

LEARNING AND RECOGNITION FRAMEWORK FOR THE FOOD & BEVERAGE PROCESSING SECTOR



FPSC



FOOD PROCESSING SKILLS CANADA COMPÉTENCES TRANSFORMATION ALIMENTAIRE CANADA

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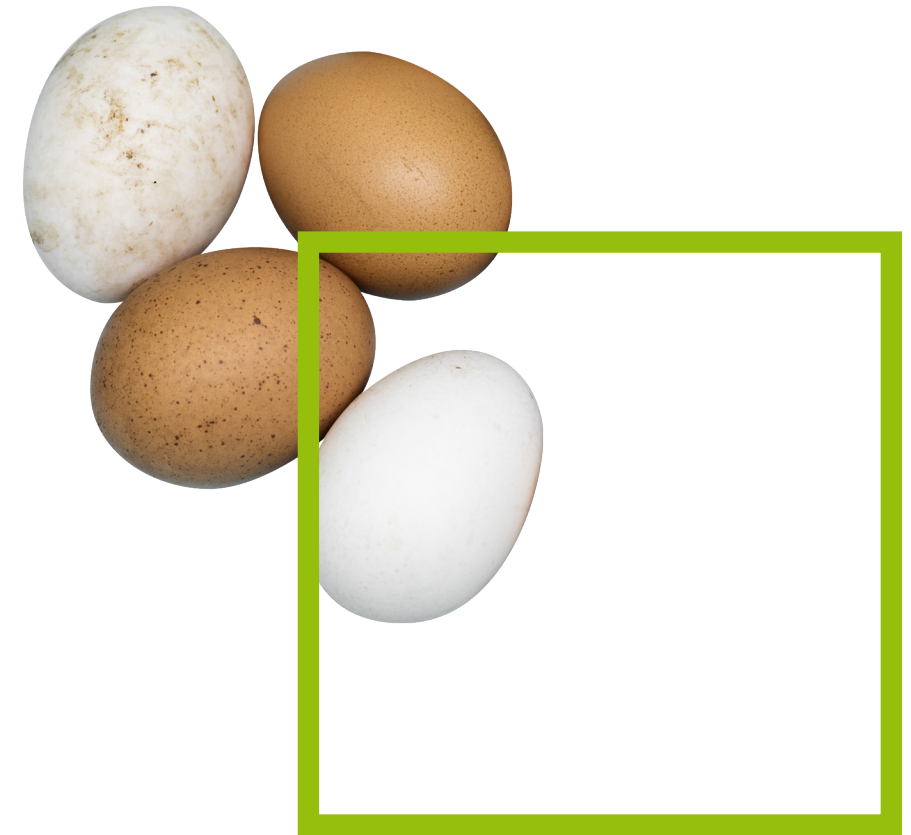
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Canada

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INTRODUCTION

The **Learning and Recognition Framework (LRF)** is a comprehensive structure of clearly defined qualifications that recognizes achievements in learning. It is achieved through engaging in a program of coursework. The LRF is recognition of 'Learning'.

This report outlines the Learning and Recognition Framework (LRF) that has been developed for the Food and Beverage Processing Sector. The process to develop this framework began with extensive research into training frameworks in North America and Internationally. The features of, and guiding principles behind, Learning and Recognition Frameworks currently in place for the food and beverage processing sector in Canada and around the world were identified and analyzed. These principles were used as the basis for developing the model of a Learning and Recognition Framework for **Food Processing Skills Canada (FPSC)** in Canada. These principles were applied during the analysis of FPSC's Master Competency Framework to develop the model framework.

This model of the framework was presented, discussed and approved at an in-person meeting with FPSC staff on February 22nd 2018, and presented at the Speaking Food Conference in May 2018. In 2019 FPSC conducted an industry consultation process to communicate, discuss and validate the model LRF. An online survey was conducted and answered by individuals representing all sub-sectors of food and beverage processing. A series of focus groups was held across the country to present the model framework and the online survey results for discussion. Focus Groups were held in March 2019 in Vancouver, Montreal, Toronto and Halifax. The focus groups were attended by representatives from training institutions and training providers involved in food and beverage processing, human resource executives and professionals from food and beverage processing organizations, and owners/managers of food and beverage processing organizations from all sub-sectors. These food and beverage processing professionals made recommendations and final decisions on the resulting valid framework outlined in this report.

ABOUT US



Food Processing Skills Canada (FPSC) is the food and beverage manufacturing industry's workforce development organization. As a non-profit, located in Ottawa with representatives across Canada, we support food and beverage manufacturing businesses from coast to coast in developing skilled and professional employees and workplace environments.

Our work directly and positively impacts industry talent attraction, workforce retention and employment culture. We care about assisting the industry in finding, training and retaining the very best people for the job. Through our partnerships with industry, associations, educators and all levels of governments in Canada, FPSC has developed exceptional resources for the sector including the **Food Skills Library™**, **Canadian Food Processors Institute™**, **FoodCert™** and Labour Market Information Reports.

BACKGROUND: ABOUT RECOGNITION FRAMEWORKS

A recognition framework is a documented model that clearly defines each and every qualification (e.g. certificate) included within a comprehensive structure. It may also provide a hierarchy of recognition/qualifications, e.g. levels.

When applied by governments nationally, it is an all-encompassing framework meant to integrate the qualifications issued by different academic bodies into a common structure. It consists of a set of common reference points, referring to competencies or learning outcomes, supported by a range of tools and techniques, regardless of how the skills and knowledge were acquired.

While no national governmentally-administered qualifications exist for the food industry in Canada, FPSC has identified a need to clearly articulate the potential recognition levels within the food industry related to their newly developed Competency Framework. FPSC Competency Framework includes all the skills and knowledge needed by the industry in the current environment, and was developed in 2015-2016. FPSC is now looking at the potential applications of this framework, and want to develop a learning and recognition system – specifically tied to training and credentials – that can be used in Canada.

The FPSC framework will be unlike a national qualifications framework in that it would not necessarily be tied to the typical levels, such as diploma, degree, etc. – but would instead organize the nationally-validated food industry competencies into a logical structure with a training focus. The framework will include levels customized to the food and beverage processing sector, and may include several credentials at the lower levels. In this way, it is not an all-encompassing national qualifications framework such as the NVQ system in the United Kingdom, but a customized approach specific to the food and beverage processing sector in Canada.

This FPSC Learning and Recognition Framework will:

- organize the sector competencies into logical groupings, with training and credentials tied to each. It may include core competencies/ as well as subsector specific competencies/levels.
- integrate with existing FPSC systems and training, and should reflect similar frameworks used in post-secondary and private/employer training within Canada, as well as other international food industry frameworks.

The benefits of the framework include:

- providing a clear, hierarchical path of learning through the sector's competencies,
- providing learners with a clear picture of what competencies are necessary in the sector, and
- providing training options for acquiring the competencies needed to progress in the sector.

Once developed, the framework can be used as the basis for an accreditation program. This accreditation program, administered by FPSC, would provide for nationally-standardized training. Institutions, private trainers and employers could apply to have their programs vetted against the national competency standards and the associated recognition level. If programs meet the requirements, the training agency would be able to (in concert with FPSC) issue nationally-recognized credentials to graduates of the program. This may require institutions to update or realign their courses with the proposed Learning and Recognition Framework.

This has several benefits. An educational institution, private trainer or employer will be able to market their program(s) as being nationally-recognized, and can offer their graduates a nationally-recognized credential upon completion of their program. Graduates will possess a credential that will be recognized across the country, increasing mobility, and provide clear learning paths for their careers in the food and beverage processing sector.

FPSC would also be able to vet their own existing courses, bundle them according to the framework levels, and provide nationally-recognized credentials to graduates of their Canadian Food Processors Institute programs.

The framework may also help with foreign credential recognition. By comparing an individual's existing qualifications (e.g. credentials, diplomas) and their competencies/learning outcomes to FPSC's framework, individuals with foreign credentials may be able to have their skills benchmarked, or even acquire a Canadian credential, through a prior learning recognition process or by taking an accredited Canadian program.

RESEARCH

TRAINING FRAMEWORKS

Extensive secondary research was conducted into national vocational qualifications frameworks internationally, as well as private and public training institution programs in North America. It also included recommendations for guiding principles that were applied to the development to the new FPSC Learning and Recognition Framework (LRF).

International Training Frameworks

In many countries outside of North America, the responsibility for education rests with the national government. For these nations, most have some kind of national qualification framework or scheme that guides all public and private training programs in all sectors within that country. The frameworks are known by different titles, such as National Vocational Qualifications (NVQ), Qualification and Credit Frame (QCF), Training Regulations (TR), or the European Qualifications Framework (EQF). These frameworks are administered by a national body associated with the sector, such as the National Food Industry Training Council (NFITC) in Australia and the Food and Beverage Sector Education and Training Authority (FoodBev SETA) in South Africa.

As Canada does not have a national body regulating training across the country, for the purposes of this project, the value in reviewing these frameworks is to look at how the programs are structured; what the levels are within the programs; and different courses' topic areas to be considered for the training recognition framework to be developed for FPSC.

International

- Australia
- European Qualifications Framework
- FDQ - England
- Philippines
- Scotland
- South Africa

North America

- Foundational Certificates
- Post-Graduate Certificates
- Professional Development Certificates
- Foundational Diploma Programs
- Post-Graduate Diploma Apprenticeship Programs
- Post-Secondary Degree
- International Food Protection Training Institute (IFPTI)

Australia

Australia's training framework is overseen by the National Food Industry Training Council (NFITC), which covers the food processing, beverage processing and pharmaceutical processing industries. There are sixteen (16) identified sectors within that portfolio, including biscuits, poultry, dairy processing and pet food (See Appendix for further information). The goals of the framework are to improve the competitiveness, productivity and profitability of the industry domestically and internationally.

The framework features three levels: Certificates I, II and III. Certificate I is basic and does not involve the use of equipment. Certificate II is the largest area and includes a number of specific optional units (including some directed to particular industries), and focuses on tasks operating equipment and following processes. Certificate III is focused on those leading and guiding others (supervisory or lead hand positions).

