluation consists of a theoretical test (40%), cleaning module training (30%), and cosmetic module training (30%). The practical non-written exam in automotive care is conducted once.</p>
Media employed	<p>Computer, online websites, Hengxing Capability Platform, and Xuexitong</p>
Reading list	<p>[8] Yue Chi. Research on the Development of the Automotive Care Service Industry [J]. Internal Combustion Engine & Parts, 2023, (02): 112-114.</p> <p>[9] Huang Huirong. Analysis of the Current Market Status and Development Prospects of China's Automotive Care Industry [J]. Knowledge Economy, 2020, (13): 58+60.</p> <p>[10] Long Cheng. Discussion on Development Strategies of the Automotive Care Industry Based on Green Maintenance [J]. Southern Agricultural Machinery, 2019, 50(15): 196+210.</p> <p>[11] Zhou Yan. Automotive Care and Decoration (4th Edition) [M]. Beijing: Mechanical Industry Press, 2020.</p> <p>[12] Xu Yuqin, Zhang Zonghui. Automotive Care [M]. Beijing: Mechanical Industry Press, 2021.</p> <p>[13] Zhao Junshan, Lu Yongzhuang. Automotive Care and Decoration [M]. Beijing: Mechanical Industry Press, 2019.</p> <p>[14] Yao Shijun, Yan Binzhu. Automotive Care [M]. Beijing: Mechanical Industry Press, 2008.</p>

Revision time	July, 2024
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Module name Automotive Service Engineering Production Internship

Module name	Automotive Service Engineering Production Internship
Module level	Undergraduate
Code	3080208522
Courses	Concentrated Practice
Semester	Spring
Contact person	FuZhi Xia
Lecturer	FuZhi Xia, YanYan Xu, XueLian Cheng, LiMin Bai
Language	Chinese
Course Nature and Semester Offered	compulsory, 7 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site teaching, 2 hours per week.		
Work load (Total Weekly Study Hours)	4. Total hours: 84 hours = 32 hours of lectures + 52 hours of self-study, completed in 16 weeks. 5. Teaching: 2 hours per week, including lectures, discussions, and Q&A. 6. Self-study: 3.25 hours per week, including preview before class, exercises after class, and review for exams.		
Credit points ETCS	3		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Automotive Care Practice		
Learning outcomes and	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

<p>their corresponding PLOs</p>	<p>CLO-1 Learning Outcome-1</p>	<p>Apply the theoretical knowledge learned in class to actual production, deepening the understanding of professional knowledge. Based on internship experience, write a detailed internship report that includes an introduction to the internship organization, internship position, internship content, gains and reflections, to demonstrate the internship results and personal growth.</p>	<p>R1、R9</p>
	<p>CLO-2 Learning Outcome-2</p>	<p>Through on-the-job practice, complete various internship tasks assigned by the enterprise, including job practice, project participation, and technical learning. Be able to apply relevant skills and operational methods in the automotive aftermarket.</p>	<p>R1</p>
	<p>CLO-3 Learning Outcome-3</p>	<p>Encourage students to identify problems, analyze issues, and solve them during the internship, while attempting to design innovative solutions.</p>	<p>R2、R3</p>
	<p>CLO-3 Learning Outcome-4</p>	<p>Cultivate students' professional qualities, including diligence, pursuit of excellence, dedication, honesty, and integrity, as well as</p>	<p>R7、R8、R9</p>

