Program Handbook for Software Engineering

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1. Basic Information of the Program

Discipline Category: Engineering	Specialty Category: Computer
Program Name: Software Engineering	Program Code: 080902
Program Duration: Four years	Degree awarded: Bachelor of Engineering
CN Credits: 169	Total Lecturing Hours: 2944
ECTS: 199	Total Workload: 5624

2. Program Objectives

This program adopts the "Four Teachings and Four Achievements" educational framework to cultivate high-quality, application-oriented professionals with ″HengXing five excellences″ (Good moral character, Strong academic ability, Solid theoretical foundation, Practical diligence and Internationalization), who embrace the core values of socialism, possess sound moral attainment and comprehensive quality, meet the demands of socialist modernization, and achieve all-round development in morality, intellectual ability, physical health, aesthetic appreciation, and labor skills.(The Four Teachings refer to Ideological and Political Education, General Education, Professional Education, and Innovation and Entrepreneurship Education; the Four Achievements encompass Education for Adulthood, Growth, Talent Development, and Success.) Graduates will master basic knowledge in software engineering technology, mobile software, Web software, cloud computing and other related fields, receive fundamental training for software R&D engineers and enterprise cloud engineers, and possess great potential to develop into software analysts, software architects, software project managers, alongside solid practical capabilities, innovative thinking and teamwork skills. They are competent to engage in competitive careers within the software engineering industry.

2.1 The Intended Learning Outcomes (Graduation requirements)

The intended learning outcomes are the criteria for talent development, a concrete

representation of the program objectives, and the foundation for designing and structuring teaching content and the curriculum system. They also serve as the basis for developing teaching plans and curriculum standards, organizing instruction, assessing and evaluating educational quality. Aligned with the program objectives, graduates are expected to achieve the following intended learning results, closely tied to their employability.

R1 Engineering Knowledge: Able to apply mathematics, natural science, and software engineering expertise to solve complex engineering problems in the software engineering field.

a) Be able to apply knowledge of advanced mathematics, discrete mathematics, probability and statistics to quantitatively analyze and evaluate practical engineering problems such as algorithm efficiency and system resource consumption.

b) Be able to apply core theories such as data structures and database principles to complete data modeling, business process design, and core function implementation for small-to-medium-sized business systems.

c) Be able to select mainstream technology stacks for specialized directions such as mobile Internet and intelligent applications, and independently complete functional module development, interface debugging, and system integration testing.

R2 Problem Analysis: Be able to apply the fundamental principles of mathematics, natural science, and software engineering to identify, formulate, and analyze complex engineering problems in the software engineering field through literature research, and obtain valid conclusions.

a) Be able to extract core business logic and constraints from user requirements, and use tools such as use case diagrams, flowcharts, and class diagrams for structured representation.

b) Be able to identify key difficulties in complex software projects from dimensions such as cost, efficiency, and maintainability, and develop comparative analysis plans.

c) Be able to retrieve literature from sources such as CNKI and IEEE for complex problems in mobile Internet, intelligent applications, and related areas, and formulate multiple technical solutions with comparative analysis.

R3 Design/Development Solutions: Be able to design solutions for complex engineering problems in software engineering, and design software systems, modules, or algorithmic processes that meet specific requirements, while demonstrating innovation in the design process

and considering social, health, safety, legal, cultural, and environmental factors.

a) Be able to design comprehensive solutions covering architecture, components, and databases for complex software requirements, clearly identifying constraints such as social, safety, and legal factors; for specialized directions like mobile Internet and intelligent applications, be able to complete system architecture design and functional module development, and verify feasibility through stress testing and security scanning.

b) Be able to propose functional or technical improvements in course projects or competitions, validate their effectiveness through prototyping, and demonstrate features of "micro-innovation" and "practical innovation."

R4 Research: Be able to investigate complex engineering problems based on software engineering theory and using scientific methods, select research approaches, design feasible experiments, analyze and interpret experimental data, and draw reasonable and valid conclusions through information synthesis.

a) Be able to design user questionnaires, log analysis, or controlled experiment schemes for engineering problems such as slow system response and concurrency conflicts, and collect valid data to support problem identification.

b) Be able to execute experimental procedures in a standardized manner, collect data using software modeling, performance testing, and other means, present analysis results through charts, and form actionable optimization recommendations.

c) Be able to conduct applied research in directions such as mobile Internet and intelligent applications, and translate experimental conclusions into project optimization measures.

R5 Use Modern Tools: Be able to develop, select, and apply appropriate technologies, resources, modern engineering R&D tools, and information technology tools to complex engineering problems in software engineering, including analysis, design, testing, implementation, application, and maintenance, while understanding their limitations.

a) Be able to utilize libraries and the Internet for literature retrieval and data querying, proficiently use modern software engineering tools to accomplish core tasks such as code management, building, and testing, and understand their limitations.

b) For specific complex software engineering problems, be able to develop, select, and apply appropriate platforms, technologies, and modern engineering R&D tools throughout the

processes of analysis, design, implementation, testing, verification, and documentation, while analyzing, understanding, and evaluating their limitations, especially those of mobile Internet applications.