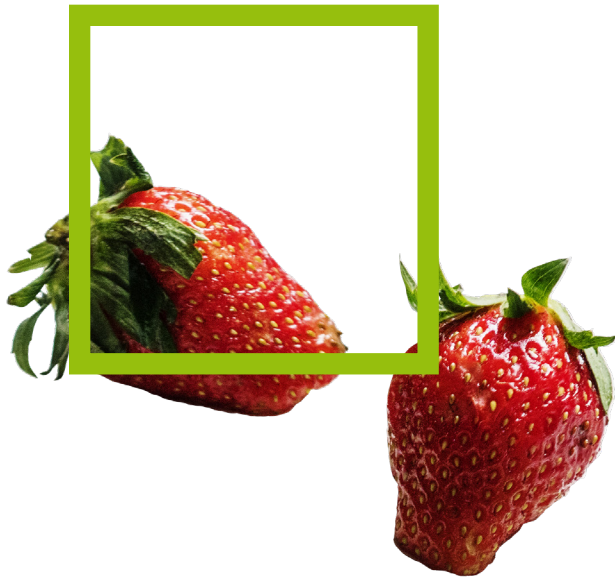
- Certificate I – 5 mandatory, 3 optional units – total 8 units
- Certificate II – 4 mandatory, 5 optional units – total 9 units
- Certificate III – 4 mandatory, 3 optional units, 1 specialized unit – total 8 units

European Qualifications Framework (EQF)

The European Qualifications Framework (EQF) exists to allow learners, trainers and employers to compare qualifications across different national systems within the European Union. It is a lifelong learning framework and covers all qualifications from basic to advanced. This framework allows for greater worker mobility throughout European Union countries.

In general, the levels correlate as follows:

- Level 1 – basic general knowledge
- Level 2 – basic factual knowledge of a field of work or study
- Level 3 – knowledge of facts, principles, practices in a field of work or study
- Level 4 – factual and theoretical knowledge in broad contexts in a field of work or study
- Level 5 – comprehensive, specialized knowledge and an aware of boundaries of that knowledge
- Level 6 – Advanced knowledge, involving critical understanding of theories and principles
- Level 7 – forefront of knowledge in a field of work or study, basis for original thinking
- Level 8 – knowledge at most advanced frontier in a field of work or study and interface between fields



FDQ - England

FDQ is an example of a training provider applying the training recognition framework (formerly the NVQ) system in the United Kingdom (FDQ's jurisdiction is England, Northern Ireland and Wales). They deliver qualifications that support on-the-job competence in the workplace.

FDQ delivers programs at Levels 2 through 4 (see Appendix for more details):

- Level 2 – for operational staff: introductory food skills and technical skills (food safety, knife skills, cleaning, food safety, etc.)
- Level 3 – for tactical staff, which may include supervisors/line managers: processing and supply skills
- Level 4 – for management: business and people skills

Philippines

The Technical Education and Skills Development Authority (TESDA) is the government agency tasked to manage and supervise technical education and skills development in the Philippines. Trainees or students coming into TESDA programs are expected to possess oral and written communication skills, be physically and mentally fit, be able to perform basic mathematics, and have good moral character.

For food processing, there are four levels in the framework. The system does not allow for flexibility, as there are no optional units. All training units are mandatory. The levels of the system are as follows (See Appendix for more detail):

- Food Processing NC I – for workers with no experience.
- Food Processing NC II – for workers that apply a number of processes to food products, such as bring, curing, smoking, drying. Intended for those in the production line.
- Food Processing NC III – for those involved in processing, packaging, storing product, can include Lead Hand or Supervisory.
- Food Processing NC IV – for those in supervisory positions. Must be able to set up and operate systems evaluate systems and monitor processes.

Scotland

The NVQs in Food Manufacture have been developed by Improve, the Sector Skills Council for UK Food and Drink Processing, and are intended for people working in that sector. They may be working as operators, processors, supervisors or managers. The NVQs are designed to be assessed in the workplace, or in conditions of the workplace.

There are five levels in the Scottish Qualifications Authority NVQ for Food Processing (See Appendix for further details):

- Level 1 – defines performance in a range of activities that are routine and predictable
- Level 2 – specific competence in a broader range of work activities
- Level 3 – describes performance in a broad range of varied work activities. May control and guide others.
- Level 4 – specifies technical or professional work activities. Managing staff is often involved.
- Level 5 – describes performance in a significant range of activities in unpredictable circumstances. Allocating resources, managing others and complex analysis skills are required.

South Africa

The framework is administered by the Sector Education and Training Authority (FoodBev SETA) and includes five subsectors (1. Baking, cereals, confectionary and snacks; 2. Beverage processing; 3. Dairy processing; 4. Processed and preserved meat, fish, fruit and vegetables; 5. Manufacture of food preparation products).

There are six levels in the South African framework, correlated to a variety of certificates and a National Diploma. The names of the levels are as follows (details on the specific designations are found in the Appendix):

- Level 1 – General Education and Training Certificate
- Level 2 – National Certificate
- Level 3 – National Certificate (tends to focus on particular industries)
- Level 4 – Further Education and Training Certificate
- Level 5 – National Certificate (Processing Management)
- Level 6 – National Diploma (focus on management in specific industries)

Features of International Frameworks

By comparing and contrasting the international frameworks examined in this report, the following observations can be made:

- International frameworks typically feature a number of levels (usually 2 to 6 levels) that increase in their complexity. That is, the lower levels are typically for those with little or no work experience, working up to the higher levels that demand specialized skills
- Supervisory and management-related competencies are typically expected at the mid-higher levels of the frameworks.
- While it varies, there are typically more courses or credits required at higher levels
- Frameworks can be completely mandatory, requiring students to require a set number of courses or units; or can involve some flexibility by offering a choice of options. Most international frameworks are a blend of mandatory courses supplemented by a set number of options. This allows students to customize their programs to their own professional needs.
- Many frameworks acknowledge the specific needs of particular industries (dairy, wine, etc.), but also try to remain relatively broad-based.
- Some frameworks integrate apprenticeship credentials into their models. Where these appear, they are typically at levels addressing specialized technical skills.

These are considerations that were applied during the decision-making process for the development of FPSC's Learning and Recognition Framework.

North American Training Frameworks

In North America, the responsibility for education rests with the governments of each province, territory and state; there is no national educational framework or oversight body. There are some agreements on credentials and how education is structured across different jurisdictions. Course structure, course content, and who delivers courses varies across the continent.

For the purposes of this project, the value in reviewing these educational programs and their credentials is to look at how the programs are structured; what the levels are within the programs; and different courses' topic areas to be considered for the training recognition framework to be developed for FPSC.

CERTIFICATE PROGRAMS

Research indicates that there are three types of certificate programs with the following admission requirements:

- **Foundational** programs that do not require any previous credential other than a secondary school diploma and English competency.
- **Post Graduate** programs that require a previous post-secondary diploma or degree as an admission requirement and may also require work experience.
- **Professional** development programs that may or may not require a credential, but will require significant work experience.

Most certificate programs are 1 year or less to complete. A few are delivered online. The structure of certificate programs allows for very few elective options, especially for foundational certificate programs. They may include an elective option in any field of study for at least one term or they may provide a selection of options in the field of study to choose from. Post graduate certificate programs along with some required courses may have specialized courses that they may choose from depending on their field of interest and thesis topic.

Foundational Certificate Programs

Foundational programs tend to be for individuals that desire a quick credential that could provide access to entry level employment. The content of these programs tends to be basic (e.g. food safety, GMPs) and foundational to a specific occupational area, e.g. Centennial College's Baking Skills program, Conestoga College's Food Processing Techniques. They may also include a hands-on component either in a lab, on-site facility such as Conestoga College's Craig Richardson Institute of Food Processing Technology pilot plant, or a practicum placement.

Foundational programs typically have some general academic, basic courses in math for technology, communications/English composition, and depending on the focus may include a course in psychology/human behaviour. Most of the courses focus on a subject area (e.g. baking, meat processing, winemaking, food processing) and include a range of courses from introductory (Introduction to Enology) to applied technical theory, e.g. Elements of Wine Production, Wine Chemistry and Microbiology. Foundational programs may also be a means for student to acquire other industry certifications such as Food Safe or CPR if it is built into the curriculum.

Certificate programs tend to be more industry-focused, introducing food science theory, but within the context of its application in the work setting.

Some certificate programs may be used as a foundation for future studies for additional certificates in a complementary subject area or as credit towards more advanced credential programs such as a diploma.



Post Graduate Certificate Programs

Post Graduate programs are designed to augment an individual's existing post-secondary credential and work experience in the food processing industry.

The subject area of these certificates can have several focusses. These programs can provide:

- Additional theory for a subject area (e.g. Memorial University/Marine Institute Post Graduate certificate in Food Safety), or more specific technical topics (e.g. Food Safety and Defense Graduate Certificate Program-Universities of Missouri/Kansas/Nebraska-Lincoln/Iowa).
- introduce management concepts such as regulatory compliance (e.g. FOOD8075 Canadian and International Food Safety Law and Regulations-Conestoga Food Safety and Quality Assurance program, Niagara College's Wine Business Management program), leadership and management (Conestoga Operations Leadership in Food Processing program).
- Introduce a whole new subject area, for which the previous credential provides a foundation, e.g. Niagara College – Artisan Distilling Program.
- Provide an industry application context for food science concepts and theory, e.g. Illinois Institute of Technology Food Science Graduate Certificate programs.

Professional Development Certificate Programs

Some certificate programs are more suitable for professional development of individuals working in the food processing industry. Typically, these certificate programs do not require a post-secondary credential, but usually require significant work experience.

They are designed for individuals who want to take a credential that will:

- Expand their knowledge for continuous improvement for their area expertise
- Provide foundational knowledge to improve their opportunities for advancement in their work place

The content of these programs tends to be more specific or focused on a subject area and/or specific industry to build technical expertise (e.g. Pennsylvania State University's Food Science Certificate Program) or introduce broader more general management concepts, e.g. Module 3 Business Growth Strategies and Human Resources-Food Processing Management Certificate Program, University of Nebraska-Lincoln.



DIPLOMA PROGRAMS

Diploma programs are generally 2 years in length with a focus on entry for students into the workforce. These programs are geared for individuals who are ready to make a commitment to a career path in the food and beverage processing industry. Often diploma programs lay the foundation for additional schooling to upgrade from a diploma to a degree. For example, the BCIT Food Technology program is set up to allow individuals to complete the 2-year BSc. Program in Food Technology and Operations Management.

Diploma programs often require a secondary school diploma with specific requirements for secondary credits in Chemistry, Math, and English.

There are two types of diploma programs with the following admission requirements:

- **Foundational** programs that typically require a high school diploma and may require specific subjects such as English 12, chemistry 11 and/or math 12
- **Post-Graduate** programs that require a previous credential such as a degree program and may require work experience

Diploma programs can offer more opportunities for electives outside of the field of study because they have a longer time frame. However, this cannot be generalized. Some of the programs have a completely full course schedule of required programs with no electives or even options to choose from. This was most evident in the occupationally specific diploma programs. Post-graduate programs may be more self-directed in terms of their courses, due to the more limited focus and self-directed projects or theses.

