Semester	Course	Credits	NOTE	Course Descriptions
First	Fire Service English	2	General Required	This course is designed for first-year firefighting students to build a solid foundation in fire service English. The curriculum emphasizes listening and reading comprehension, utilizing authentic materials such as fundamental fire dynamics, disaster preparedness concepts, and basic terminology. Students will develop essential language skills to understand professional lectures, technical manuals, and international safety guidelines. Through targeted listening exercises and reading practice, learners enhance their ability to process English-language information related to emergency response and public safety, preparing them for advanced professional studies and future international exchanges.
	Introduction to Artificial Intelligence and Information	2	General Required	
	Chinese I	2	General Required	
	Constitution and Human Rights (including Taiwan's	2	General Required	
	Physical Education	2	General Required	
	Emergency Medical Services Techniques	4	Compulsor	Establish the concept of an emergency medical rescue system, be familiar with pre-hospital rescue procedures, and possess skills in patient assessment, CPR, AED, trauma management, transport and immobilization, and common emergency management to meet EMT-1 training standards. Cultivate students' advanced patient(EMT2) assessment, airway management, oxygen therapy, special emergency handling, and rescue recording skills required of intermediate ambulance technicians, enhancing their professional competence in pre-hospital emergency care.

Second	Professional English for Fire Protection II	2	General Required	
	Legal Theory	2	General Required	This course introduces the fundamental concepts, principles, and functions of law within a modern democratic society. Topics include the sources and hierarchy of law, legal rights and obligations, statutory interpretation, and the relationship between law, government, and citizens. Students examine the rule of law, due process, and the legal limits of public authority through selected cases and practical examples. Particular attention is given to legal reasoning and the application of general legal principles to public administration, public safety, and disaster governance. The course aims to develop students' ability to identify legal issues, analyze regulatory frameworks, and make well-grounded decisions in professional practice.
	Chinese II	2	General Required	

	Calculus I	2	Compulsor	Calculus I introduces the foundational concepts of single-variable differential and integral calculus. The course begins with functions, limits, and continuity, establishing the mathematical groundwork for understanding rates of change. Students then explore derivatives, mastering differentiation rules—such as the product, quotient, and chain rules—and applying them to optimization, related rates, and curve sketching. Finally, the curriculum covers basic integration, antiderivatives, and the Fundamental Theorem of Calculus to calculate areas under curves. Key learning objectives include building strong problem-solving skills, visualizing mathematical behavior, and connecting theoretical theorems to practical applications in science and engineering.
	General Physics	3	Compulsor	This course introduces fundamental principles of physics with emphasis on mechanics, fluid mechanics, electricity, and thermodynamics. Topics include Newton's laws of motion, forces, work and energy, fluid statics and dynamics, electrical circuits, and the principles of heat and energy transfer. Students learn to apply physical laws and mathematical relationships to analyze natural phenomena and solve basic engineering problems. Through theoretical instruction, quantitative exercises, and practical examples, the course develops students' analytical and problem-solving skills while establishing a foundation for advanced studies in fire science, fluid dynamics, heat transfer, and fire protection engineering.
	General Chemistry	3	Compulsor	General Chemistry provides a foundational understanding of the principles governing matter and its interactions. Core topics include atomic structure, periodic trends, chemical bonding, stoichiometry, states of matter, thermodynamics, chemical kinetics, and equilibrium. Students will also explore acid-base reactions, electrochemistry, and basic nuclear chemistry. Key learning objectives focus on developing quantitative problem-solving skills, interpreting chemical data, and applying theoretical concepts to predict reaction outcomes. Through structured coursework, students build the analytical framework necessary for advanced studies in chemistry, biology, engineering, and related scientific disciplines.