R6 Engineering and Sustainable Development: When solving complex engineering problems, be able, based on relevant background knowledge of software engineering, to analyze and evaluate the impact of engineering practices on health, safety, environment, law, and economic and social sustainable development, and understand the responsibilities to be undertaken.

a) Understand technical standards and specifications, intellectual property, industry policies, laws and regulations, and knowledge of science and technology ethics related to software engineering, and be able to exercise self-discipline in software engineering practice.

b) Be able to analyze and evaluate the impact of software engineering practices on society, health, safety, law, and culture, as well as the influence of these constraints on the implementation of solutions to complex software engineering problems, and understand the responsibilities to be undertaken.

c) Be aware of and understand the concepts and connotations of environmental protection and sustainable development, possess knowledge of science and technology ethics, and understand the impact of the software industry on the environment and sustainable development.

d) Be able to recognize and evaluate the impact of various information systems and software engineering practices, especially mobile Internet applications, on environmental and social sustainable development.

R7 Ethic and Professional Norms: Possess humanities and social science literacy and a sense of social responsibility, be able to understand and apply engineering ethics, abide by professional ethics, norms, and relevant laws in software engineering practice, and fulfill responsibilities.

a) Establish a correct worldview, outlook on life, and values; possess good professional ethics and professionalism; and have a strong sense of collective honor and team spirit.

b) Be able to understand the professional nature and responsibilities of software engineering professionals in practice in software engineering and related fields, pay attention to professional ethical cultivation, abide by professional ethics and norms, and fulfill

responsibilities.

R8 Individual and Teams: Possess team spirit, be able to assume the roles of individual, team member, and leader in a multidisciplinary team, and accomplish assigned tasks.

a) Understand the meaning of teamwork, have a sense of teamwork, and be able to assume the roles of individual, team member, and leader in the implementation of software engineering and related field practices.

b) Be able to play an appropriate role in a multidisciplinary team according to role requirements, organize and coordinate team members, coordinate relationships with other disciplines, and jointly solve problems in software engineering and related fields.

R9 Communication: Be able to communicate effectively with industry peers and the public on complex engineering problems in software engineering, including writing reports and design documents, making presentations, and clearly expressing or responding to instructions; possess a certain international perspective and be able to communicate in cross-cultural contexts.

a) Be able to accurately express one's views on complex software engineering problems through oral, written, and graphical means, and effectively communicate and exchange with industry peers and the public.

b) Possess language and written expression skills for cross-cultural communication, and be able to conduct basic communication and exchange on software engineering issues in cross-cultural contexts.

R10 Project Management: Master software engineering project management methods, understand the important economic and management factors involved in software engineering activities, and be able to apply them in a multidisciplinary environment.

a) Be able to estimate costs for human resources, time, cloud resources, etc., in project planning, and track schedule deviations using Gantt charts, burndown charts, and similar tools.

b) Be able to identify common risks such as requirement changes, technical difficulties, and staff turnover, formulate preventive and responsive measures, and embed quality gates such as code reviews, automated testing, and user acceptance testing into the development process.

R11 Life-Long Learning: Possess an awareness of self-directed and lifelong learning, be able to track developments in the software engineering field, and have the ability to continuously learn and adapt to change.

a) Possess the ability to proactively identify and pose problems; have the awareness and requirement for lifelong learning; master self-learning methods; and have channels for expanding knowledge and abilities.

b) Be able to recognize the diversity of the technological environment in the software engineering field, pay attention to hot topics in software technology development, and have the ability to track and identify knowledge advancements and latest research directions in the discipline.

2.2 Curriculum-Objectives Matrix

Table 1: The matrix of the support of the Software Engineering curriculum system to the intended learning outcomes

Rs / Course Name	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
Ethics and the Rule of Law							√	√			√
Outline of Modern Chinese History							√	√			√
Basic Principles of Marxism						√	√			√	√
Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics						√		√	√	√	
Xi Jinping Thought on Chinese Characteristics and Socialism in the New Era						√	√			√	
Situation and Policy I-VIII						√					√
Advanced Mathematics AI-II	√	√									
Linear Algebra	√	√									
Probability and Mathematical Statistics	√	√									
University Physics II	√	√									
Digital Intelligence English I-IV					√				√		√
College Digital Literacy					√						√
Information Retrieval and Utilization				√	√						√
Military Theory							√	√			
University Sports I-IV								√			√
Mental Health Education							√	√	√		
Education on Chinese Excellent Traditional Culture							√	√			√
National Security Education							√	√			
University Students Career Development Planning							√	√	√		√
University Students Career Guidance							√	√	√		√
Art Literacy Courses							√	√			