Foundational Diploma Programs

The content of the courses in diploma programs appear to be much more theoretical, with course work in chemistry, biology, and math, as well as applied courses in food technology, food safety and sanitation and process instrumentation.

Diploma programs typically have an occupational focus such as Conestoga College's Food Processing Technician and Packaging Engineering Technician programs and Niagara Colleges Winery and Viticulture Technician, and may apply to specific industries within the Food and Beverage Processing Sector, such as Niagara and Olds College's Brewmaster and Brewery Management programs. Diploma programs that do not specify an occupation are similar in their scope, e.g. BCIT's Food Technology program.

The programs are usually divided into semesters or levels. Courses typically are progressive, starting with basics and theory, then applications and integration into food and beverage processing operations and systems. The depth of knowledge that can be explored within a 2-year foundational program is more significant than 1-year foundational certificate programs.

The content of food science/technology programs begin with fundamental science theory in math, chemistry and microbiology. These courses support the more food science/technology-specific courses, and provide the theoretical base for the applied courses in food safety and sanitation. Later levels also include courses in food safety management systems, quality control and quality assurance. At this level, there can be an emphasis on processing operations with courses in instrumentation and processing processes or an emphasis on food science analysis, and testing.

Similarly, with the occupational, subject-specific diploma programs, such as the brewing or wine and viticulture and the packaging engineering programs, the beginning of the program starts with basics, an introduction to the subject matter, examines components/ingredients, delves into the science that is involved with the subject area, and then introduces management concepts, e.g. managing the wine cellar/ brewery and sales and marketing. The scope of courses will cover: the technology of how to produce product, operations management, regulatory compliance, as well as the business aspects of running a processing operation. Most diploma programs also have a co-op option or courses that provide application opportunities in on-site facilities or short work placements.

In addition to fundamental science courses that support the technical aspects of the subject area/ occupation, almost all of the diploma programs included courses in language and communications/ college level reading and writing, and a few included course work in basic computer applications.

Post-Graduate Diploma Programs

Post-graduate programs tend to more focused and specialized in a specific area of study. However, they may also relate the subject area to management concepts such as regulatory compliance, and the integration of the subject matter to bigger picture initiatives. This is evident in the Memorial University/Marine Institute's Advance Diploma in Food Safety. The term 1 courses review basics and term 2 courses focus on mitigation initiatives and techniques, followed by application projects in the workplace.

There were more post-graduate certificate programs available than post-graduate diploma programs. This may be a function of demand and time or just nomenclature, as one post-graduate program was also 1 year in length.



APPRENTICESHIP PROGRAMS

Of the available trades across the country, the two traditional trades of Baker and Meat Cutter are the only trades that are listed in each province/territory that are related to food production. Typically, the off-the-job training programs for these two trades are for those in the trade that are “customer-facing” work, i.e. in retail work situations. Although individuals who complete apprenticeships could work in industrial settings, the training programs are not designed for the work considerations or environments in industrial food and beverage processing facilities. It also appears that although these trades are listed, they may not have all the components for apprenticeship in place. For example, Baker is listed as a Red Seal Trade in every jurisdiction, but does not appear to be available in all jurisdictions as there are gaps in the availability of off-job training programs to support apprenticeship. In Saskatchewan, there is no off-the-job training available for Meat Cutter Apprenticeship, but the Saskatchewan trades governing body will accept training from Twin Rivers University in British Columbia.

However, in Ontario, there is a trade and an apprenticeship program for Process Operator – Food Processing. This appears to be a relatively new trade. The only available documentation was the Training Standard form and a description of the off-the-job training provided by Conestoga College. This apprenticeship program is designed for individuals who want to work as Process Operators in food and beverage processing settings. The off-the-job training provides a grounding in food safety as well as the application of instrumentation and mechanical systems in food and beverage processing.

Consideration should be given to how apprenticeships in food related trades could be accommodated in an FPSC training framework.



DEGREE PROGRAMS

There are many post-secondary degree programs in food science/technology in Canada and the US at the baccalaureate, masters and doctorate levels, which is the traditional degree structure in most post-secondary institutions. Food Science is affiliated with programs that are health oriented (e.g. Food Science and Nutrition), or more applied, e.g. Food Science and Technology, or culinary. However, it is evident in both Canada and the US that there is shift in this structure and in the focus of food science programs as post-secondary institutions become more responsive to the needs of industry or need to reflect what is happening in industry. Many post-secondary institutions have aligned food science with agriculture and expanded agriculture to also include agribusiness and food processing. There are degree programs that are specifically aimed at food safety. The importance of the food and beverage processing industry is also reflected in changes to engineering programs. Food engineering or bioprocess engineering are newer areas of engineering with degrees now available to post-secondary students.

There are also degrees available that reflect other food and beverage processing related industries. In the US, there is a BS available for Food Science for Companion Animals, i.e. pet food as well as Brewing, and Enology, which reflects more current cultural/societal trends and interests. There is also a BS and MS program in Packaging Science.

However, every province, territory and state is responsible for advanced education and there is limited agreement for recognition of credentials as the course work supporting them is so variable. Many of the variations in the food science-food technology courses reflect the industries in the region, for example, enology, fermentation in the Pacific Northwest, and dairy food management in the mid-west.

Typically, the technical institutes tend to provide more applied offerings that are more relevant to industry, but this is shifting as more and more universities are providing co-op/practicum components to their programs. Colleges typically provide most of the foundational certificate and diploma programs and the universities provide post-secondary and post-graduate

degree programs and post-graduate certificates and diplomas. Many colleges provide associate degrees that can be articulated into full degree programs with additional schooling. This usually applies to programs taken in the same institution or within the same jurisdiction.

Many post-secondary institutions also have continuing education/extension/outreach programs. However, these programs consist of a variety of courses that are provided on demand or by a schedule. These courses are provided ad hoc, more for interest or for professional development and are not part of a specific training program, therefore were not considered for this research.

Degree programs in food science/technology or other related fields have more stringent admission requirements. They generally require a high school diploma with grade 11 and/or 12 course work in chemistry, mathematics, physics, and English.

The baccalaureate programs are longer in duration than certificates or diplomas, typically ranging from 4-5 years and may include co-op or practicum components. Typically, each year is a level, with each year being divided into 4 semesters. Courses build on each other. The first-year courses tend to be more general and provide the foundation for successive semesters and years, becoming more focused over the four years. After the second year, it is common to set a major/emphasis/track/stream for the degree. For example, at Oklahoma State University, Bachelor of Science degrees are available with major options in Food Science, Food Industry, Food Safety, or Meat Science.

Due to the length of baccalaureate programs, more electives may be required that are outside of the student's field of study and co-op/practicum components can be several months.

Admission to a Masters or Ph.D. program typically requires a baccalaureate degree and may include work experience. The Masters and Ph.D. programs are usually shorter in length, with less required course work, but with more time spent on research for thesis or project work. These degrees typically focus on a specific subject area of interest derived from a baccalaureate program.

PRIVATE ORGANIZATIONS

THE INTERNATIONAL FOOD PROTECTION TRAINING INSTITUTE (IFPTI)

There are many for-profit businesses, such as SGS, a leading inspection, verification, testing and certification company in the US, and not-for-profit food and beverage processing/processing organizations such as FPSC and the Alberta Food Processors Association that provide training. Typically, this training is offered to industry in the form of workshops, seminars or online courses. These courses are designed to provide information in a short time frame on very specific topics. They are typically not part of a program of courses that are part of a credential, as a result they were not included in the research.

The International Food Protection Training Institute has developed training frameworks for food safety that could guide the structure of the framework required for this project. The IFPTI framework graphics are included in the appendices.

The IFPTI is an American private training provider that specializes in food safety. They were contracted by the US Food and Drug Administration (FDA) to develop a curriculum framework to support the FDA's Integrated Food Safety System (IFSS). The success of this initiative was based on the provision of consistent, accessible, standards-based training for a network of an estimated 45,000 federal, state, local, tribal and territorial regulatory food protection personnel across the US.

The IFPTI developed a training framework that identified:

- The content areas specific for regulatory food protection personnel
- The competencies associated with each content area
- The food safety training courses available

The outcome of this work was a “roadmap for an integrated, open-source, career-spanning food safety regulatory training system or curriculum framework for IFSS”¹

The framework is based on four professional levels:

1. Entry basic and Entry-Program specific – these are individuals with 2 years or less experience
2. Advanced – these are individuals with 2 years or more experience, where most inspection personnel spend most of their career
3. Technical Specialist – regulatory inspection personnel who have developed a specific area of expertise
4. Leadership – individuals in middle and upper management positions

In addition to these levels are professional tracks or concentrations that cover the scope of regulatory food safety. These professional tracks are:

- Unprocessed food concentration
- Manufactured food concentration
- Retail concentration

Content areas or topics can span all the tracks or concentrations for a level; can be specific for a concentration or can span levels. The base framework is depicted on the next Table.

Curriculum Framework				
Leadership	Recognition of Competency Attainment			Professional Level Spanning Content Areas
	Core Content			
Technical Specialist	Recognition of Competency Attainment			
	Unprocessed Concentration	Manufactured Concentration	Retail Concentration	
	Core Content			
Advanced	Recognition of Competency Attainment			
	Unprocessed Concentration	Manufactured Concentration	Retail Concentration	
	Core Content			
Entry	Recognition of Competency Attainment			
	Unprocessed Concentration	Manufactured Concentration	Retail Concentration	
	Core Content			

For example, at the Advance level, Core Content that spans all concentrations includes Enforcement, Evidence, Feed/Food defense, Imports, Inspections, Investigative Skills, Laboratories, Outbreak Investigation, Product Disposition, Risk Analysis, Sampling and Transportation. Each concentration has their own content areas, which are comprised of programs (a set of courses) in the concentration, for example in the Manufactured Food Concentration one of the content areas is a program for Dairy Processing. The content areas that span several professional levels includes Communications skills, Emergency response, Integrated Food Safety System, Emerging trends, Instructional skills and Leadership skills. Electives in each area of concentration are also noted, but specifics are not available.

The noted benefits of the IFPTI framework are:

1. Provide guidance to food protection professionals in planning their career paths in planning their career paths and receiving the necessary training as their jobs evolve.
2. Help supervisors create career improvement paths for their employees.
3. Foster the efficient use of resources – money can be spent to develop courses that address competencies.

4. Provide a road map and standards for public, private, and academic outfits seeking to offer food safety training.
5. Assure federal agencies like FSA and the US Department of Agriculture that regulators are being trained consistently and systematically; thereby boosting the agencies' ability to rely on these regulators and prevent duplication of services.
6. Foster integration of the food safety system by encouraging greater collaboration among all stakeholders (government agencies, industry, agriculture, and academia).
7. Improve understanding of food safety by elected officials who make legislative decisions affecting the system.
8. Help food protection professionals prepare for certification exams.