	Fire Science I	2	Compulsor	This course introduces the fundamental scientific principles of fire behavior and combustion. Topics include the chemistry and physics of combustion, ignition mechanisms, heat transfer, flame characteristics, fire growth, smoke production, and fire suppression principles. Students will develop an understanding of the factors influencing fire initiation, development, and spread in different environments. Emphasis is placed on the scientific understanding of fire phenomena and the application of fire science principles to fire prevention, protection, and investigation.
	Study of Fire Protection	2	Compulsor	The scope of work of fire departments in Taiwan falls under the broad definition of firefighting, covering a wide range of matters. Besides fire prevention and suppression, it also includes rescue and rescue for all disasters that harm people's lives, bodies, and property. Therefore, the significance of firefighting in our country is: Its administrative function is to protect people's lives, bodies, and property, and to prevent disasters such as fires, floods, earthquakes, or to mitigate the damage caused by such disasters, using prevention, alertness, and suppression as means. According to the statutory scope of fire safety work and tasks, it is responsible for fire prevention, disaster rescue, and emergency rescue, in order to maintain public safety and ensure the safety of people's lives and property. Therefore, fire science is a compulsory introductory subject in the basic fire protection course. All fire safety work and tasks rely on this theory and technology to enable graduates to competently engage in fire services, thereby promoting the continuous development of fire services.
	Seismology	2	Elective	
	Applied Building Physics	2	Elective	

	Automotive Engineering	2	Elective	This course bridges foundational automotive engineering principles with specialized firefighting vehicle applications. Students will learn how engine mechanics, hydraulic systems, and vehicle electronics function under extreme emergency conditions to ensure reliable fleet maintenance and tactical operation. Beyond routine technical management, the curriculum introduces modern vehicle fire investigation techniques, focusing on identifying thermal failure patterns, electrical short circuits, and fuel system hazards in post-incident scenarios. Additionally, learners will explore the fundamentals of automotive competitions, analyzing how high-performance racing technologies and vehicle dynamics inspire safety innovations and durability standards in modern emergency response vehicles.
Third	Gender Equality and Police Practice	2	General Required	
	Administrative Law	2	General Required	This course examines the legal foundations and operation of public administration, emphasizing the powers, responsibilities, and accountability of administrative agencies. Major topics include administrative organization, the principle of legality, administrative acts and regulations, procedural requirements, discretionary authority, and administrative remedies. Through case discussions, students explore how administrative law protects individual rights while enabling government agencies to perform public functions effectively. Examples from public safety, emergency management, and disaster response illustrate the legal challenges of urgent decision-making and interagency coordination. The course strengthens students' understanding of lawful administrative action and their capacity to evaluate public decisions from legal and institutional perspectives.
	Criminal Law	2	General Required	

	Calculus II	2	Compulsor	Calculus II builds upon the foundational concepts of single-variable differentiation and integration, focusing on advanced integration techniques, infinite series, and multidimensional applications. Key topics include integration by parts, trigonometric substitution, partial fractions, and improper integrals. Students also explore geometric applications such as calculating arc length, surface area, and volumes of revolution. A major portion of the course is dedicated to sequences and infinite series, covering convergence tests, power series, and Taylor approximations. Finally, the curriculum introduces parametric equations and polar coordinates, equipping students with essential analytical tools for higher-level mathematics, physics, and engineering.
	Engineering Mathematics I	2	Compulsor	This course introduces fundamental mathematical methods essential for engineering analysis and problem-solving. The main topics include ordinary differential equations, linear algebra, and selected concepts of vector analysis. Students will learn to solve differential equations, perform matrix operations, analyze systems of linear equations, and apply vector methods to engineering problems. Emphasis is placed on mathematical modeling and analytical techniques to describe and solve practical engineering phenomena. Through theoretical concepts and problem-solving exercises, students will develop the mathematical skills necessary for understanding and analyzing engineering systems.
	Fire Cause Investigation	2	Compulsor	This course introduces the fundamental principles, methodologies, and procedures of fire cause investigation. Topics include fire origin determination, fire development, ignition sources, potential accidental and intentional causes, and the systematic evaluation of fire scene evidence. Students will learn to apply scientific methods and logical reasoning to identify the origin and determine the probable cause of a fire. Emphasis is placed on hypothesis development, evidence assessment, investigative decision-making, and the application of standardized approaches to fire cause investigation.