Rs / Course Name	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
International Literacy Courses								√	√		
International Literacy Activities								√	√		
Social Science Courses						√	√				
Natural Science Courses	√	√				√					
Introduction to Software Engineering Program	√	√	√						√		
C Language Programming	√	√	√		√						
Discrete Mathematics	√	√		√							√
Data Structures and Algorithms	√	√	√	√							
Principles of Operating Systems	√	√	√	√							
Principles of Database Systems	√	√	√								
Digital Logic		√	√	√							
Principles of Computer Composition	√	√	√								
Computer Networks	√	√	√								
Web Front-end Development Technology		√	√		√				√		
Software Engineering	√	√	√							√	
Object-Oriented Programming	√	√	√		√						
Principles of Compilation	√	√	√	√	√						
Software Architecture		√	√		√					√	
System Analysis and Design	√	√	√	√							
Software Testing			√		√	√		√			
Software Project Management			√		√				√	√	

Rs / Course Name	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
Java Web Application Development		√	√		√						
C++ Object-Oriented Programming	√	√	√		√						
Enterprise-level Java Development		√	√		√						
Android Mobile Application Development		√	√		√				√		
Python Programming		√	√		√						
Big Data Collection and Processing		√	√						√		
Introduction to Artificial Intelligence	√	√				√	√				√
Computer Science English						√		√	√		√
Fundamentals of Information Security Technology		√	√	√			√				
Internet of Things Applications		√		√		√				√	
Innovative Design Thinking			√					√	√		√
The Basic of Entrepreneurship								√	√	√	√
Innovative Practices in AIGC Applications		√	√		√						
Internet+ Innovative Application		√	√					√			
Military Skill Training							√	√			
Labor Practice						√	√	√			
Basic Training in Programming	√	√	√		√						
Basic Training in Data Structures and Algorithms	√		√		√			√			
Basic Training in Software Front-end Development		√	√		√				√		
Basic Training in Database Application		√	√	√	√						

Rs / Course Name	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
Linux System Programming Training	√	√	√	√							
Comprehensive Training in Software Requirement Analysis		√	√	√				√	√		
Comprehensive Training in Object-Oriented Programming	√	√	√		√			√	√		
Comprehensive Training in Java Web Application Development		√	√		√			√	√		
Software Engineering Practice	√	√	√				√	√			
Comprehensive Training in System Analysis and Design		√	√		√				√		
Comprehensive Training in Software Testing			√		√	√		√			
Comprehensive Training in Enterprise-level Java Application Development			√		√			√		√	
Software Engineering Project Management Practice	√		√					√		√	
Comprehensive Training in System Development	√	√	√	√	√						
Graduation Internship						√	√	√	√		
Graduation Thesis (Design)		√	√	√	√	√			√		√
Second Classroom Activity								√	√	√	√