It was also determined that the training developed to fill the mandate of the training framework should meet ANSI/IACET 1-2007 standards for Continuing Education and Training. The framework is also being used to recognize professionalism by providing the basis for a certificate program.

The framework also provides a means to identify gaps in training in relation to what is required.

The IFPTI has also developed similar frameworks for the Canadian Food Inspection Agency (CFIA) for three professional areas, Inspectorate, Advisory, and Laboratory Specialist. (see Appendix)

The Canadian frameworks differ in that the levels are defined with specific occupational titles, e.g. Inspector, Compliance Officer or levels of responsibility, e.g. Laboratory Support, Laboratory Analyst, Laboratory Specialist. Otherwise the structure is the same for each framework with Core Content for each area. The Inspectorate and Advisory frameworks have similar concentration, i.e. Food, Animal, and Plant; and Laboratory has a Chemical and Biological concentrations.

Key Observations of the IFPTI frameworks:

- Some key observations from the analysis of the IFPTI are as follows:
- The framework relates to a specific area of practice, i.e. Regulatory Food Safety
- Levels of competence defined by regulatory agents within the profession
- Content areas based on competencies defined by the professionals operating within the area of practice
- Common/core content is identified for each level and across all concentrations or tracks
- Common/core content that spans levels is identified
- Content areas are defined for each of the concentrations or tracks
- Some of the content areas are defined as Electives
- Framework is used for professional certification

Each of these observations are considerations for the development of FPSC framework. It is important to note that the scope of the IFPTI frameworks is exclusively food safety, which is very narrow when compared with the training framework required for the entire scope of food and beverage processing desired by FPSC. However, parallel components, such as competency database/occupational competencies, and structural elements, such as common/core and concentrations, content area electives, and the recognition of levels through a certificate program, could be used in the development of a training framework for FPSC.

Summary and Analysis of Principles to be Applied to FPSC Learning and Recognition Framework

By comparing and contrasting the guiding principles and features of existing frameworks, some generalizations can be made that are useful to consider when designing FPSC Learning and Recognition Framework.

Internationally, there is a mix of completely mandatory (all units/courses must be achieved) versus mandatory/elective programs (those that allow flexibility for the student to choose some units/courses in their area of interest). In general, programs are organized hierarchically, from basic or essential work skills up to technical skills and supervisory/management competencies. Typically, there are more credits or courses required at the higher levels in the frameworks.

In North America, which does not operate with nationally-mandated framework systems, there is a wide mix of programs developed to meet local or regional needs. Many times these programs are particular to industries, such as wine or brewing, and are localized in their delivery. Where frameworks do exist, such as through the IFPTI, they have similar features to the international frameworks; they are hierarchical, moving from basic work skills to specializations and management. They also allow students to focus on particular areas of interest.

Taking all of the findings into consideration, the following guiding principles are recommended for FPSC Learning and Recognition Framework. The new framework should:

- feature hierarchical levels. Starting with a base/essential skills/work skills level, graduating to a technical/occupational level, through to supervisory and management/executive levels
- be flexible versus entirely mandatory (have a number of electives or options at the higher levels, rather than having all units/courses as mandatory)
- require more 'credits' or 'courses' at higher levels than lower
- have more electives to choose from at higher levels
- feature some acknowledgement of different industry needs (dairy, beverage, etc), while remaining largely broad-based
- provide a clear map of competencies needed to progress for a career in food and beverage processing within Canada
- be confirmed through consultation with industry professionals in Canada

A framework developed with these principles in mind will be consistent with other international and North American frameworks, and provide clarity and value to food and beverage processors in Canada.



THE LEARNING AND RECOGNITION FRAMEWORK

DEVELOPMENT AND VALIDATION OF THE LRF

To develop the model of the Learning and Recognition Framework, the consultants analyzed FPSC's Master Competency Framework. They applied the guiding principles from the research, and organized the competencies into groupings and levels. The model was used as a basis of discussion during the industry consultation process. In early 2019 FPSC hosted an online survey with specific questions about the model of the LRF. These survey results were then collated and presented at the four focus groups that were facilitated across the country. This section describes the industry consultation process, and the final validated framework, including its features and levels

The Framework lays out a **learning path** for those working in, or transferring into, the food and beverage processing sector. While it is not a career path per se, it does provide an overview of skills needed as an individual progresses through his or her career.



INDUSTRY CONSULTATION

FPSC conducted a comprehensive industry consultation process to present, discuss, and make decisions regarding, the model of the Learning and Recognition Framework. The first phase of industry consultation was conducted in January and February of 2019, and involved hosting an online survey that posed twenty-six questions related to the model. These included questions related to the entry/admission requirements, the structure/levels of the framework and specific questions related to the content within the proposed levels. The second phase of industry consultation involved a series of four cross-Canada focus groups in March 2019, during which the model and online survey results were presented for consideration, and large and small-group discussions were facilitated to arrive at the final, validated model of the LRF. The LRF was developed for the food and beverage processing sector by the food and beverage processing sector, or 'for industry, by industry'.

QUESTIONS TO BE ASKED DURING SECTOR CONSULTATION:

- Are the courses in mandatory core and elective sections in the correct section? (i.e. are mandatory courses appropriate? Should any electives be mandatory?)
- Specific question re: finance in Level 3 – should be mandatory or elective?
- Is the division of the content/courses logical? Should any be subdivided further into two or more courses, or should any be combined into a single course?
- Is the number of required electives per level appropriate? What should the required number of chosen electives be?
- Are the proposed admission/entry requirements per level appropriate? Do they need to be adjusted, and if so, how?
- The proposed names/titles for each Level – are they beneficial? Any other suggestions?

ONLINE SURVEY

The bilingual online survey was conducted in January and February 2019. It consisted of twenty-six questions related to:

- Levels and entry requirements
- Each level:
 - Workplace Essentials
 - Level 1
 - Level 2
 - Level 3
 - Level 4

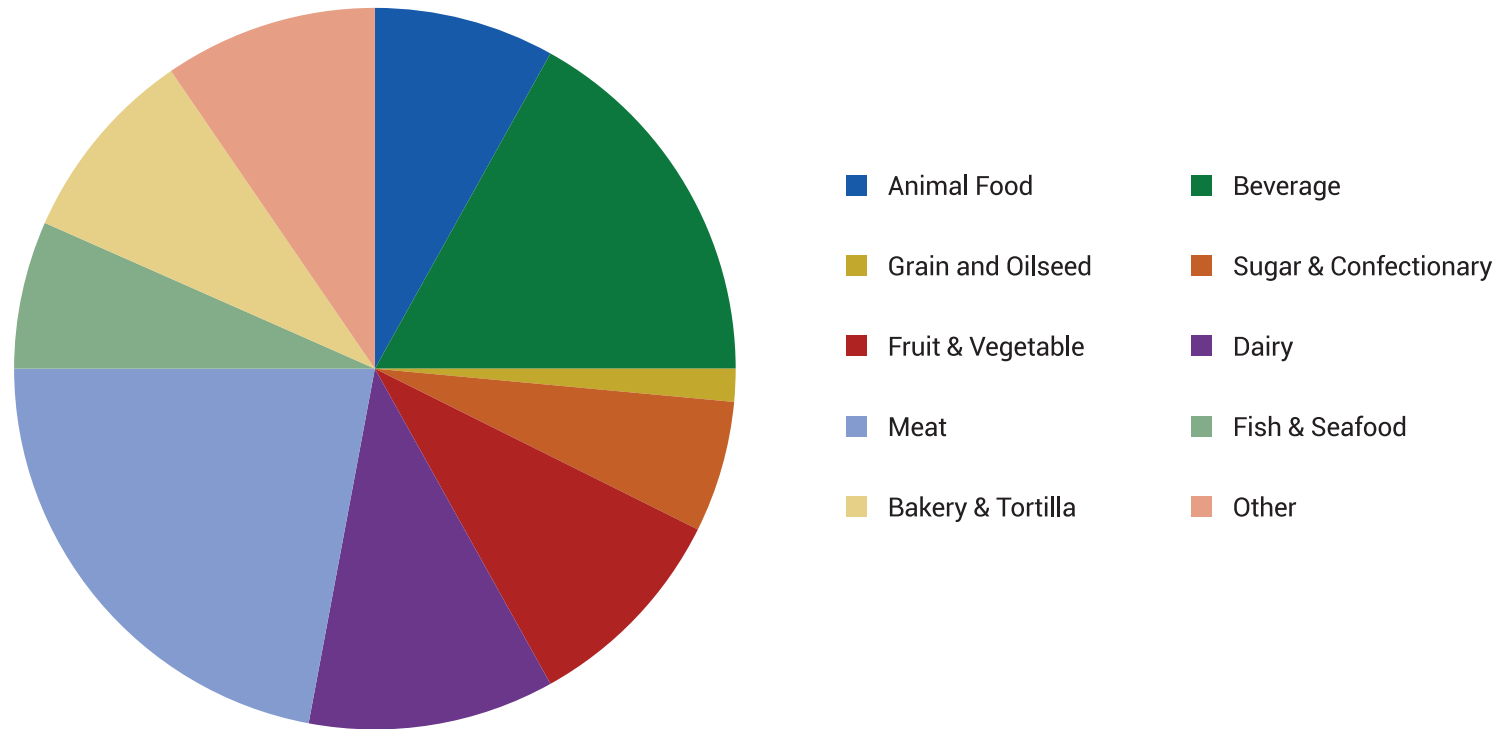
It also collected categorizing information, such as respondent's province/territory, food and beverage processing sub-sector(s) they work within, job titles, and number of years of experience in the food and beverage processing sector. The survey was designed to collect information related to the model of the LRF that could be further discussed at the cross-Canada focus groups.



