Table 1 Objective-Module-Matrix for Food Science and Engineering Programme

ASIIN Subject-Specific Criteria (SSC)	Learning Outcomes of the Study Programme	Corresponding Modules
1 Knowledge and Understanding Graduates		
1.1 know and understand the principles of natural sciences, social science, mathematics, medical science, economics and engineering their discipline is based on	**Knowledge:** Mastery of fundamental natural science knowledge such as mathematics, physics, and chemistry, as well as engineering basics including engineering drawing and mechanical design. **Skills:** Ability to apply natural science knowledge (e.g., mathematics) to understand and explain real-world engineering problems, and to utilize modern information technology to solve various practical issues in scientific and engineering applications. **Abilities:** Capability to observe, analyze, and solve problems from the perspectives, thinking modes, and methodologies of mathematics, physics, chemistry, and information science.	**Natural Science Module:** Advanced Mathematics (1), Advanced Mathematics (2), Linear Algebra, Probability Theory and Mathematical Statistics, College Physics, Inorganic Chemistry, Organic Chemistry, Analytical Chemistry, College Physics Experiment, Inorganic Chemistry Experiment, Organic Chemistry Experiment, Analytical Chemistry Experiment **Food Engineering Module:** Engineering Drawing, Fundamentals of Mechanical Design, Principles of Food Engineering, Electrical and Electronic Technology, Fundamentals of Auto CAD Application **General Course Module:** Digital and Information Literacy **Elective Course Module:** Advanced Office Software Applications, Introduction to Artificial Intelligence
1.2 have a coherent	**Knowledge:** Master emerging and cutting-edge professional knowledge in the field of food science	**Food Science Module:** Food Biochemistry, Food Chemistry, Food Microbiology, Food

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knowledge in their discipline including knowledge of the latest findings in their discipline	and engineering. **Skills:** Possess the ability to expand professional knowledge, track development trends in the discipline and related fields, accumulate relevant knowledge, and engage in in-depth learning. **Abilities:** Capable of comprehensively understanding interdisciplinary subjects related to the field and effectively integrating and applying acquired expertise across a broad range of contexts.	Nutrition and Hygiene (Bilingual), Principles and Techniques of Food Preservation, Food Analysis, Food Sensory Analysis, Food Additives **Food Engineering Module:** Engineering Drawing, Fundamentals of Mechanical Design, Electrical and Electronic Technology, Fundamentals of Auto CAD Application, Principles of Food Engineering, Modern Instrumental Analysis, Food Factory Design and Environmental Protection, Food Processing Equipment, Food Packaging Technology **Elective Course Module:** Frontiers and Hot Topics in Food Science, Environmental Protection and Sustainable Development, Fundamentals of Quality and Technical Supervision, Food Contact Materials and Safety Testing, Functional Food Science, Food Raw Materials Science, Enterprise Management, Food Packaging Technology, Food Logistics, Marketing
1.3 know concepts of identification and safeguarding of quality in their respective fields of work	**Knowledge:** Mastery of relevant knowledge in food processing technologies, product development, quality analysis and control, instrumental analysis methods, and engineering design principles. **Skills:** Proficiency in operating precision instruments	**Food Science Module:** Food Analysis, Food Sensory Analysis **Food Engineering Module:** Dairy Technology, Meat Products Technology, Fruit and Vegetable Processing Technology, Food Quality Management,

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	for quality testing, designing food processing workflows, and conducting design, development, and analysis related to food engineering equipment, processing techniques, as well as food quality and safety. **Abilities:** Comprehensive competency in product design, analysis, testing, and quality management; ability to perform rational analysis based on engineering knowledge, evaluate engineering practices and complex technical issues, demonstrate innovative thinking in problem-solving, and propose viable solutions.	New Product Development and Techno-Economic Analysis (Bilingual), Engineering Ethics and Project Management, Food Quality and Safety Traceability Systems, Soft Drink Technology, Bakery Products Technology **Practical Training Module:** Food Processing Laboratory Courses, Training on Detection Skills of Food Precision Instruments, Practical Training on Dairy Professional Skills, New Product Development and Pilot Production Training, Dairy Pilot Line Training, Comprehensive Food Processing Skills Training, Training of Detection Skills for Precision Instruments in Dairy Products, Production Internship **Graduation Thesis (Design) Module:** Graduation Thesis (Design)
1.4 know the essential legal regulations relating to their discipline	**Knowledge:** Mastery of food standards and regulations, fundamentals of quality supervision, food contact materials and safety testing, as well as other relevant laws and regulatory requirements. **Skills:** Ability to design compliant product solutions in accordance with regulations and assess production compliance. **Abilities:** Capability to adhere to and apply relevant laws and regulations in the field of food science and	**Food Science Module:** Food Standards and Regulations, Food Additives **Food Engineering Module:** Food Quality Management, Food Quality and Safety Traceability System, Food Packaging Technology **Elective Course Module:** Fundamentals of Quality and Technical Supervision, Food Contact Materials and Safety Testing