3. Curriculum structure and Topology

3.1 Curriculum Structure

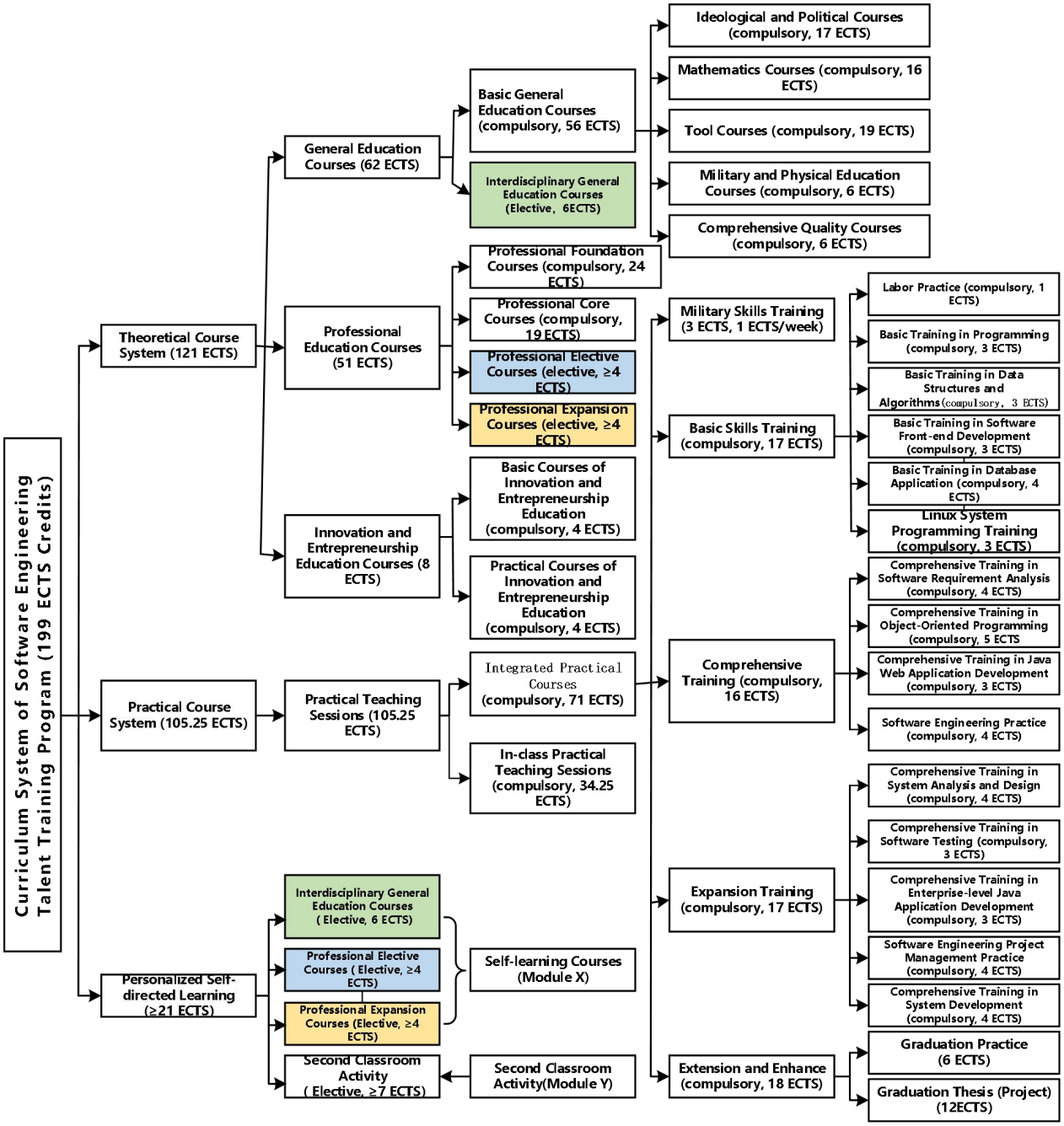
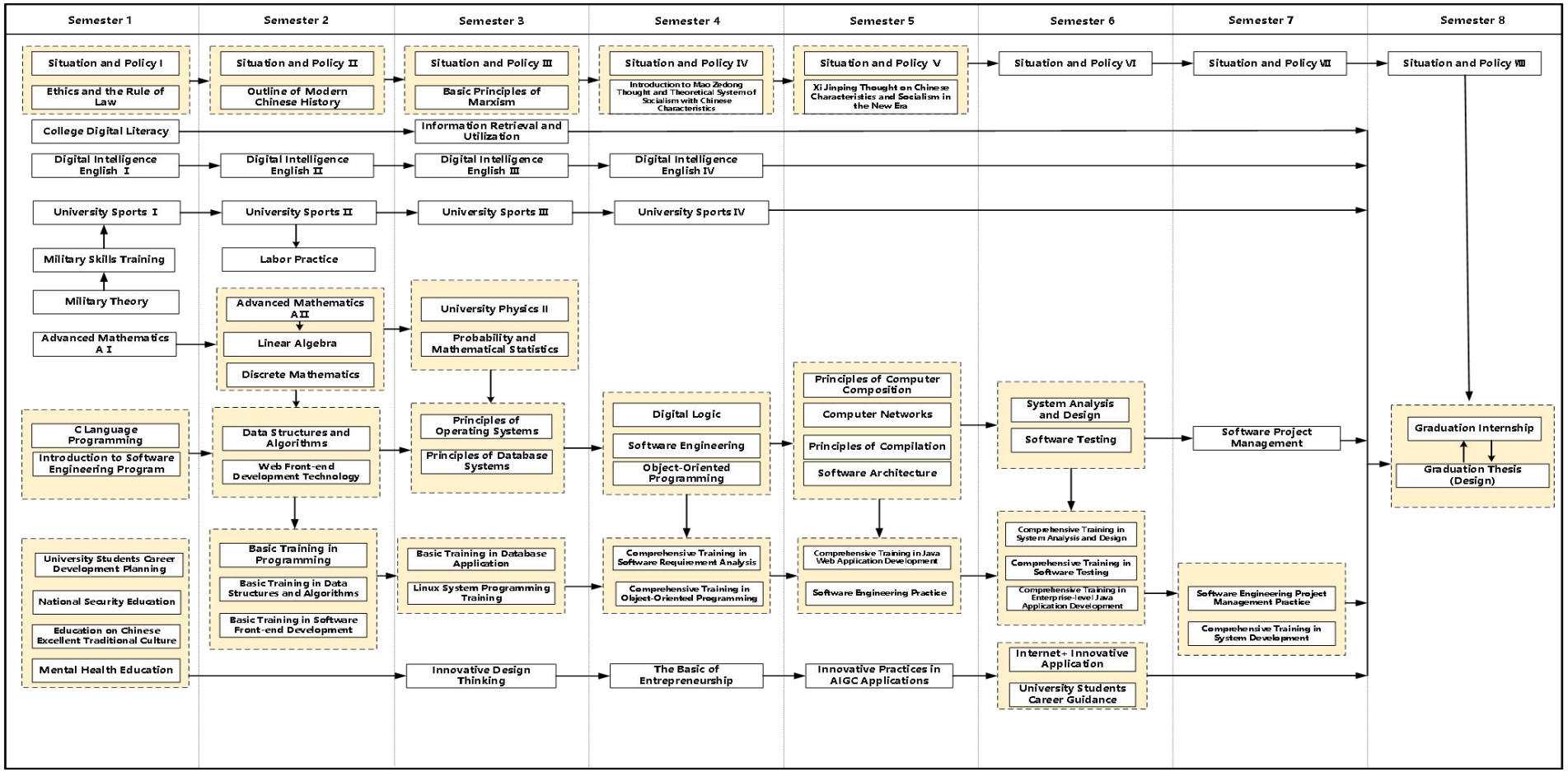