ONLINE SURVEY RESPONDENTS

The fifty respondents to the online survey represented nine provinces. Over half of the respondents work in food and beverage processing organizations, one-quarter of the respondents are educators or trainers in food and beverage processing, and the remaining one-quarter of the respondents work in associations, not-for-profit organizations or governmental departments associated with food and beverage processing. Respondents work in, or with, all of the food and beverage processing sub-sectors identified by FPSC as indicated below:

Respondents to Online Survey by Food and Beverage Processing Sub-Sector



ONLINE SURVEY RESULTS: ENTRY (ADMISSION) REQUIREMENTS

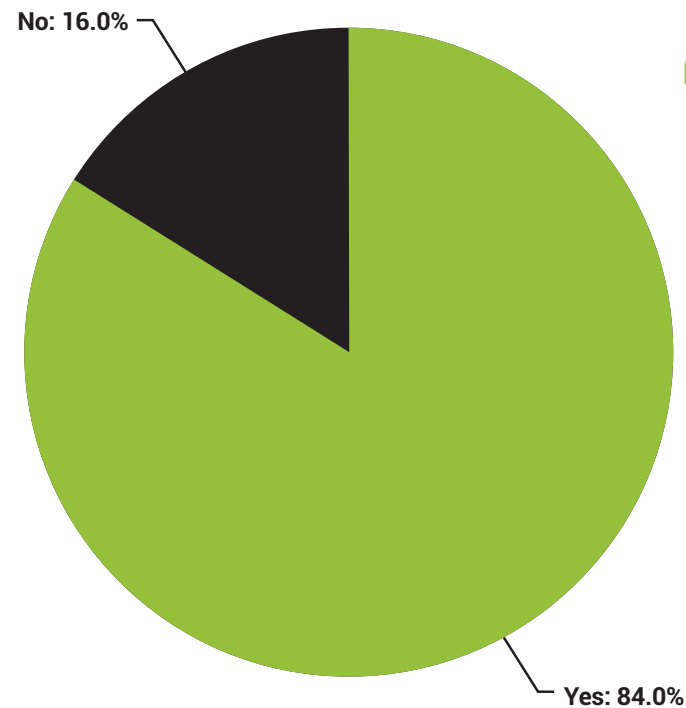
Respondents were asked about the proposed entry (admission) requirements for each level of the framework. These requirements specify what prerequisites a learner must have before beginning their learning at a particular level. For instance, the proposed entry requirements for Level 2 in the model was that learners were required to have achieved Common Core Level 1 or 6 months – 1 year of experience in a food and beverage processing environment. Respondents were asked to consider the suggestions made in the model and to comment.

They were asked a number of specific questions related to each level, as well as an overall question related to entry (admission) requirements.

84% of respondents answered that the proposed requirements were appropriate. For those that disagreed, they identified a concern that the model entry requirements for Level 3 and 4 may not be rigorous enough.

For specific levels, respondents identified that entry requirements for:

- Level 2 should include a minimum of 6 months to a year of work experience
- Level 3 should include a minimum of 1- 2 years of work experience
- Level 4 should include a minimum of 2 or more years of work experience

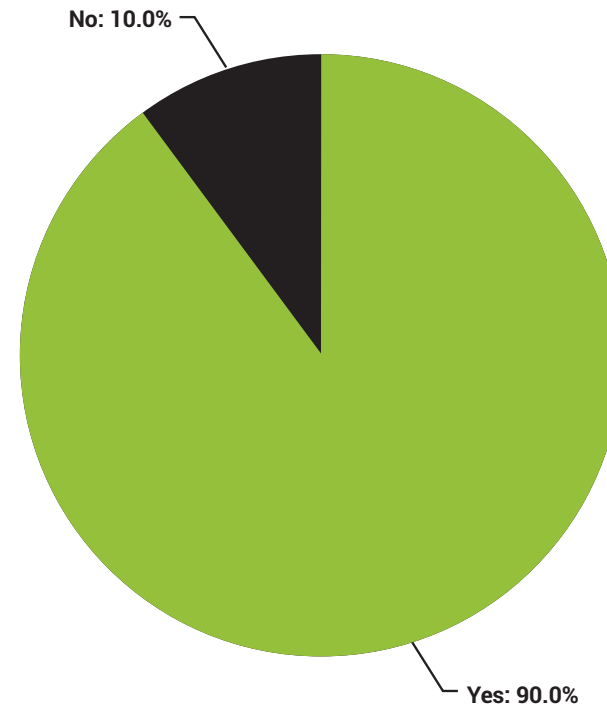


“ In your experience, do you believe these entry requirements are appropriate? ”

ONLINE SURVEY RESULTS: REQUIREMENTS OF EACH LEVEL

Respondents were asked specific questions related to the content at each level of the LRF. These requirements specify what content is contained at what level (i.e. frontline versus supervisory, supervisory vs. management), and what content is identified as mandatory as opposed to elective at each level.

In general, online survey respondents believed that the division of mandatory versus elective content for each level was appropriate, and that the mandatory common core content for each level was largely correct. There was some confusion as to what was included under some of the titles/topics in Workplace Essentials and Level 1, so this was further defined for the second stage of industry consultation at the cross-Canada focus groups. Respondents also felt that learners should have to choose from a broad range of electives, rather than specialize in one particular area. Specific feedback related to Level 3 was collected, for instance: respondents indicated that they felt that skills around 'monitoring budget performance' should be mandatory rather than elective.



Sample Question: "Individuals learning in Level 1 are currently required to take all of the common core content (mandatory), along with one selection from the industry-specific electives, and one selection from the sector-specific electives. Do you agree with this division of mandatory/core and electives?"

CROSS-CANADA FOCUS GROUPS

The results of the online survey were presented at each of the four cross-Canada focus groups for consideration and further discussion. In March 2019 four focus groups were facilitated across Canada to discuss the model of the LRF and to define further refinements to the model. Meetings were held in Vancouver, Montreal (in French and English), Toronto and Halifax. A total of fifty-eight Canadian food and beverage processing professionals from across the regions travelled to attend meetings at these central locations. Each focus group was led by a team of three facilitators. Discussions were held in large and small groups throughout the one-day session. Focus group members were highly engaged in the discussions, as many points were debated until consensus could be reached on the best outcome for **FPSC's Learning and Recognition Framework**. Although the focus group participants came from across the country and from a number of different sub-sector and work contexts, there was remarkable agreement on both pressing issues in the sector and how those issues should be reflected in the LRF. Facilitators heard the same comments in Vancouver as were heard, unprompted, in Halifax. These discussions are reflected in the validated LRF. *Comments from some participants are quoted in the boxes below.*

The next pages present the validated **Learning and Recognition Framework** and that has resulted from industry consultation.

“THIS IS THE WAY OF THE FUTURE.”

“I BELIEVE THE LRF WILL BE USEFUL TO ASSIST IN ALIGNING TRAINING TO JOB PERFORMANCE. THIS WILL AID IN THE SUCCESSFUL PERFORMANCE OF JOB TASKS.”

“THIS WILL HELP WITH THE DEVELOPMENT OF THE FUTURE OF FOOD AND BEVERAGE PROCESSING IN CANADA.”

**“GREAT SESSION, GREAT DISCUSSION!
THANK YOU!”**

LEVELS OF LEARNING AND RECOGNITION FRAMEWORK

The model framework has five levels: Workplace Essentials and Levels 1 through 4. The food and beverage processing subject matter experts (SMEs) requested the addition of titles to level 1 through 4 and decided on 'foundations', 'occupations', 'supervisor' and 'management'. Level 3 has a specialty level built specifically for food production supervision, which is expected to be the area of the most interest and uptake within food and beverage processing organizations. SMEs also requested to broaden the description of the Workplace Essentials level to include people for whom Canadian culture and/or Canadian food safety culture may be new.

DESCRIPTION OF LEVELS

<p>Workplace Essentials</p>	<ul style="list-style-type: none"> • For those with no or little work experience • For those who are new to Canadian work culture or to Canadian food safety culture • Likely do not have Canadian High School Diploma • Provides foundation skills for working in the food and beverage processing sector
<p>Level 1: Foundations</p>	<ul style="list-style-type: none"> • For those with 1 year of experience or less in a food and beverage processing work setting • Individuals in or seeking their first employment position in food and beverage processing • Establishes an understanding of the food and beverage processing sector
<p>Level 2: Occupations</p>	<ul style="list-style-type: none"> • For those in the process of acquiring their specific technical skills in the sector and directly involved in food and beverage production • Also value-added recognition for those already holding some kind of occupational recognition i.e. certification • Based on specific NOS/occupations, develops specific technical/occupational skills and establishes a comprehensive base of knowledge
<p>Level 3: Supervisor</p>	<ul style="list-style-type: none"> • For those currently holding, or transitioning to, supervisory positions • Provides support to set new supervisors up for success <p>*Level 3 Specialty: Supervisor Specializing in Food and Beverage Production</p>
<p>Level 4: Management</p>	<ul style="list-style-type: none"> • For those currently holding, or transitioning to, management positions • Provides support to set new managers up for success and broadens the base skills and knowledge of existing managers

ENTRY/ADMISSION REQUIREMENTS FOR LEVELS OF LEARNING AND RECOGNITION FRAMEWORK

There are no entry/admission requirements for the Workplace Essentials level. The other levels have proposed entry/admission requirements that were discussed and amended during the industry consultation phase. As the goal of the LRF is to encourage learning, SMEs were careful to ensure that the entry/admission levels would not represent a barrier to learning, but rather set the learner up for success by ensuring they had the base knowledge and skills to succeed in their ongoing learning at a particular level. One of the big changes that resulted from the focus group discussions was the addition of recommended entry/admission criteria. These are not required, and therefore do not provide a barrier to learning, but learners are encouraged to pursue them.

ENTRY/ADMISSION REQUIREMENTS

Level 1: Foundations	<ul style="list-style-type: none"> • Canadian High School /CEGEP or equivalent OR Workplace Essentials required • Recommend Workplace Essentials Thinking Skills if have not taken the Workplace Essentials level
Level 2: Occupations	<ul style="list-style-type: none"> • Common Core Level 1 required • Recommend 6 months experience in food and beverage processing environment • Recommend Workplace Essentials Thinking Skills • Recommend choice of at least one relevant Level 1 industry-specific elective (e.g. dairy industry, fish & seafood industry, etc).
Level 3: Supervisor	<ul style="list-style-type: none"> • Common Core Level 1 required • Recommend food and beverage processing technical experience of at least 6 months • Recommend minimum of 1 year of work experience in any sector • Recommend choice of at least one relevant Level 1 industry-specific elective (e.g. dairy industry, fish & seafood industry, etc).
Level 4: Management	<ul style="list-style-type: none"> • Common Core Level 1 required • Common Core Level 3 required • Level 2 Principles of Food Safety core unit required • Recommend minimum of 1 year supervisory experience in any sector • Recommend food and beverage processing technical experience of 1 year • Recommend choice of at least one relevant Level 1 industry-specific elective (e.g. dairy industry, fish & seafood industry, etc).

WORKPLACE ESSENTIALS LEVEL

Workplace Essentials is for those with little or no work experience. It is also for those who are new to Canadian work culture or to Canadian food safety culture. There are no admission requirements for this level. These individuals likely do not possess a Canadian High School Diploma. The training at this level provides foundation skills for working in the food and beverage processing sector.