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	engineering.	
1.5 are aware of the further multidisciplinary context of agriculture, forestry or food science and neighbouring fields	**Knowledge:** Understand interdisciplinary connections between food science and sociology, environmental science, management studies, etc. **Skills:** Ability to expand professional knowledge, track development trends in both core and related fields, systematically accumulate expertise, and pursue advanced learning. **Abilities:** Capacity to holistically comprehend profession-relevant interdisciplinary subjects within sustainable development contexts, and to integrate and apply specialized knowledge effectively.	**Food Science Module：** Professional Introduction **Food Engineering Module:** Food Quality Management, Engineering Ethics and Project Management **Elective Course Module：** Environmental Protection and Sustainable Development, Enterprise Management, Food Logistics, Marketing, Social Sciences and Humanistic Literacy, Human Civilization and Chinese Cultural Heritage, International Affairs and Critical Writing
2 Engineering Analysis Graduates		
2.1 have the required knowledge and understanding to identify and formulate problems arising in agriculture, forestry or food science (which may contain aspects stemming from areas	**Knowledge:** Master multidisciplinary knowledge in food science. **Skills:** Ability to identify and articulate interdisciplinary issues through literature research. **Abilities:** Capable of conducting comprehensive analysis and innovative practice in multidisciplinary contexts.	**Food Science Module:** Professional Introduction, Food Biochemistry, Food Chemistry, Food Microbiology, Food Nutrition and Hygiene (Bilingual) **Food Engineering Module:** New Product Development and Techno-Economic Analysis (Bilingual) **Practical Training Module:**

ASIIN Subject-Specific Criteria (SSC)	Learning Outcomes of the Study Programme	Corresponding Modules
other than their field of specialisation)		New Product Development and Pilot Production Training, Comprehensive Food Processing Skills Training
2.2 are able to apply different methods orientated on fundamentals – such as mathematical, statistical, and experimental (laboratory) analysis	**Knowledge:** Mastery of mathematics, statistical methods, and experimental design principles. **Skills:** Ability to apply mathematical and statistical approaches to design experimental protocols and solve practical problems. **Abilities:** Capability to optimize food processing parameters and address engineering challenges through analytical reasoning, synthesis, computation, judgment, and logical deduction.	**Natural Science Module:** Advanced Mathematics (1), Advanced Mathematics (2), Linear Algebra, Probability Theory and Mathematical Statistics **Food Engineering Module:** Principles of Food Engineering, Dairy Technology, Meat Products Technology, Fruit and Vegetable Processing Technology, Soft Drink Technology, Bakery Products Technology, Food Factory Design and Environmental Protection **Elective Course Module:** Natural Sciences and Mathematical Foundations, Experimental Design and Data Processing **Practical Training Module:** Course Project of Principles of Food Engineering, New Product Development and Pilot Production Training, Course Project of Food Factory Design and Environmental Protection, Comprehensive Food Processing Skills Training **Graduation Thesis (Design) Module:** Graduation Thesis (Design)