	Fire Science II	2	Compulsor	Fire Dynamics I introduces the physical and chemical principles that govern the initiation and development of fires. Topics include combustion, ignition, heat transfer by conduction, convection, and radiation, heat release rate, and flame spread. Students also examine how fuel properties, ventilation, and enclosure geometry influence fire growth and smoke movement. Through worked examples and case discussions, students learn to interpret common measures of fire behavior and explain how changes in fuel or ventilation can affect the development of a compartment fire.
	Fire Hydraulics	2	Compulsor	Fire Hydraulics studies the behavior and movement of water in fire protection systems, serving as the foundation for firefighting tactics. Key course topics include fluid properties, hydrostatics, hydrodynamics, Bernoulli's principle, friction loss calculations in hoses and pipes, pump operations, and water supply networks. Primary learning objectives are mastering pressure, flow rate, and velocity calculations, determining required pump discharge pressures, and diagnosing hydraulic bottlenecks. Students also learn to apply pumping reference charts to ensure adequate water delivery and system reliability during firefighting operations and fire protection engineering design. Ultimately, students can directly apply effective water flow on the fire to execute suppression tasks, advancing from skilled water supply officers to incident commanders.
	Chemical Disaster Prevention and Response	2	Compulsor	This course covers the fundamentals of chemical disaster prevention, preparedness, and emergency response. Key topics include hazardous material classification, Globally Harmonized System (GHS) labeling, and risk assessment methodologies. Students will master standard operating procedures (SOPs) for incident command, containment, decontamination, and personal protective equipment (PPE) selection. Through case studies and tabletop exercises, learners develop practical crisis management skills to mitigate environmental and public health impacts during industrial accidents or chemical spills.
	Disaster Prevention and Reduction	2	Compulsor	
	Piping Engineering	2	Elective	

	Introduction to AI and Practical Application	2	Elective	
	Fire Insurance	2	Elective	The prevention and mitigation of fire hazards has become a major issue in modern social safety. Fire insurance is a common and important part of property insurance. Its function is to protect the property of the public, enabling individuals or businesses to receive economic compensation through fire insurance when suffering losses due to fire, thereby reducing human fear of fire hazards. This semester, lectures on fire insurance theory and related topics further stimulate students' interest in research on the content of corporate fire insurance policies, rate regulations, and practical issues in underwriting and claims. Foreign books and literature are also cited to discuss risk management and risk assessment techniques in groups, aiming to understand the current operations of the insurance industry. The aim is to integrate theory with practice, deeply interpret its relationship with fire department organization development, and explore its impact on fire prevention work.
	Fire Safety Management	2	Elective	
	Search and Rescue at Disaster Scenes	2	Elective	
	Urban Disaster Management and Public Safety	2	Elective	Urban Disaster Management and Public Safety addresses the severe social impacts of disasters in densely populated and industrialized urban areas. The course introduces core concepts of disaster vulnerability, resilience, and urban governance to guide students in examining the root causes of urban disasters and formulating management strategies. Integrating existing hazard analysis findings with land-use planning systems and tools, the curriculum systematically covers the full disaster management cycle—from risk analysis, mitigation, and preparedness to emergency response and post-disaster recovery. Through group case exercises, students conduct urban development and disaster risk diagnoses for specific jurisdictions and formulate response strategies for regional disaster prevention and protection plans, comprehensively strengthening their professional capabilities in urban public safety.
Fourth	Criminal Procedure Law	2	General Required	

	Engineering Mathematics II	2	Compulsor	This course focuses on advanced mathematical methods for engineering applications, particularly Fourier series and partial differential equations. Students will learn the principles and techniques of Fourier series expansion, as well as methods for solving partial differential equations, including separation of variables and other analytical approaches. Emphasis is placed on mathematical modeling and the application of these methods to engineering problems involving heat transfer, wave propagation, and other physical phenomena. Through theoretical study and practical exercises, students will develop the ability to formulate, analyze, and solve engineering problems using advanced mathematical techniques.
	Fire Dynamics	2	Compulsor	Fire Dynamics examines the physical and chemical principles governing fire initiation, growth, and spread in enclosures. The course covers combustion chemistry, heat transfer mechanisms (conduction, convection, and radiation), and ignition processes of solid, liquid, and gaseous fuels. Key learning objectives include analyzing fire plumes, ceiling jets, and compartment fire behavior—such as flashover and backdraft—alongside smoke movement and tenability criteria. Students learn to apply conservation laws and empirical correlations to quantify heat release rates and smoke production. Ultimately, learners master the analytical tools needed to predict fire development and evaluate life safety systems in building design.
	Fire Scene Evidence Collection and Handling	2	Compulsor	This course introduces the principles and practical procedures for collecting, preserving, packaging, and handling physical evidence from fire scenes. Topics include evidence recognition, sampling strategies, contamination prevention, proper packaging, labeling, transportation, and chain of custody. Students will learn appropriate procedures for handling different types of fire-related evidence, including fire debris, suspected ignitable liquid residues, and other physical materials. Emphasis is placed on evidence integrity, quality assurance, and compliance with forensic investigation standards to ensure the reliability and admissibility of collected evidence.
	Building and Fire Safety Codes	3	Compulsor	