Since the development of the model of the LRF, FPSC has developed courses and content related to Emotional Intelligence for their “Succeeding at Work” program. These courses and content were integrated into the LRF for discussion during the industry consultation phase. The SMEs agreed to add a number of electives to this level that learners can choose from based on their interests and work context. Recommendations were made to rename some of the content. This is reflected in the illustration below. The old title/relevant Essential Skills or Emotional Intelligence Skills is indicated below the new title in parenthesis. They also asked for the addition of a mandatory course for numeracy and an elective course on cultural intelligence. There were numerous detailed suggestions for the potential course content for each of these boxes that have been forwarded to FPSC for their consideration as they further develop these courses.

WORKPLACE ESSENTIALS

WORKPLACE ESSENTIALS ELECTIVES <i>Minimum of Three</i>	Self-Awareness/ Independence	Customer Relationships (customer service)	Canadian Workplace Cultures	Adaptability	Self-Actualization	Interpersonal Relationships	Assertiveness	Empathy/Social Responsibility	Positive Attitudes in the Workplace (optimism/happiness)
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WORKPLACE ESSENTIALS MANDATORY	Workplace Communication (oral communication)	Thinking Skills	Document Use	Working with Others	Employee & Employer Expectations	Food Safety Culture & You	Digital Technology Skills	Numeracy	Stress Management
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NOTE: An orange outline indicates Food Safety

LEVEL 1: FOUNDATIONS

Level 1 is for those with 1 year of experience or less in a food and beverage processing environment. They are likely individuals in, or seeking, their first employment position in food and beverage processing. The admission requirements include having completed the Workplace Essentials level or possessing a High School Diploma/CEGEP Diploma or equivalent. For those who have not achieved their Workplace Essentials level, it is recommended that they take the Workplace Essentials Thinking Skills course. Training at this level establishes an understanding of the food and beverage processing sector.

In general, SMEs were satisfied with the structure of Level 1. It was renamed to *Level 1: Foundations*. There was a lot of discussion regarding the common core. SMEs reviewed outlines for some existing FPSC courses with related content. The overall recommendation is that while these topic areas/boxes are correct for Level 1, the actual learning objectives and course content will need to be further validated by a group of industry SMEs once it has been reanalyzed according to this structure. The existing FPSC courses included a great deal of overlap and content that is intended for a higher level audience. To be consistent with the LRF, these courses will need to be reworked and then validated by SMEs. This recommendation is also reflected in the 'Next Steps' section of this report.

SECTOR-SPECIFIC ELECTIVES One of:	Knife and Power Tool Skills -OR- Level 1 Meat Cutting Certification (use food processing hand and power tools, use knives and saws)	Food Processing Equipment (operate food processing equipment [pre-op, startup, monitor, changeovers, minor maintenance, troubleshoot, lock out])	Product Packaging (prepare materials, portion/weigh, fill and seal, bottle/can, label, tray/box, palletize, perform change-over)	Inventory Handling (pick and pack, prep for shipping, receive, unload, store, etc)
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INDUSTRY-SPECIFIC ELECTIVES One of:	Introduction to the Animal Food Production Industry*	Introduction to the Grain and Oilseed Industry*	Introduction to the Sugar and Confectionery Industry*	Introduction to the Fruit and Vegetable Industry*	Introduction to the Dairy Industry*	Introduction to the Meat and Poultry Industry*	Introduction to the Fish and Seafood Industry*	Introduction to the Bakery Industry*	Introduction to the Beverage Industry*
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*Each to include what it produces, overview of industry in Canada, processes used (smoking, distilling, etc, grading systems/inspection process, raw ingredients).

MANDATORY COMMON CORE	Introduction to the Food Processing Industry (“I AM FOOD” course)	Basics of Food Safety (what is contamination, overview of allergens, importance of sanitation, consequences of noncompliance, regulatory overview, proper handling and preservation of ingredients/products, what is traceability, intro pest control)	Workplace Sanitation	Introduction to Quality Control and Quality Assurance (what is it, how does it impact worker in the workplace)	GMPs and SOPs	Workplace and Industrial Safety
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NOTE: An orange outline indicates Food Safety

LEVEL 2: OCCUPATIONS

Level 2 is for those in the process of acquiring their technical skills and who are already directly involved in food and beverage production. The admission requirements include having completed Common Core Level 1. Although not required, it is recommended that learners have 6 months of experience working in a food and beverage processing environment, that they have taken Workplace Essentials Thinking Skills and at least one industry-specific elective from Level 1. Training at this level establishes a comprehensive understanding of the food and beverage processing sector and is based on specific occupational areas. Level 2's core enhanced knowledge reflects the level of content found in many North American certificate and diploma programs. Level 2 is directly related to **FPSC's National Occupational Standards (NOS)**. During the industry consultation, Level 2 Common Core was completely reorganized and rethought to create three distinct areas. The group also recommended further analysis of the common core once the learning outcomes have been developed.



The concepts of 'Certification' and the 'Learning and Recognition Framework', is defined as follows:

Certification is a program of assessment that provides recognition of a level of **existing competence of knowledge and performance**. It is achieved through knowledge and performance assessment, often 'on the job'.

— *Certification is recognition of "Competence".* —

The **Learning and Recognition Framework** is a comprehensive structure of clearly defined qualifications that **recognizes achievements in learning**. It is achieved through engaging in a program of coursework.

— *The LRF is recognition of "Learning".* —

LEVEL 2: OCCUPATIONS*

OCCUPATIONAL-SPECIFIC TRAINING	INDUSTRIAL MEAT CUTTER	CHEESE-MAKER	POULTRY PRIMARY PROCESSING FRONTLINE WORKER	SANITATION WORKER	QA/QC TECHNICIAN	FISH AND SEAFOOD PRIMARY PROCESSOR	FOOD PROCESSING OPERATOR	DAIRY PROCESSING OPERATOR
One of the following:	Course accredited to NOS	Course accredited to NOS	Course accredited to NOS	Course accredited to NOS	Course accredited to NOS	Course accredited to NOS	Course accredited to NOS	Course accredited to NOS

MANDATORY COMMON CORE	Principles of Food Safety (food microbiology, foodborne illnesses, indicators of contamination/spoilage, microbiological hazards, bacteria, yeasts and molds (good and bad); biological/chemical/physical sources of contamination including allergens)	Quality Control and Quality Assurance Systems (Quality Control systems, mitigation, introduction to recall audits, basics of regulation and compliance, safety and quality specifications)	Introduction to Process Control (sampling, Critical Control Points (CCP), food safety, product quality, characteristic of ingredients and in-process products)	*NEW* FUTURE NOS TBD Course accredited to NOS

* Individuals with a **Level 2 Certificate** will receive credit towards the knowledge portion of their chosen occupational certification.

* People who have taken programs that are accredited to **HACCP Coordinator NOS** will receive credit for courses at several different levels in this framework.

NOTE: An orange outline indicates Food Safety

LEVEL 3: SUPERVISOR

Level 3 is for those currently holding, or transitioning to, supervisory positions. The admission requirements include having completed Common Core Level 1. Although not required, it is recommended that learners have 6 months of food and beverage processing technical experience, a minimum of 1 year of work experience in any sector and at least one industry-specific elective from Level 1. Training at this level sets new supervisors up for success and enhances the skills and knowledge of existing supervisors.

The SMEs also felt strongly that there should be a specialization at this level. They have defined a specialty recognition at Level 3 titled “Level 3: Supervisor Specializing in Food and Beverage Production”. Achievement of this certificate requires individuals to have successfully completed the Level 3 Common Core, all four units in Food and Beverage Production, plus a number of units TBD.

There were several questions that needed to be addressed regarding Level 3 during the industry consultations. The large group discussions resulted in “Introduction to the Regulatory Environment” being moved from Common Core Level 2 to Common Core Level 3. It was decided that “Monitor Budget Performance” should be moved from elective to Common Core Level 3 and that it should be combined with the existing “Essential Mathematics for Supervisors”. The skills under Food Quality and Safety Management electives were identified as belonging to Level 4, not Level 3, so were moved to that level. There was a great deal of discussion regarding the proposed “Manage Diversity” under Common Core Level 3 that was built from an existing FPSC course. The consensus was to update the concept, language and content of this area by renaming it “Build a Respectful Workplace” and to include content relating to supervising in an emotionally intelligent way, inclusion versus diversity and aspects of cultural knowledge such as individualistic versus collective cultures, etc. The Food and Beverage Production area was significantly reworked into four units of content from two. The SMEs requested the addition of a new sales and marketing course for non-sales and marketing professionals called “Introduction to Marketing in the Food and Beverage Processing Sector”. Requirements regarding data integrity were added to the details of some units. Critical thinking and problem-solving skills have also been integrated into the Common Core.

SMEs in small groups discussing Level 3 and Level 4 were asked to identify the number of electives that learners would need to take to achieve the level. The group felt that this question was premature and cannot be decided upon until all of the elective areas are further developed with complete learning outcomes (LOs) that indicate the number of credits/training hours required for each. The recommendation is to revisit this decision point once the LOs have been completely developed for the electives at each level. This is also listed in the 'Next Steps' section of this report.

A NOTE ON HACCP COORDINATOR CERTIFICATION:

During the industry consultation, it became clear that the FPSC Certified HACCP Coordinator Certification program did not map to Level 2, as with other FPSC certification programs. Instead, it is recommended that those who hold an FPSC Certified HACCP Coordinator Certificate receive one-way credit for certain units within the LRF. For instance a Certified HACCP Coordinator may receive automatic credit for certain units at multiple levels, such as “Principles of Food Safety” at Level 2 and “Develop HACCP Program” at Level 4. The Certified HACCP Program will need to be mapped to the LRF to identify which credits will apply. This will give Certified HACCP Coordinators a head-start towards achieving their desired level of the LRF.