Figure 1: Curriculum System and ECTS Composition Diagram of Software Engineering

3.2 Curriculum Topology



*Specialization Courses and Professional Elective Courses Not Included

Figure 2: Topology Diagram of Software Engineering Professional Curriculum

3.3 Course Balance Rate

Table 2: Semester Teaching Balance Table for Software Engineering Courses (ECTS)

Semester Distribution	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6	Semester 7	Semester 8	proportion
Theoretical Compulsory	18	16.75	14.75	11.25	10.25	4.25	1.25	0.25	**38.57%**
Practical Compulsory	9.25	15.5	11.5	15	11	13	8	18	**50.88%**
Recommended Elective	1.75	0.75	1.75	1.75	3.75	5.75	3.75	1.75	**10.55%**
Total	**29**	**33**	**28**	**28**	**25**	**23**	**13**	**20**	**100%**

3.4 Course Allocation Ratio

Table 3: Distribution and Proportion of ECTS and WorkLoad Hours for the Software Engineering Major

class	ECTS	Proportion of total ECTS	WorkLoad hours	Proportion of total hours
Basic General Education	56	28.14%	1568	27.88%
Compulsory Professional Education	43	21.61%	1204	21.41%
Entrepreneurship and Innovation Education	8	4.02%	224	3.98%
Individualized Development	21	10.55%	602	10.70%
Integrated Practical	71	35.68%	2026	36.02%
Total	**199**	**100.00%**	**5624**	**100.00%**

Statistical Table on the Distribution and Proportion of ECTS and WorkLoad Hours for the Theoretical Course System in the Software Engineering Major

class			ECTS and proportion of Total ECTS			WorkLoad hours and proportion of total hours			
General Education	Basic General Education	Basic General Education Courses	40.75	40.75	20.48 %	20.48 %	1141	1141	20.29 %
Professional Education	Professional Foundational Education	Introduction to Software Engineering	1	19.5	0.50%	9.80%	28	546	0.50%
		Professional Foundational Courses	18.5		9.30%		518		9.21%
	Professional Core Education	Professional Core Courses	12.5	12.5	6.28%	6.28%	350	350	6.22%
Entrepreneurship and Innovation Education	Entrepreneurship and Innovation Education	Basic Courses of Entrepreneurship and Innovation	4	4	2.01%	2.01%	112	112	1.99%
		Practical Courses of Entrepreneurship and Innovation	0		0.00%		0		0.00%
Personalized Training	Personalized Training	Interdisciplinary General Education Course	6	10	3.02%	5.03%	168	280	2.99%

		Professional Elective Courses	2		1.01%		56		1.00%
		Professional Expansion Course	2		1.01%		56		1.00%
Total			**86.75**	**86.75**	**43.59%**	**43.59%**	**2429**	**2429**	**43.19%**

Statistical Table on the Distribution and Proportion of ECTS and WorkLoad Hours for the Practical Course System in the Software Engineering Major

class	ECTS	Proportion of total ECTS	WorkLoad hours	Proportion of total hours
In-class Practice	34.25	17.21%	959	17.052%
Integrated Practical	71	35.68%	2026	36.024%
Personalized Training (Second Classroom Activities)	7	3.52%	210	3.734%
Total	**112.25**	**56.41%**	**3195**	**56.81%**

4. Course list - Foundational, Core, Elective and Featured Courses

4.1 Foundational Courses (9 courses, 24 ECTS)

Introduction to Software Engineering Program (1 ECTS), C Language Programming (3 ECTS), Discrete Mathematics (3 ECTS), Data Structures and Algorithms (4 ECTS), Principles of Operating Systems (3 ECTS), Principles of Database Systems (3 ECTS), Digital Logic (2 ECTS), Principles of Computer Composition (3 ECTS), Computer Networks (2 ECTS).

4.2 Core Courses (8 courses, totaling 19 ECTS)

Web Front-end Development Technology (2 ECTS), Software Engineering (3 ECTS), Object-Oriented Programming (4 ECTS), Principles of Compilation (2 ECTS), Software Architecture (2 ECTS), System Analysis and Design (2 ECTS), Software Testing (2 ECTS), Software Project Management (2 ECTS).

4.3 Elective Courses (at least 8 ECTS from 10 courses)

Java Web Application Development (2 ECTS), C++ Object-Oriented

Programming (2 ECTS), Enterprise-level Java Development (2 ECTS), Android Mobile Application Development (2 ECTS), Python Programming (2 ECTS), Big Data Collection and Processing (2 ECTS), Introduction to Artificial Intelligence (2 ECTS), Computer Science English (2 ECTS), Fundamentals of Information Security Technology (2 ECTS), Internet of Things Applications (2 ECTS).

4.4 Featured Courses (1 course, 4 ECTS)

Comprehensive Training in System Development (4 ECTS): Centered on practical engineering projects, this course deeply integrates programming languages, databases, Web and mobile application development technologies to comprehensively cultivate students comprehensive software development capabilities. By simulating enterprise development workflows, it strengthens students′ teamwork and project management skills, enabling students to fully understand the full life cycle of software development through hands-on practice. Combining theoretical knowledge with practical training, the course aims to cultivate interdisciplinary talents with solid technical foundations and sound professional literacy, laying a solid foundation for students′ future career development.