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2.3 are qualified to plan and conduct respectively suitable experiments, interpret the data, and draw conclusions	**Knowledge:** Mastery of experimental design, data processing, and analytical methodologies. **Skills:** Ability to design and execute experiments, interpret data, and draw valid conclusions. **Abilities:** Capability to apply experimental methods for verification and analysis in practical problem-solving scenarios.	**Elective Course Module:** Experimental Design and Data Processing **Practical Training Module:** Food Processing Technology Laboratory Course, Training on Detection Skills of Food Precision Instruments, Practical Training on Dairy Professional Skills, New Product Development and Pilot Production Training, Dairy Pilot Line Training, Comprehensive Food Processing Skills Training, Training of Detection Skills for Precision Instruments in Dairy Products, Production Internship **Graduation Thesis (Design) Module:** Graduation Thesis (Design)
3 Investigation Graduates		
3.1 are able to pursue literature searches in a targeted way and to use data bases and other sources of information	**Knowledge:** Mastery of literature search methodologies and database utilization techniques. **Skills:** Proficiency in conducting comprehensive literature searches and effectively leveraging databases and information resources. **Abilities:** Ability to efficiently acquire and utilize information for research and practical applications.	**Foreign Language Module:** College English (1), College English (2), College English (3), College English (4), English for Food Science and Technology, Scientific and Technological Literature Retrieval and Paper Writing (Bilingual) **Elective Course Module:** International Affairs and Critical Writing **Practical Training Module:**

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		New Product Development and Pilot Production Training, Dairy Pilot Line Training, Comprehensive Food Processing Skills Training **Graduation Thesis (Design) Module:** Graduation Thesis (Design)
3.2 are qualified to carry out assessments on the basis of comparisons with literature references and plausibility considerations	**Knowledge:** Mastery of literature comparison methodologies and rationality evaluation principles. **Skills:** Ability to conduct professional judgments based on literature comparison and rationality assessment. **Abilities:** Capability to apply literature-based knowledge for sound decision-making in practical problem-solving scenarios.	**Foreign Language Module:** Scientific and Technological Literature Retrieval and Paper Writing (Bilingual) **Elective Course Module:** Experimental Design and Data Processing, International Affairs and Critical Writing **Graduation Thesis (Design) Module:** Graduation Thesis (Design)
4 Engineering Practice Graduates		
4.1 have the skills to solve practical problems	**Knowledge:** Mastery of food processing technologies, product development, quality analysis and control, and related expertise. **Skills:** Ability to design unit operations, process flows, and quality control protocols for practical issues in food processing and related fields. **Abilities:** Capability to rapidly respond to technical	**Food Science Module:** Food Biochemistry Experiment, Food Microbiology Experiment, Food Chemistry Experiment, Food Nutrition and Hygiene Experiment, Food Analysis Experiment, Food Sensory Analysis Experiment **Food Engineering Module:** Electrical and Electronic Technology Experiment, Principles of

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	challenges in real-world production environments.	Food Engineering Experiment, Modern Instrumental Analysis Experiment **Practical Training Module:** Cognition Practice, Metalworking Practice (Engineering Training), Course Project of Principles of Food Engineering, Course Project of Food Factory Design and Environmental Protection
4.2 can combine theory and practice to solve subject-specific practical problems	**Knowledge:** Mastery of the practical application of food science and engineering theories in engineering practice. **Skills:** Ability to apply theoretical knowledge to real-world scenarios. **Abilities:** Capability to conduct comprehensive analysis and problem-solving in professional practice.	**Practical Training Module:** Training on Detection Skills of Food Precision Instruments, Practical Training on Dairy Professional Skills, New Product Development and Pilot Production Training, Dairy Pilot Line Training, Comprehensive Food Processing Skills Training, Training of Detection Skills for Precision Instruments in Dairy Products, Production Internship **Graduation Thesis (Design) Module:** Graduation Thesis (Design)
4.3 are able to select and apply suitable devices, processes, and methods	**Knowledge:** Mastery of food engineering equipment, processes, and methodologies. **Skills:** Ability to select and apply appropriate equipment, processes, and methods. **Abilities:** Capability to operate, optimize, and make informed selections of equipment and processes.	**Food Engineering Module:** Food Processing Equipment, Principles of Food Engineering, Food Factory Design and Environmental Protection, Dairy Technology, Meat Products Technology, Fruit and Vegetable Processing Technology, Soft Drink Technology, Bakery Products Technology **Practical Training Module:**