	Legal System for Disaster Prevention and Relief	2	Compulsor	
	Engineering Statistics	3	Compulsor	Engineering Statistics aims to cultivate students' fundamental statistical concepts and quantitative analysis skills for future professional practice and academic research. Progressing from foundational to advanced topics, the course begins with data types, measurement, data collection methods, and distribution analysis, followed by theoretical foundations in probability theory, discrete and continuous random variables, and sampling distributions. The second half of the semester focuses on the principles and applications of inferential statistics, covering statistical estimation and hypothesis testing for one and two populations, analysis of variance (ANOVA), and simple regression analysis. Through lectures, exercises, and classroom discussions, students will master core techniques in data interpretation and statistical inference.
	Computer Programming	2	Elective	This course introduces the fundamental concepts and techniques of computer programming for engineering applications. Major topics include programming logic, data types, variables, operators, conditional statements, loops, functions, arrays, and basic data structures. Students will learn to develop, implement, test, and debug computer programs to solve engineering problems and perform numerical calculations. Emphasis is placed on algorithm development, logical thinking, problem-solving skills, and practical programming applications. Through hands-on exercises and programming projects, students will gain the ability to use computational tools for engineering analysis, simulation, and data processing.
	Architectural Graphics	3	Elective	
	Photography	2	Elective	
	Fire Protection Machinery	2	Elective	
	Principles and Regulations of Urban Planning	2	Elective	
Fifth	Police Practical Writing and Practice I	1	General Required	
	Fire Chemistry and Laboratory I	3	Compulsor	
	Dangerous Goods Management	2	Compulsor	

	Fire Protection Security Equipment I	2	Compulsor	1. Through teaching, train students to gain a deeper understanding of fire safety equipment design principles. 2. Use practical fire safety equipment design cases as practice materials to enable flexible application of design theory. 3. Introducing excellent new fire safety equipment products and related design principles from domestic and international countries, enabling students not only to learn the foundations of domestic and Japanese safety design but also to learn safety design techniques from other countries to meet the design needs of various practical venues.
	Architecture Equipment	2	Elective	This course examines building systems and their integration with fire protection and life safety requirements. Major topics include fire-resistant construction, fire compartmentation, fire doors, firestopping, vertical shafts, smoke control, evacuation facilities, and building mechanical systems. Students study the relationships between passive fire protection, active fire safety systems, and building design. The course also addresses ventilation systems, elevators, emergency power supplies, and relevant building and fire safety regulations. Through engineering principles, building plans, and fire case studies, students learn to identify design deficiencies, evaluate system interactions, and assess building fire safety performance.
	Fire Protection System of Various Nations	2	Elective	Through teaching and training, students will understand the organizational forms and characteristics of firefighting organizations in various countries, departmental divisions, authorization and decentralization, command and control range, planning and selection of human resource management, personnel promotions and rewards and punishments, education and training and development, operational design and performance evaluation criteria and methods for fire safety work, the climate of fire organizations and the improvement of staff morale, self-defense fire capability training, and volunteer fire protection organizations, as well as related fire safety systems.

	Fire Service Ethics	2	Elective	Fire Service Ethics examines the moral principles, professional standards, and legal responsibilities guiding firefighters in emergency response and public service. Key course topics include the Firefighter Code of Ethics, ethical decision-making under high-stress conditions, duty of care, and maintaining public trust. Students learn to navigate complex dilemmas such as resource allocation during mass-casualty incidents, balancing personal safety against rescue risks, and upholding workplace integrity, diversity, and confidentiality. By analyzing real-world case studies, learners develop sound moral judgment, accountability, and professional conduct essential for protecting lives and property.
	Introduction to Explosion Protection	2	Elective	This course introduces explosion hazards and the principles used to prevent explosions and limit their consequences in buildings and industrial facilities. Topics include flammable gases and vapors, combustible dust, ignition sources, confinement, and the effects of explosion pressure. Students examine incident cases to identify contributing conditions and evaluate measures such as hazard isolation, ignition source control, and explosion venting. The course develops students' ability to recognize explosion hazards, explain the purpose of common protective measures, and assess their suitability for different operating environments.
	Introduction to Disaster Mitigation Engineering	2	Elective	Introduction to Disaster Mitigation Engineering aims to establish students' foundational understanding of natural hazards and disaster mitigation engineering. Focusing on major hazards common in Taiwan—including earthquakes, typhoons, floods, and slope hazards—the course systematically introduces the physical characteristics, causes, and failure mechanisms affecting structures and the surrounding environment. It also examines engineering mitigation, protection, and countermeasure practices tailored to each hazard type, covering the fundamental principles and practical applications of seismic design, flood control and drainage, slope stabilization, and debris flow mitigation. Through this course, students will develop essential competencies in interpreting hazardous environments and evaluating engineering responses, laying a solid foundation for advanced disaster planning and management