5. Course list -Integrated Practical Courses

5.1 Military Skill Training (1 course, 3 ECTS)

Military Skill Training (3 ECTS)

5.2 Basic Skills Training (6 courses, 17 ECTS)

Labor Practice (1 ECTS), Basic Training in Programming (3 ECTS), Basic Training in Data Structures and Algorithms (3 ECTS), Basic Training in Software Front-end Development (3 ECTS), Basic Training in Database Application (4 ECTS), Linux System Programming Training (3 ECTS).

5.3 Comprehensive Training (4 courses, 16 ECTS)

Comprehensive Training in Software Requirement Analysis (4 ECTS),

Comprehensive Training in Object-Oriented Programming (5 ECTS), Comprehensive Training in Java Web Application Development (3 ECTS), Software Engineering Practice (4 ECTS).

5.4 Expansion Training (5 courses, 17 ECTS)

Comprehensive Training in System Analysis and Design (3 ECTS), Comprehensive Training in Software Testing (3 ECTS), Comprehensive Training in Enterprise-level Java Application Development (4 ECTS), Software Engineering Project Management Practice (3 ECTS), Comprehensive Training in System Development (4 ECTS).

5.5 Extension Enhancement(2 Courses, 16 ECTS)

Graduation Internship (6 ECTS), Graduation Thesis (Design) (12 ECTS)

6. Graduation and Degree Conferment Requirements

6.1 Graduation Requirements

To qualify for graduation, students must fulfill the requirements set forth in the Hengxing University Student Graduation Management Regulations. It includes successfully completing all credits stipulated in the curriculum plan, achieving passing grades in all courses, and attaining at least the “Pass” level in meeting the program’s educational objectives (i.e., graduation requirements). Students who satisfy these conditions are awarded the Bachelor’s Degree Graduation Certificate in Software Engineering from Hengxing University.

Grading Scale for Achievement of Educational Objectives,using a five-tier grading scale: Excellent, Good, Satisfactory, Pass, and Fail. This grading scale is aligned with the centesimal system as follows:

90-100 points: Excellent

80-89 points: Good

70-79 points: Satisfactory

60-69 points: Pass

Below 60 points: Fail

6.2 Degree Conferment Requirements

Students who meet the graduation requirements and satisfy the criteria outlined in the Hengxing University Bachelor's Degree Awarding Implementation Rules will be reviewed and approved by the University's Academic Committee. Upon approval, they will be conferred the Bachelor of Engineering Degree from HXU.

7. Implementation Plan of Program

Table 4: Implementation Plan for Software Engineering Education

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
General Education Courses	Basic General Education Courses	Ideological and political courses	Ethics and the Rule of Law	3000000101	C	3	3	48	84	√								Ex	School of Marxism
			Outline of Modern Chinese History	3000000102	C	3	3	48	84		√							Ex	
			Basic Principles of Marxism	3000000103	C	3	3	48	84			√						Ex	
			Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	3000000104	C	3	3	48	84				√					Ex	
			Xi Jinping Thought on Chinese Characteristics and Socialism in the New Era	3000000147	C	3	3	48	84					√				Ex	
			Situation and Policy I	3000000105	C	0.25	0.25	8	7	√								As	
			Situation and Policy II	3000000182	C	0.25	0.25	8	7		√							As	
			Situation and Policy III	3000000106	C	0.25	0.25	8	7			√						As	
			Situation and Policy IV	3000000183	C	0.25	0.25	8	7				√					As	
			Situation and Policy V	3000000107	C	0.25	0.25	8	7					√				As	
			Situation and Policy VI	3000000184	C	0.25	0.25	8	7						√			As	
			Situation and Policy VII	3000000108	C	0.25	0.25	8	7							√		As	
			Situation and Policy VIII	3000000185	C	0.25	0.25	8	7								√	As	
			Subtotal 1			**17**	**17**	**304**	**476**									**5 Exam-Based Courses**	
		Mathematics	Advanced Mathematics A I	3000000160	C	5	5	80	140	√								Ex	School of Education

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
		and Physics	Advanced Mathematics AII	3000000161	C	5	5	80	140		√							Ex	
General Education Courses	Basic General Education Courses	Mathematics and Physics	Linear Algebra	3000000113	C	2	2	32	56		√							Ex	School of Education
			Probability and Mathematical Statistics	3000000114	C	2	2	32	56			√						Ex	
			University Physics II	3000000140	C	2	2	32	56			√						Ex	
			Subtotal 2			**16**	**16**	**256**	**448**									**5 Exam-Based Courses**	
		Tools	Digital Intelligence English I	300000010B	C	2	2	64	56	√								Ex	School of International Education
			Digital Intelligence English II	300000010C	C	2	2	64	56		√							Ex	
			Digital Intelligence English III	300000010D	C	2	2	64	56			√						Ex	
			Digital Intelligence English IV	300000010E	C	2	2	64	56				√					Ex	
			College Digital Literacy	3000000186	C	2	2	32	56	√								As	School of Big Data and Intelligent Information Engineering
			Information Retrieval and Utilization	3000000134	C	1	1	16	28			√						As	
			Subtotal 3			**11**	**11**	**304**	**308**									**4 Exam-Based Courses**	
		Military and sports	Military Theory	3000000131	C	2	2	32	56	√								As	Student Development Office
			University Sports I	3000000192	C	1	1	36	28	√								As	School of Physical
			University Sports II	3000000193	C	1	1	36	28		√							As	
			University Sports III	3000000194	C	1	1	36	28			√						As	
			University Sports IV	3000000195	C	1	1	36	28				√					As	