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		Metalworking Practice (Engineering Training), Course Project of Principles of Food Engineering, Course Project of Food Factory Design and Environmental Protection, Dairy Pilot Line Training, Comprehensive Food Processing Skills Training, Production Internship **Graduation Thesis (Design) Module:** Graduation Thesis (Design)
4.4 have developed an understanding of applicable techniques and methods and their limitations	**Knowledge:** Mastery of technical characteristics and application scopes of various food processing and analytical methodologies. **Skills:** Ability to conduct cost-benefit comparisons of different technologies while assessing their safety and environmental impacts. **Abilities:** Capability to balance technical feasibility with societal demands in engineering practice.	**Food Science Module:** Food Analysis, Food Sensory Analysis, Principles and Techniques of Food Preservation **Food Engineering Module:** Principles of Food Engineering, Food Quality Management, Modern Instrumental Analysis, Engineering Ethics and Project Management
4.5 recognise the technical, health and safety, social, ecological, and legal implications of engineering practice in their field of scientific expertise	**Knowledge:** Mastery of engineering practice-related technical, safety, social, ecological, and legal knowledge. Abilities: Capability to balance technical, ethical, and sustainable development considerations in engineering decision-making.	**Food Science Module:** Food Standards and Regulations, Food Additives, Principles and Techniques of Food Preservation **Food Engineering Module:** Food Quality and Safety Traceability System, Engineering Ethics and Project Management, Food Factory Design and Environmental Protection

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		Elective Course Module: Environmental Protection and Sustainable Development, Food Contact Materials and Safety Testing, Social Sciences and Humanistic Literacy
4.6 can apply methods relevant for their profession	**Knowledge:** Mastery of professional methodologies and tools in food science and engineering, including food quality analysis and food processing technologies. **Skills:** Proficiency in applying analytical testing and processing techniques to solve practical problems in real-world operations. **Abilities:** Capability to strictly implement quality control standards in professional settings.	**Food Science Module:** Food Analysis, Food Sensory Analysis, Principles and Techniques of Food Preservation **Food Engineering Module:** Principles of Food Engineering, Food Quality Management, Modern Instrumental Analysis, Engineering Ethics and Project Management, Food Quality and Safety Traceability System **Practical Training Module:** Training on Detection Skills of Food Precision Instruments, New Product Development and Pilot Production Training, Comprehensive Food Processing Skills Training, Practical Training on Dairy Professional Skills, Training of Detection Skills for Precision Instruments in Dairy Products
4.7 are aware of the usability and the restrictions of concepts and solution strategies	**Knowledge:** Mastery of characteristics and application scopes of various food analysis and processing methods. **Skills:** Ability to evaluate solution feasibility using techno-economic analysis tools and select optimal implementation strategies.	**Food Engineering Module:** Food Quality Management, New Product Development and Techno-Economic Analysis (Bilingual), Engineering Ethics and Project Management **Practical Training Module:**

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	Abilities: Capability to develop innovative solutions with optimized resource allocation.	New Product Development and Pilot Production Training, Comprehensive Food Processing Skills Training
4.8 can resort to experience with problems, topics, and processes relating to their scientific discipline	**Knowledge:** Mastery of fundamental processes and empirical knowledge in food science and engineering. **Skills:** Ability to apply practical experience for problem-solving and process optimization in real-world operations. **Abilities:** Capability to transform experiential knowledge into systematic problem-solving strategies.	**Practical Training Module:** Production Internship, Graduation Internship
4.9 are able to consult adequate literature and information sources and coordinate the work of experts	**Knowledge:** Understanding of interdisciplinary collaboration mechanisms and resource integration methodologies. **Skills:** Ability to leverage academic networks for expert support, integrate multi-party resources, and enhance work efficiency. **Abilities:** Capability to organize multidisciplinary teams to execute complex projects.	**Foreign Language Module:** Scientific and Technological Literature Retrieval and Paper Writing (Bilingual), English for Food Science and Technology **Elective Course Module:** International Affairs and Critical Writing
5 Social Competences Graduates		