LEVEL 3: SUPERVISOR

SUPERVISOR SPECIALIZING IN FOOD AND BEVERAGE PRODUCTION

FUNCTION-SPECIFIC ELECTIVES – Number TBD Must choose at least one elective bordered in orange/food safety	SALES AND MARKETING					WORKFORCE MANAGEMENT				LOGISTICS AND PURCHASING		FACILITY MANAGEMENT	
	Intro to Marketing in Food Processing (domestic and international markets/end consumers, basics of pricing, how to reach market, connection to customer, marketing trends, whole process for product develop, processing, labelling, consumer sales plan, handle customer concerns and complaints)	Sell Products and Services (qualify customer, conduct sales calls and presentations, overcome objections, develop quotes, close sales, process sales, follow up on sales, monitor sales plan, handle customer concerns and complaints)	Oversee Marketing Activities (monitor implementation of marketing strategy, provide info about products and services, advertise)	Develop Promotional Events and Contests (develop marketing/ promotional events, oversee promotional events, participate in industry shows, develop trade sales promotions)	Execute Online Marketing (develop online presence)	Execute Public Relations and Media Activities (conduct public relations activities)	Hire Employees (recruit/assist with recruitment, screen, interview, hires)	Train Employees (employee resources, orientation, plan training, conduct training, conduct one-on-one training)	Manage in Union Environment (collective agreement, respond to grievances, participate in collective bargaining)	Facilitate Employee Departure (dismiss, layoff, resignations)	Inventory Management (maintain inventory system, manage problem inventory, complete cycle counts, oversee warehouse operations)	Purchasing (research suppliers and prices, choose suppliers, oversee purchasing, issue claims)	Intro to Facility Operations (knowledge of each system, function, impacts on operation, maintenance scheduling, basic troubleshooting, conserving resources, integrity of data)
	RISK MANAGEMENT AND RECALLS		SANITATION AND WASTE MANAGEMENT		FOOD PRODUCTION				RESEARCH AND DEVELOPMENT		FUTURE ELECTIVES		
	Risk Management for Supervisors (implement risk management plans, monitor implementation of risk management plan, also monitor department's record management system)	Supervise Recalls (manage recall, follow recall plan, legislation/ compliance)	Oversee Facility Cleanliness & Sanitation (develop cleaning processes, verify cleaning processes, monitor cleaning, develop sanitation process, monitor sanitation)	Monitor Waste Management (monitor facility waste management activities, manage and implement recycling program)	Food Production Workflow Management (monitor production workflow, monitor yield, manage production problems, adjust production workflow, maximize personnel and equipment use, assess availability of supplies, data integrity)	Food Production Administration (prepare production reports, monitor department record management – ISO compliance – legislation regulations, implement P&P, data integrity)	Food Safety and Quality Program Implementation (communicate FSMS and QMS to staff, verify programs and tasks, monitor quality, grade/ inspect, review and validate, program documentation, implement and monitor pest management, corrective action)	Food Safety and Quality Compliance (prepare for audits, participate in audits, interact with regulatory inspectors)	Develop New Product Ideas (research, product concepts, bench-top prototypes; also commercialize [provide input])	Improve Existing Products and Processes (value-added, input into innovation, cost optimization, product development and improvement)			
MANDATORY COMMON CORE	Supervise Employee Performance (positive work environment, motivate, schedule staff, conduct perf reviews, performance issues, promote, mentor/coach)	Monitor OH&S and Security (conduct safety inspections, follow OHS Program, participate in emergency prep and accident investigations, monitor adherence to security program, conduct exercises and drills, knowledge of worker's compensation, lead emergency prep)	Monitor Budget Performance (impacts of key indicators being monitored, margin, financial impacts, labour costing, monitoring production/yield, essential math, e.g. ratios and proportions)	Build a Respectful Workplace (supervising with emotional intelligence, diversity/ inclusion, harassment)	Leadership for Supervisors (implement action plans, delegate tasks, promote continuous improvement, implement organizational change, support organizational change, conduct meetings, critical thinking/ problem solving for supervisor, manage internal communication)	Introduction to the Regulatory Environment (provincial/territorial, national/international regulations and agency info for all subsectors)	Future Skills						

NOTE: An orange outline indicates Food Safety

LEVEL 4: MANAGEMENT

Level 4 is for those currently holding, or transitioning to, management positions. The admission requirements include having completed Common Core Level 1 and Common Core Level 3, as well as the Level 2 Food Safety core unit. Although not required, it is recommended that learners have 1 year of supervisory experience in any sector, food and beverage processing technical experience of 1 year, and a choice of at least one Level 1 industry-specific elective. Training at this level sets new managers up for success and broadens the base skills and knowledge of existing managers.

During the industry consultation, the existing model was built upon and the units made more comprehensive; for instance, deepening the knowledge base of risk management with details such as knowledge of audits and knowledge of OH&S risks. Data integrity and data analysis was integrated into the structure. Critical thinking and problem-solving skills have also been integrated into the Common Core. The titles of some units were revised to better reflect the content. During small group discussions, SMEs identified some gaps in the LRF, and by association FPSC's Master Competency Framework on which the LRF is built. These areas have been identified so that FPSC can address these gaps in the framework in the future. One example is the area of building a culture of food safety, which is currently not addressed in the Master Competency Framework. These gaps for further development are identified in the 'Next Steps' section of this report.



WHAT ABOUT INDIVIDUALS WHO ALREADY HOLD UNIVERSITY-LEVEL CREDENTIALS?

During the industry consultation this question was posed. The LRF allows anyone the opportunity to acquire enhanced knowledge and skills related to the food and beverage processing sector. For instance, a person who holds an MBA might benefit from further learning related to the food and beverage processing sector, such as food safety management or risk management; or a person who holds a designation in food science may benefit from learning skills such as setting the strategic direction for the workforce, or financial management for food processing managers. These individuals may also benefit from a prior learning assessment to receive credit for learning they have achieved previously.

LEVEL 4: MANAGEMENT

FUNCTION-SPECIFIC ELECTIVES Choose from a minimum of two categories	SALES AND MARKETING				WORKFORCE MANAGEMENT		FACILITY MANAGEMENT	FOOD PRODUCTION		LOGISTICS AND PURCHASING		FUTURE ELECTIVES	
	Manage Public Relations Crises and Controversies	Develop Sales Plan	Develop Integrated Marketing Strategy (conduct situational analysis, develop integrated marketing strategy)	Develop Branding and Pricing Strategy (develop branding, develop pricing strategy)	Set Strategic Direction for the Workforce (develop HR plan, develop succession plan, allocate HR, monitor implementation of HR Plan)	Develop Compensation Packages (develop compensation packages)	Oversee Design of Facility Systems (electrical, piping, HVAC, water, wastewater, air, gas, plumbing, steam, etc.)	Set Strategic Direction for Food Production (develop production plan, develop production schedule, review production reports, monitor workflow and yield, implement strategies to maximize resources)	Plan for Equipment (design/plan equipment layout, provide input for food processing equipment purchases, define process capacity, commission equipment)	Develop Logistics Plan (establish inventory system, plan warehouse operations, develop warehouse plan)	Manage Transportation (design transportation network, determine carrier requirements, select carrier, obtain insurance)	For example: Food Fraud, etc.	
MANDATORY COMMON CORE	HEALTH AND SAFETY		RISK MANAGEMENT AND RECALLS		FOOD QUALITY AND SAFETY MANAGEMENT				SANITATION AND PEST CONTROL			WASTE MANAGEMENT	R&D
	Develop Occupational Health and Safety Program (develop OH&S program, evaluate program, direct accident/incident investigations)	Develop Facility and Product Security Program (develop Facility Security Program, monitor adherence to facility security program)	Manage Food Traceability (create traceability system, implement traceability system, maintain system)	Manage Recalls (develop recall plan, manage recall)	Develop HACCP Program (assemble team, describe products, process flow diagram, verify schematic, hazard analysis, CCP, critical limits, monitoring procedures, record keeping)	Develop Prerequisite Program (develop prerequisite program for premises)	Develop Quality Management System (develop quality manual, benchmark best practices, create deviation management system, create corrective and preventive action system, create complaint system, process control data analysis)	Manage Audits (develop tracking tools, develop system to manage audits)	Develop Chemical Safety Program (conduct chemical risk assessment, implement control measures, develop chemical safety program)	Develop Pest Control Program (develop pest control program, implement and monitor)	Develop Facility Environmental Monitoring Processes	Develop Facility Waste Management and Recycling Programs (develop recycling waste management program)	Develop New Product Development Projects (include analyze trial results)
	Risk Management for Managers (analyze risk of domestic and international operations, develop risk management plans, implement and monitor plan, knowledge of food traceability and recalls, OH&S risks)		Develop Organizational Policies, Processes and Procedures (determine applicable legislation, develop organizational policies, develop SOPs, implement P&P, establish record management P&P and monitor organization's record keeping, knowledge of audits)		Financial Management for Managers (develop budget, monitor budget performance, develop product costing, manage cash flow, generate reports, obtain alternate source of funds)		Business Data Analysis and Statistics for Managers (data collection systems, using formulas, projections, presentation of financial information, consumer and commercial credit, simple and compound interest, trend analysis, annuities, depreciation, financial instruments and discounting, integrity of data)		Leadership for Managers (decision making, critical thinking, problem solving, internal and external communication [media, agencies, customers and the protocols], develop strategic vision, develop organizational sustainability plan, develop change management plan, promote continuous improvement)		Future Core Skills For example: Developing a Culture of Food Safety		

NOTE: An orange outline indicates Food Safety

INDIVIDUAL LEARNING EXAMPLES

To illustrate how the Learning and Recognition Framework may contribute to individual's growth and motivate continuous learning in the sector, let's look at a couple of practical examples.

Example 1

Lisa has graduated with a High School Diploma within the last five years. While she has been working, it has been in a sector other than food and beverage processing. She has just started a new job at a food and beverage processing company and is looking to grow her career. She is pondering her training options.

Lisa decides to **start her training at Level 1**, which is intended for those starting in the sector. As she is working at a chocolate factory with automated equipment, she chooses the relevant electives.

LEVEL 1: Foundations

FUNCTION-SPECIFIC ELECTIVES

- Food Processing Equipment

INDUSTRY-SPECIFIC ELECTIVES

- Introduction to the Sugar and Confectionery Industry

COMMON CORE

- Intro to Food Processing Industry
 - Basics of Food Safety
- Intro to Quality Control and Assurance
 - GMPs and SOPs
- Workplace & Industrial Safety
 - Workplace Sanitation

In the future she wants to **work towards becoming a supervisor**. She plans on taking training in Level 3 Common Core when she has completed her Level 1 to work towards that career goal.

LEVEL 3: Supervisor

COMMON CORE

- Monitor Employee Performance

Example 2

Mark has been working in a meat processing facility for 8 months. He has taken all of his base training at the company and has also completed his Level 1 Meat Cutter Certification. He wants to improve his skill set through training to eventually achieve his Level 2 Meat Certification in Meat Cutting.

Mark can **enter at Level 2** as he has work experience and Level 1 Meat Cutting and is pursuing occupational-specific training. He will take the Common Core and a course that has been accredited to meet the specifications of the National Occupational Standard for Industrial Meat Cutter.

LEVEL 2: Occupations

OCCUPATIONAL TRAINING

INDUSTRIAL MEAT CUTTER

- Course Accredited to Meat NOS

COMMON CORE

- Principles of Food Safety
- Quality Control and Quality Assurance Systems
- Intro to Process Control

By completing his Level 2, Mark **will receive credit for the knowledge portion of the Level 2 Meat Cutting Certification**. This means he will only need to complete the performance evaluation **to receive the additional credential** of his Level 2 Meat Cutting Certification.

If Mark decides later on that he wants to move onto becoming a Supervisor, he can start to move through Level 3.