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
			Subtotal 4			**6**	**6**	**176**	**168**										
		Comprehensive Quality Courses	Mental Health Education	3000000129	C	2	2	32	56	√								As	School of Education
General Education Courses	Basic General Education Courses		Education on Chinese Excellent Traditional Culture	3000000197	C	1	1	16	28	√								As	School of Humanities
			National Security Education	3000000187	C	1	1	16	28	√								As	School of Marxism
			University Students Career Development Planning	3000000132	C	1	1	16	28	√								As	School of Business
			University Students Career Guidance	3000000133	C	1	1	16	28						√			As	
			Subtotal 5			**6**	**6**	**96**	**168**										
	Interdisciplinary General Education Courses	Interdisciplinary General Education Courses	Art Literacy Courses		E	2	2	32	56									As	All Department
			International Literacy Courses		E	1	1	16	28									As	
			International Literacy Activities		E	1	1	16	28									As	
			Social Science Courses		E	1	1	16	28									As	
			Natural Science Courses		E	1	1	16	28									As	
			Subtotal 6			**6**	**6**	**96**	**168**										
	Total 1 = Subtotal 1 + Subtotal 2 + Subtotal 3 + Subtotal 4 + Subtotal 5 + Subtotal 6					**62**	**62**	**1232**	**1736**										
Professional Education	Professional Foundational Courses	Professional Foundational Courses	Introduction to Software Engineering Program	3080902270	C	1	1	16	28	√								As	School of Big Data and Intelligent Information Engineering
			C Language Programming	3080900242	C	3	3	48	84	√								**Ex**	
			Discrete Mathematics	3080900229	C	3	3	48	84		√							**Ex**	

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
Courses			Data Structures and Algorithms	3080900230	C	4	4	64	112		√							Ex	
			Principles of Operating Systems	3080903255	C	3	3	48	84			√						Ex	
			Principles of Database Systems	3080900211	C	3	3	48	84			√						Ex	
			Digital Logic	3080900202	C	2	2	32	56				√					Ex	
			Principles of Computer Composition	3080900257	C	3	3	48	84					√				Ex	
			Computer Networks	3080900206	C	2	2	32	56					√				Ex	
			Subtotal 1			**24**	**24**	**384**	**672**									**8 Exam-Based Courses**	
Professional Education Courses	Professional Core Courses	Professional Core Courses	Web Front-end Development Technology	3080902227	C	2	2	32	56		√							Ex	School of Big Data and Intelligent Information Engineering
			Software Engineering	3080902210	C	3	3	48	84				√					Ex	
			Object-Oriented Programming	3080902228	C	4	4	64	112				√					Ex	
			Principles of Compilation	3080903243	C	2	2	32	56					√				Ex	
			Software Architecture	3080902222	C	2	2	32	56					√				Ex	
			System Analysis and Design	3080902226	C	2	2	32	56						√			Ex	
			Software Testing	3080902224	C	2	2	32	56						√			Ex	
			Software Project Management	3080902223	C	2	2	32	56							√		Ex	
			Subtotal 2			**19**	**19**	**304**	**532**									**8 Exam-Based Courses**	
	Professional Elective	Professional Elective	Java Web Application Development	3080902229	E	2	2	32	56					√				As	School of Big Data and Intelligent Information Engineering
			Object-Oriented C Language Programming++	3080717264	E	2	2	32	56					√				As	

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
	Courses	Courses	Enterprise-level Java Development	3080902416	E	2	2	32	56						√			As	
			Android Mobile Application Development	3080902225	E	2	2	32	56						√			As	
			Subtotal 3			**≥ 4**	**≥ 4**	**≥ 64**	**≥ 112**										
Professional Education Courses	Professional Expansion Courses	Professional Expansion Courses	Python Programming	3080900219	E	2	2	32	56						√			As	School of Big Data and Intelligent Information Engineering
			Big Data Collection and Processing	3080717260	E	2	2	32	56						√			As	
			Introduction to Artificial Intelligence	3080717245	E	2	2	32	56						√			As	
			Computer Science English	3080900209	E	2	2	32	56							√		As	
			Fundamentals of Information Security Technology	3120105258	E	2	2	32	56							√		As	
			Internet of Things Applications	3080903335	E	2	2	32	56							√		As	School of Big Data and Intelligent Information Engineering
			Subtotal 4			**≥ 4**	**≥ 4**	**≥ 64**	**≥ 112**										
	Total 2 = Subtotal 1 + Subtotal 2 + Subtotal 3 + Subtotal 4					**≥ 51**	**≥ 51**	**≥ 816**	**≥ 1428**										
Entrepreneurship and Innovation Education Courses	Entrepreneurship and Innovation Education Courses	Basic Courses of Entrepreneurship and Innovation	Innovative Design Thinking	3000000305	C	2	2	32	56			√						As	School of Entrepreneurship and Innovation
			The Foundation of Entrepreneurship	3000000306	C	2	2	32	56				√					As	
			Subtotal 1			**4**	**4**	**64**	**112**										
		Practical	Innovative Practices in AIGC Applications	3080902307	C	2	2	32	56					√				As	School of Big Data and Intelligent