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5.1 are able to work efficiently on their own and as team members	**Knowledge:** Mastery of fundamental principles and methodologies in teamwork and project management. **Skills:** Ability to clarify role assignments and coordinate task progress within teams. **Abilities:** Adaptability to flexibly transition between independent work and collaborative teamwork.	**General Course Module:** College Students' Career Planning, Introduction to Innovation and Entrepreneurship, Employment Guidance **Practical Training Module:** Production Internship, Graduation Internship
5.2 are qualified to apply different methods to communicate effectively with the scientific community and the society as a whole	**Knowledge:** Mastery of audience differentiation and communication techniques in science dissemination. **Skills:** Ability to conduct clear and effective communication with diverse audiences in professional practice. **Abilities:** Capability to articulate technical information to non-specialist groups with clarity.	**Foreign Language Module:** Scientific and Technological Literature Retrieval and Paper Writing (Bilingual), English for Food Science and Technology **General Course Module:** College Students’ Mental Health, College Students' Career Planning, Introduction to Innovation and Entrepreneurship, Employment Guidance **Elective Module:** International Affairs and Critical Writing
5.3 feel obliged to act in accordance with professional ethics and the responsibilities and standards of practical engineering	**Knowledge:** Mastery of engineering ethics and professional responsibility principles. **Skills:** Ability to make ethically and professionally accountable decisions in engineering practice. **Abilities:** Capability to consistently uphold engineering ethics and professional standards in practical work contexts.	**Food Engineering Module**: Engineering Ethics and Project Management, Food Quality Management **General Course Module:** Ideology, Morality and Rule of Law, Basic Principle of Marxism, Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics, Introduction to Xi

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		Jinping Thought on Socialism with Chinese Characteristics for a New Era, Outline of Modern and Contemporary Chinese History, Situation and Policy **Elective Course Module:** Social Sciences and Humanistic Literacy, Human Civilization and Chinese Culture Heritage, Enterprise Management
5.4 are aware of the methods of project management and business practices such as risk and change management and understand their limitations	**Knowledge:** Mastery of fundamental methodologies and tools in project management and business practices. **Skills:** Ability to effectively execute project management and business operations in professional settings. **Abilities:** Capability to develop project proposals by applying project management and business practice principles.	**Food Engineering Module:** Engineering Ethics and Project Management **General Course Module:** College Students' Career Planning, Introduction to Innovation and Entrepreneurship, Employment Guidance **Elective Course Module:** Enterprise Management
5.5 recognise the necessity of independent life-long learning and are qualified to do so	**Knowledge:** Mastery of lifelong learning principles and continuous learning pathways /methodologies. **Skills:** Ability to track technological advancements and adapt to changes throughout one's career. **Abilities:** Capability to autonomously update knowledge systems in response to industry transformations.	**General Course Module:** National Security Education, Ideology, Morality and Rule of Law, Situation and Policy, Labour Education, College Students' Career Planning, Introduction to Innovation and Entrepreneurship, Employment Guidance, College Physical Education, Military Theory, Digital and Information Literacy **Elective Course Module:**

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		Sports, Health and Art Appreciation, Enterprise Management, Introduction to Artificial Intelligence, Frontiers and Hot Topics in Food Science **Practical Training Module:** Military Skills Training **Language Module:** English for Food Science and Technology, Scientific and Technological Literature Retrieval and Paper Writing (Bilingual)
5.6 depending on the professional field they have competences in the fields of management and marketing, in particular project management, acquisition, personnel management, controlling etc	**Knowledge:** Mastery of fundamental principles in management, marketing, and related fields. **Skills:** Ability to develop food brand promotion plans and sales strategies. **Abilities:** Capability to apply professional knowledge in management and marketing practices.	**Food Engineering Module:** Food Quality Management **Elective Course Module:** Enterprise Management, Marketing
5.7 are adequately competent in the area of communication, e.g. presentations or	**Knowledge:** Mastery of fundamental techniques and methodologies for professional communication. **Skills:** Ability to conduct professional communication, including creating technical presentations, delivering	**General Course Module:** College Students' Mental Health, College Students' Career Planning, Introduction to Innovation and Entrepreneurship, Employment Guidance

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moderation	speeches, and chairing meetings. **Abilities:** Cross-cultural communication skills to interact effectively in multicultural contexts.	**Elective Course Module:** Advanced Office Software Applications, Social Sciences and Humanistic Literacy, Human Civilization and Chinese Cultural Heritage **Foreign Language Module:** Scientific and Technological Literature Retrieval and Paper Writing (Bilingual), English for Food Science and Technology