	Disaster Management Information and Communicat	2	Elective	Disaster Management Information and Communications introduces information and communications requirements, technological applications, and existing system architectures in disaster management, building students' foundational skills in searching, integrating, and interpreting disaster-related data. Course topics cover hazard potential and monitoring information—including meteorological, flood, slope, and seismic data—as well as socioeconomic and land-use datasets. Through hands-on labs using Geographic Information Systems (GIS) and web-based interfaces, students strengthen their spatial data analysis capabilities. The course also addresses public information dissemination, early warning mechanisms, risk communication techniques, disaster decision support systems, and communications infrastructure, preparing students to effectively leverage ICT tools to enhance disaster management performance.
	Special Hazard Prevention and Response	2	Elective	This course examines emergencies involving unusual hazards or conditions that complicate conventional response. Topics include hazard recognition, initial incident assessment, responder safety, protective actions, and coordination among fire services, facility operators, and other agencies. Cases may include hazardous materials incidents, industrial accidents, and emergencies involving emerging energy technologies. Students compare the response priorities of different incident types and learn to identify the information, resources, and technical support needed for initial decisions. Case discussions also address how preparedness and site information can improve response and reduce consequences.
	Disaster Evacuation and Shelter	2	Elective	

	Numerical Analysis	2	Elective	This course introduces the fundamental principles and computational methods of numerical analysis for solving mathematical and engineering problems. Major topics include numerical solutions of nonlinear equations, systems of linear equations, interpolation, curve fitting, numerical differentiation, integration, and solutions of ordinary differential equations. Students will learn to develop and apply numerical algorithms to obtain approximate solutions to complex problems that cannot be easily solved analytically. Emphasis is placed on computational accuracy, numerical stability, error analysis, and practical implementation using computer programming tools for engineering modeling, simulation, and analysis.
	Thanatology and Life-Death Education in Disasters	2	Elective	
Sixth	Police Practical Writing and Practice II	1	General Required	
	Fire Service English II	2	Compulsor	Tailored for third-year students, this advanced course focuses on enhancing professional speaking and writing proficiency in fire services and disaster management. Building upon prior knowledge, students engage in practical communication tasks, including tactical reporting, technical writing, and oral presentations on hazardous materials, fire investigation, and emergency management systems. The curriculum is designed to cultivate effective communication and documentation skills necessary for modern firefighting professionals, enabling them to articulate complex operational procedures, collaborate in international settings, and meet the demands of professional examinations and global cooperation.

	Fire Protection Security Equipment II	2	Compulsor	1. Through teaching, train students to gain a deeper understanding of fire safety equipment design principles. 2. Use practical fire safety equipment design cases as practice materials to enable flexible application of design theory. 3. Introducing advanced foreign fire safety design principles, enabling students to learn both domestic and Japanese safety design In addition to the basics, students can also learn security design techniques from other countries to meet the design needs of various practical venues.
	Firefighting Tactics	2	Compulsor	This 2-credit course equips students with systematic knowledge and practical skills in firefighting operations. Content covers fundamental concepts, initial response procedures, on-scene operations including entry, forcible entry, fire attack, overhaul, rescue, and mass casualty management. It also addresses incident command, scene safety, and specific fire scenarios in various structures, tunnels, wildlands, and special settings. Learning Objectives: Master safe, efficient tactics; enhance on-scene judgment and command. Students will master standard operational procedures, hazard recognition, and effective decision-making to ensure safe and efficient firefighting and rescue missions.
	Fire Scene Simulation	2	Compulsor	The course provides a means of mathematical modeling on the fire behavior through the use of CFD software. The advantage of CFD is that it involves solving the fundamental equations of fluid dynamics and can be coupled to flame chemistry and radiation models to give a precise description of a variety of fire phenomena. It is essential knowledge for all those involved in the wide ranging field, from Fire Prevention Officers to Consulting Engineers, whether involved in problems of fire risk assessment, fire safety design, or fire investigation.
	Fire Management Practice	2	Compulsor	
	Fire Chemistry and Laboratory II	3	Elective	