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
		Courses of Entrepreneurship and Innovation	Internet+ Innovative Application	3080903332	C	2	2	32	56						√			As	Information Engineering
			Subtotal 2			**4**	**4**	**64**	**112**										
	Total 3 = Subtotal 1 + Subtotal 2					**8**	**8**	**128**	**224**										
Integrated Practical Courses	Integrated Practical Courses		Military Skills Training	3000000196	C	2	3	32	84	√								As	Student Development Office
		Basic Skills	Labor Practice	3080902501	C	1	1	16	30		√							As	School of Big Data and Intelligent Information Engineering
			Basic Training in Programming	3080902504	C	2	3	32	84		√							As	
			Basic Training in Data Structures and Algorithms	3080902502	C	2	3	32	84		√							As	
			Basic Training in Software Front-end Development	3080902503	C	2	3	32	84		√							As	
			Basic Training in Database Application	3080902505	C	3	4	48	112			√						As	
			Linux System Programming Training	3080902513	C	2	3	32	84			√						As	
		Comprehensive Training	Comprehensive Training in Software Requirement Analysis	3080902518	C	3	4	48	112				√					As	
			Comprehensive Training in Object-Oriented Programming	3080902515	C	4	5	64	140				√					As	
			Comprehensive Training in Java Web Application Development	3080902516	C	2	3	32	84					√				As	School of Big Data and Intelligent

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
			Software Engineering Practice	3080902511	C	3	4	48	112					√				As	Information Engineering
Integrated Practical Courses	Integrated Practical Courses	Extension Training	Comprehensive Training in System Analysis and Design	3080902519	C	2	3	32	84						√			As	
			Comprehensive Training in Software Testing	3080902520	C	2	3	32	84						√			As	
			Comprehensive Training in Enterprise-level Java Application Development	3080902517	C	3	4	48	112						√			As	
			Software Engineering Project Management Practice	3080902522	C	2	3	32	84							√		As	
			Comprehensive Training in System Development	3080902510	C	3	4	48	112							√		As	
		Extension and Enhance	Graduation Internship	3080902517	C	2	6	32	180								√	As	
			Graduation Thesis (Design)	3080902601	C	4	12	64	360								√	As	
	Total: 4					**44**	**71**	**704**	**2026**										
second classroom activity	**second classroom activity**	**second classroom activity**	Labor Activities	3000000907	E	1	1	16	30									As	Youth League Committee
			Reading of 100 Selected Classics from Chinese and Foreign Literature	3000000901	E	1	3	3	18									As	
			Freshman Orientation	3000000902	E			3	18									As	Youth League Committee
			Student Associations	3000000904	E			3	18									As	
			Sports Activities	3000000905	E			4	18									As	
			Aesthetic Education Activities	3000000906	E			3	18									As	

Type	Level	Course Module	Course Names	Course Code	Course Nature	Chinese Credits	ECTS	Lecturing Hours	Work Load	Commencement term								Assessment Method	Offering Department
										First Year		Secon Year		Third Year		Fourth Year			
										1	2	3	4	5	6	7	8		
second classroom activity	second classroom activity	second classroom activity	Ideological and Political Development	3000000908	E	2	3	32	90									As	
			Club and Cultural Activities	3000000909	E													As	
			Volunteer and Public Service	3000000910	E													As	
			Innovation, Entrepreneurship, and Creativity	3000000911	E													As	
			Practical Training, Internship, and Hands-On Activities	3000000912	E													As	Youth League Committee
			Skill and Talent Development	3000000913	E													As	
	Total: 5					≥ 4	≥ 7	≥ 64	≥ 210										
Total = Total 1 + Total 2 + Total 3 + Total 4 + Total 5						≥ 169	≥ 199	≥ 2944	≥ 5624										

Course Nature： C(Compulsory), E(Elective)

Assessment Method: Ex(Examination), As(Assessment)

8.Courses Offered for External Program（Courses that include public elective courses）

Introduction to Software Engineering Program（1 ECTS）.

Revision	Head of Teaching and Research Office Signature:	Liu Qianqian		
	Administrative Program Director Signature:	Guo Ning	Academic Program Leader Signature:	Liu Zunren
Review	Dean of Industry College Signature:	Li Yan	Academic Dean Signature:	Jiang Zhijun
	Executive Dean Signature and Date:	Xu Ying		