		teamwork, communication, and coordination skills.	
Content	<p>Automotive Service Engineering Production Internship is a concentrated practical teaching course for the four-year undergraduate program in Automotive Service Engineering. Through the internship, students integrate the theoretical knowledge they have learned with actual production, understand new technologies, new processes, and new standards in the automotive aftermarket, and are able to outline the workflow, job content, and core skills of relevant typical positions. The main content includes:</p> <p>① Company Internship: Understanding the organizational structure, rules and regulations, corporate culture, operational modes, and basic safety production knowledge of the enterprise. ② On-the-Job Practice: Gaining hands-on experience in typical job positions such as automotive sales, automotive insurance and claims, automotive care, auto body repair and painting, and automotive fault diagnosis, mastering the related core skills. Through this course, students are expected to complete all internship tasks assigned by the enterprise according to the internship plan and requirements, including on-the-job practice, project participation, and technical learning. Based on their internship experience, students must write a detailed internship report covering the introduction of the internship organization, internship position, internship content, gains, and reflections to demonstrate their internship achievements and personal growth. Students will undergo assessment and evaluation by both the school and the internship organization, covering internship performance, skill mastery, professional qualities, etc., to verify the effectiveness of the internship. Ultimately, the course aims to enhance students' comprehensive professional competence.</p> <p>Knowledge Module 1: Pre-job Training (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: On-the-Job Internship (Weighting Factor: 28/32, Level: Memorization to Evaluation)</p>		

	Knowledge Module 3: Assessment (Weighting Factor: 2/32, Level: Application + Evaluation)
Study and examination requirements and forms of examination	The course assessment consists of process assessment (50%) and practical non-written exam(50%). The process assessment includes regular performance (40%), attendance (30%), and theoretical testing (30%). The final practical non-written exam is conducted once.
Media employed	Computer, online websites, Hengxing Capability Platform, and Xuexitong
Reading list	<p>[1] Ling Zhijie. Safety Production Basics [M]. Beijing: Machinery Industry Press, 2013.</p> <p>[2] Bai Changli. Professional Ethics Training for Technical Personnel [M]. Beijing: Xi'an University of Electronic Science and Technology Press, 2012.</p> <p>[3] Gao Junjie, Yao Baozhen. Automotive Service Engineering [M]. Beijing: Machinery Industry Press, 2018.</p> <p>[4] Feng Tao. IT Technology in Automotive Production [M]. Beijing: Machinery Industry Press, 2014.</p> <p>[5] Xu Zhaotang. Automotive Service Management [M]. Beijing: Machinery Industry Press, 2022.</p> <p>[6] Zeng Zhaojin. Research on the Innovative Application of CNC Machining Technology in Automotive Manufacturing Processes [J]. Times Automobile, 2024, (23):157-159.</p> <p>[7] Yao Bowen. Research on Quality Management System of Automotive Maintenance Service [J]. Automotive Testing Report, 2024, (07):16-18.</p>
Revision time	July, 2024

Module name Graduation Internship

Module name	Graduation Internship
Module level	Undergraduate
Code	3080208523
Courses	Concentrated Practice
Semester	Fall
Contact person	FuZhi Xia
Lecturer	FuZhi Xia, YanYan Xu, XueLian Cheng, LiMin Bai
Language	Chinese
Course Nature and Semester Offered	compulsory, 8 th semester

Teaching Methods and Lecture Hours (Weekly Lecture Hours)	Lecture, demonstration, simulation, practice, and on-site teaching, 2 hours per week.		
Work load (Total Weekly Study Hours)	<ol style="list-style-type: none"> 1. Total hours: 112 hours = 32 hours of lectures + 80 hours of self-study, completed over 16 weeks 2. Instruction: 2 hours per week, including lectures, demonstrations, and on-site teaching 3. Self-study: Approximately 5 hours per week, including simulations and exercises 		
Credit points ETCS	4		
Requirements according to the examination Regulations	A student must have registered for the course.		
Recommended prerequisites	Automotive Service Engineering Production Internship		
Learning	Course Learning Outcome (CLO) (suggested 3-4)	Description	Supported Programme Learning Objective (PLOs)

outcomes and their corresponding PLOs	CLO-1 Learning Outcome-1	Apply the theoretical knowledge learned in class to actual production to deepen the understanding of professional knowledge. Based on internship experiences, write detailed internship reports, including an introduction of the internship organization, internship position, internship tasks, gains, and reflections, to demonstrate internship achievements and personal growth.	R1、R9
	CLO-2 Learning Outcome-2	Complete various internship tasks assigned by the enterprise through on-the-job practice, including practical work, project participation, and technical learning. Be able to apply relevant skills and operational methods in the automotive aftermarket.	R1
	CLO-3 Learning Outcome-3	Encourage students to identify, analyze, and solve problems during the internship process, and attempt to design innovative solutions.	R2、R3