	Fire Cause Investigation Laboratory	4	Elective	This course provides practical training in fire origin and cause investigation through laboratory experiments and case-based analysis. Students examine fire development, combustion characteristics, fire patterns, and the effects of ventilation and building conditions on fire damage. The course emphasizes systematic scene examination, evidence documentation, physical evidence collection, and the interpretation of fire-related damage. Experimental observations are used to evaluate potential ignition sources and fire development hypotheses. Students also learn the importance of scientific reasoning, evidence reliability, and uncertainty in fire investigations, developing practical skills for objective and evidence-based fire cause determination.
	Engineering Mechanics of Materials	2	Elective	This course introduces the fundamental principles of mechanics of materials and their applications in engineering analysis and design. Major topics include stress, strain, material properties, axial loading, torsion, bending, shear forces, and structural deformation. Students will learn to analyze the mechanical behavior of engineering materials and evaluate their strength, stiffness, and stability under various loading conditions. Emphasis is placed on understanding the relationship between external forces and material responses, applying analytical methods to engineering problems, and developing the ability to assess the structural performance and safety of engineering components.
	Fire Safety Equipment Inspection and Testing Design	3	Elective	This course covers the principles, standards, and practical methodologies for inspecting, testing, and validating fire safety equipment. Key topics include regulatory compliance, system diagnostics, and experimental design for fire detection, alarm, suppression, and smoke control systems. Students will learn to formulate standardized testing protocols, operate diagnostic instruments, analyze performance data, and troubleshoot system failures. Emphasis is placed on risk assessment, reliability engineering, and hands-on laboratory simulations to ensure fire protection installations meet statutory safety benchmarks and perform effectively during emergencies.
	Building Fire Safety	2	Elective	

	Community-Based Disaster Management	2	Elective	Community-Based Disaster Management focuses on a community-centered approach to disaster management, examining the implementation frameworks, administrative processes, and practical challenges of resilient communities and autonomous community disaster prevention in Taiwan. It covers the complete implementation process—including community selection, participatory disaster risk assessment, environmental diagnosis, community organization building, and effectiveness evaluation—while integrating risk communication approaches such as Disaster Prevention Specialist training and workshops to deepen students' understanding of residents' disaster behavior and local needs. Additionally, the course incorporates hands-on practice in project management, design, conduct, and evaluation based on the U.S. Homeland Security Exercise and Evaluation Program (HSEEP), comprehensively equipping students with the practical expertise to organize community disaster exercises and build grassroots capacity.
	Disaster and Crisis Management	2	Elective	Disaster and Crisis Management examines how organizations prepare for, respond to, and recover from disruptive events. Topics include risk assessment, emergency planning, crisis decision-making, interagency coordination, resource allocation, public communication, and post-incident review. Through case discussions, students examine how incomplete information, time pressure, and competing priorities affect decisions. They learn to identify organizational responsibilities, assess coordination and communication problems, and propose actions that support immediate response and recovery. The course also considers how lessons from previous incidents can inform preparedness planning.
	Incident Command System (ICS)	2	Elective	