	CLO-3 Learning Outcome-4	Cultivate students' professional qualities, including diligence, pursuit of excellence, dedication, honesty, and integrity, as well as teamwork, communication, and coordination skills.	R7、R8、R9
Content	<p>Graduation Internship is a concentrated practice course in the four-year undergraduate program of Automotive Service Engineering. Through the internship, students integrate the theoretical knowledge they have learned with actual production, gain an understanding of new technologies, new processes, and new standards in the automotive aftermarket, and comprehend the workflows, job responsibilities, and core skills of typical related positions. The main content includes:①Enterprise internship: understanding the organizational structure, rules and regulations, corporate culture, operational models, and basic safety production knowledge of the enterprise;②On-the-job practice: gaining hands-on experience in typical positions such as automotive marketing, automotive insurance and claims, automotive care, automotive sheet metal and painting, and automotive fault diagnosis, applying relevant core skills. Through this course, students should complete all internship tasks arranged by the enterprise according to the internship plan and requirements, including on-the-job practice, project participation, and technical learning. Based on their internship experience, students are required to write detailed internship reports that include an introduction to the internship organization, job descriptions, internship content, gains, and reflections to reflect their internship achievements and personal growth. Students will be assessed and evaluated by both the school and the internship organization on aspects such as internship performance, skill proficiency, and professional ethics to verify the effectiveness of the internship. Ultimately, the course aims to enhance students' comprehensive professional competence.</p>		

	<p>Knowledge Module 1: Pre-job Training (Weighting Factor: 2/32, Level: Memorization + Understanding)</p> <p>Knowledge Module 2: On-the-Job Internship (Weighting Factor: 28/32, Level: Memorization to Evaluation)</p> <p>Knowledge Module 3: Assessment (Weighting Factor: 2/32, Level: Application + Evaluation)</p>
Study and examination requirements and forms of examination	The course assessment includes continuous assessment (50%) and non-written practical exam (50%). The continuous assessment consists of: regular performance 40%, attendance 30%, and theoretical tests 30%. The final non-written practical exam is conducted once.
Media employed	Computer, online websites, Hengxing Capability Platform, and Xuexitong
Reading list	<p>[1] Ling Zhijie. Basic Knowledge of Safety Production [M]. Beijing: Mechanical Industry Press, 2013.</p> <p>[2] Bai Changli. Professional Ethics Cultivation for Technical Personnel [M]. Beijing: Xi'an University of Electronic Science and Technology Press, 2012.</p> <p>[3] Gao Junjie, Yao Baozhen. Automotive Service Engineering [M]. Beijing: Mechanical Industry Press, 2018.</p> <p>[4] Feng Tao. IT Technology in Automotive Production [M]. Beijing: Mechanical Industry Press, 2014.</p> <p>[5] Xu Zhaotang. Automotive Service Management [M]. Beijing: Mechanical Industry Press, 2022.</p> <p>[6] Fu Ying, Wu Wei, Wen Yiming, et al. Decision-making on Technological Innovation Cooperation and Emission Reduction in New Energy Vehicle Supply Chain under Low Carbon Environment [J]. Logistics Technology, 2024, 43(11): 102-113.</p> <p>[7] Yao Bowen. Research on Quality Management System of Automotive Maintenance Service [J]. Automobile Test Report, 2024, (07): 16-18.</p>

Revision time	July, 2024
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