	Geographic Information Systems (GIS)	2	Elective	This course will help students develop a practical understanding of the core theories that underpin disasters and environmental changes and to introduce them to the use of Geographic Information Science (GISc) and Geographic Information Systems (GIS) in the spatial analysis of disasters. The spatial analytical techniques will also be of value to students in other fields such as geography, urban studies and the fire science.
	Crisis Management	2	Elective	
Seventh	Practical Applications in Firefighting Scenarios	2	General Required	This course provides practical knowledge and professional skills for managing various firefighting and emergency response scenarios. Major topics include firefighting operations for different types of fires, emergency incident command and coordination, fire cause investigation, and hazardous materials management. Students will develop an understanding of operational procedures, tactical decision-making, risk assessment, and safety management during emergency incidents. Emphasis is placed on integrating theoretical knowledge with practical applications to enhance firefighting effectiveness, incident management capabilities, and public safety. The course prepares students for professional responsibilities in fire services and emergency response operations.
	Fire Service Administration and Management	2	Compulsor	This 2-credit course covers foundational theories and professional practices in fire service administration. Content includes an introduction to fire administration, evolution of management thought, fire agency structure, public policy and goal management, leadership and decision-making, administrative planning and implementation (including budgeting and procurement), performance evaluation, service quality management, human resources and career development, organizational change, and future trends. Students will develop systematic administrative knowledge and core competencies for effective, modern fire service leadership and management.
	Operations Research	2	Elective	
	Professional English for Fire Protection IV	2	Elective	
	Fire Safety Engineering Design I	2	Elective	

	Fire Incident Risk Assessment	2	Elective	
	Fire Insurance Analysis and Loss Control	2	Elective	
	Fireground Command and Operational Management	2	Elective	This 2-credit course aims to develop students' proficiency in fireground command and management practices. It analyzes core functions and operational procedures at fire scenes, explains the components of fire command systems, and familiarizes learners with standard command workflows. It also introduces the Incident Command System (ICS), covering its basic concepts and operational principles. Students will master command procedures for single fires and understand how comprehensive command frameworks operate during large-scale disasters, building the ability to lead safely and
	Special Topics in Fire Protection Equipment	2	Elective	
	Safety Management in Firefighting and Rescue	2	Elective	
	Management Information Systems for Fire Services	2	Elective	
	Japanese for Fire Protection I	2	Elective	
Eighth	Studies in Industrial Safety	2	Compulsor	This graduate course examines methods for identifying industrial hazards, evaluating risk, and assessing the effectiveness of safety controls. Topics include occupational and process safety, fire and explosion hazards, accident causation, incident investigation, and the hierarchy of controls. Students critically review research literature and industrial incident reports, examining how evidence and assumptions affect conclusions about risk. Through seminar discussions and case analysis, students develop the ability to formulate industrial safety research questions, evaluate proposed control measures, and communicate findings in a form that supports safety management decisions.

	Fire Inspection	2	Compulsor	This course examines the legal framework, administrative procedures, and practical implementation of fire safety inspections. Topics include regulatory requirements for fire protection systems, inspection procedures, identification of violations, documentation of findings, and enforcement actions. Students learn to evaluate the operational conditions of fire safety equipment, interpret applicable regulations, and identify deficiencies in fire protection and management. Particular emphasis is placed on administrative decision-making, legal responsibilities, corrective measures, and dispute prevention. Through practical cases and regulatory analysis, students develop the professional judgment required to conduct fire safety inspections and implement legally sound enforcement procedures.
	Fire Safety Engineering Design	2	Elective	This course introduces the fundamental principles and practical methodologies of fire safety engineering design for buildings and facilities. Major topics include fire risk assessment, fire prevention and protection systems, fire detection and suppression, smoke control, emergency evacuation, and structural fire protection. Students will learn to apply engineering principles, performance-based design approaches, and relevant fire safety standards to evaluate and improve building fire safety. Emphasis is placed on integrating active and passive fire protection measures, assessing potential fire hazards, and developing effective design strategies to protect human life, property, and the built environment.
	Building and Urban Disaster Prevention	2	Elective	
	Special Topics in Fire Legislation	2	Elective	
	Special Topics in Fire Services and Disaster Prever	2	Elective	This course examines the legal framework governing fire services, disaster prevention, and emergency response. Topics include relevant fire service regulations, disaster prevention and protection legislation, institutional responsibilities, emergency management, and the legal obligations of relevant authorities and personnel. Students will explore the application and interpretation of laws and regulations in fire prevention, fire investigation, and disaster response. Emphasis is placed on understanding the legal basis of fire service operations, regulatory compliance, and the relationship between legislation, public safety, and disaster risk reduction.

	Advanced Research on Fire Tactics	2	Elective	
	Japanese for Fire Protection II	2	Elective	
	Fire Information Project Management	2	Elective	
	Fire Protection Practice and Hands-on Training	1	Elective	
	(1)minimum credits upon graduation: 134			
	(2)compulsory credits as required university-wide:28			
	(3)compulsory credits as required by this department: 67			
	(4)elective credits: 108			