Example 3

Ann has worked for several years in a non-food related manufacturing environment. She has often worked as the Team Lead in her group. There is a new food processing factory being built in her town within the next year. She wants to set herself up with the best possible chance of getting a supervisory position in the new factory.

Though Ann wants to focus on achieving a supervisory-related designation, she does not have a food and beverage processing background. To address this gap she will **start by taking the Common Core of Level 1**. By demonstrating her desire to learn and continuously improve, she will have an advantage during the hiring process.

Ann can **continue her learning** even after she achieves her position, to enhance her skill set and earn her Level 3 designation. She wants to concentrate on supervising production, so she chooses associated electives.

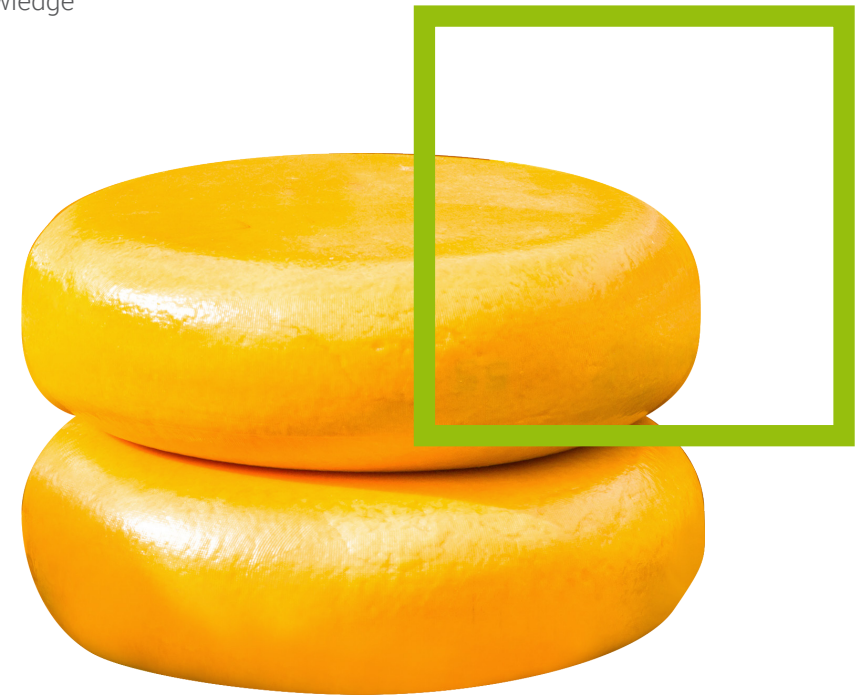
LEVEL 1: Foundations
COMMON CORE
<ul style="list-style-type: none"> • Intro to Food Processing Industry <ul style="list-style-type: none"> • Basics of Food Safety • Intro to Quality Control and Assurance <ul style="list-style-type: none"> • GMPs and SOPs • Workplace & Industrial Safety <ul style="list-style-type: none"> • Workplace Sanitation

LEVEL 3: Supervisor
FUNCTION-SPECIFIC ELECTIVES
FOOD PRODUCTION
<ul style="list-style-type: none"> • Food Production Workflow Management • Food Safety and Quality Compliance
WORKFORCE MANAGEMENT
<ul style="list-style-type: none"> • Hire Employees • Train Employees
COMMON CORE
<ul style="list-style-type: none"> • Supervise Employee Performance <ul style="list-style-type: none"> • Monitor OH&S and Security • Build a Respectful Workplace • Leadership for Supervisors • Monitor Budget Performance • Intro to Regulatory Environment

SKILL GAPS

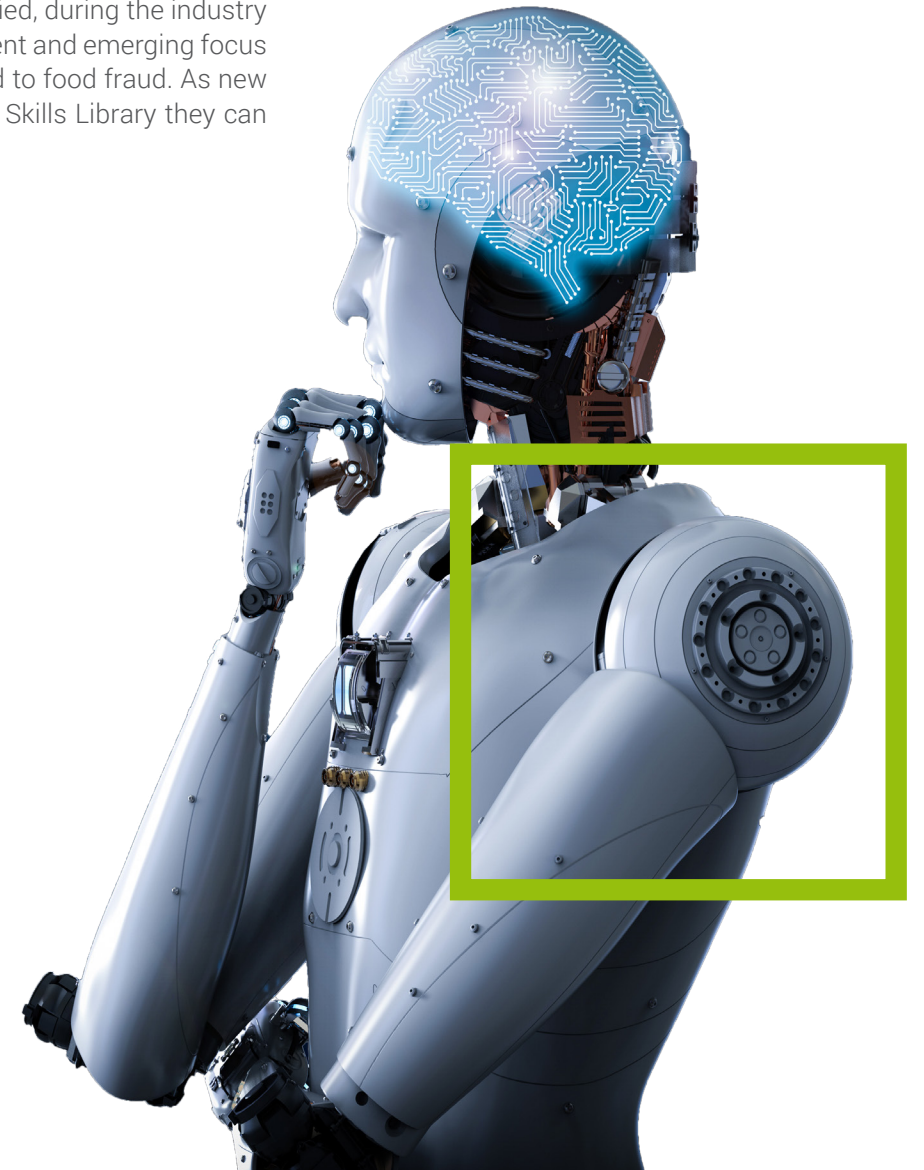
During the industry consultation phase, SMEs identified a number of new and emerging skills that do not currently appear in the Master Competency Framework/Food Skills Library; and, as a result, do not appear in the LRF. This information was captured so that these skills can be developed and added to the Framework/LRF in future projects. They include:

- Establishing a food safety culture
- Implementing a culture of food safety
- Skills around food fraud
- Skills added to Food Safety Management Systems, at end of develop prerequisites/develop HACCP – new subskills: revise programs based on annual audits (incl review and analyze results, evaluate how to address, create strategy to address, action plan, follow up, etc.)
- Develop Quality Management System content should include process control data analysis
- Suggested addition of “Processes” to Common Core Course Develop Policies and Procedures may require the development of a competency unit such as “Develop Organizational/Operational Processes”.
- Under Food Production Management, there needs to be additions to knowledge and performance related to “monitor process control statistics”



FLEXIBILITY FOR THE FUTURE

The Learning and Recognition Framework is **modularized and flexible**. This allows for **additions and changes over time**. For instance, FPSC hosted a Future Skills Roundtable in 2018 during which representatives of the sector discussed skills needed in the future. Suggested new skills, such as those regarding innovation (e.g. build a culture that supports innovation) could be added to the Master Competency Framework and then to the appropriate level of the Learning and Recognition Framework. For instance “build a culture that supports innovation” may be inserted as an elective or common core at Level 3 or 4. In addition, as previously identified, during the industry consultation for the LRF in 2019, new skill gaps were identified, such as recent and emerging focus on building a culture of food safety within an organization and skills related to food fraud. As new skills are identified and built for the Master Competency Framework/Food Skills Library they can be integrated into the LRF.



NEXT STEPS

A woman with short blonde hair, wearing a white lab coat, is focused on her work in a laboratory. She is holding a test tube in her right hand and looking down at it. The background is slightly blurred, showing laboratory equipment and shelves. The entire image has a green tint.

NEXT STEPS IN THE DEVELOPMENT OF THE LRF



In the medium to long term, the next stages that need to be carried out in order to implement the LRF can begin. These next steps below include recommendations from SMEs collected during the industry consultation phase of the LRF development. These will potentially involve:

- 1. Address skill gaps.** SMEs at the industry consultation and SMEs involved in other FPSC activities such as the Future Skills Roundtable have identified skill gaps. These recommended new skills should be full developed and validated so that they can be added to the Master Competency Framework/Food Skills Library and integrated into the LRF.
- 2. Assign learning outcomes to all core and elective options by Level.** These can be created based on the skills in the Master Competency Framework/Food Skills Library and confirmed through consultation with sector subject matter experts. It is expected that as this is a very large-scale activity, it should be done in stages. For instance, the first project/priority might be to develop learning objectives for the Workplace Essentials and Level 1 Common Core and electives.
- 3. Validate common core learning outcomes with SMEs.** During the industry consultation, it was determined that special attention needs to be paid to the development of the Common Core units. Because these areas are largely knowledge-based, the content that is included, the level of that content and how that integrates with the Common Core learning outcomes at other levels will be critical. SMEs at the industry consultation sessions felt that there must be further focus groups to have SMEs review the details of the LOs for these units.
- 4. Undertake industry consultation to set minimum number of electives at Levels 3 and 4.** As the learning outcomes are developed for the electives at each level, industry consultation should be conducted to revisit the question as to how many elective credits/courses will be required at Levels 3 and 4. This may done in a focus group or through distance means

- 5. Assess and update FPSC courses.** After the framework is set, existing FPSC courses should be analyzed and potentially revised to match the levels, learning objectives and the audience. As part of this current project, a comparison between existing courses and the model framework was completed. In some cases, several existing courses could map across different levels because they were not set for a specific audience (i.e. beginning in the industry versus working as a manager). This activity should help to focus some of the existing courses on their target audiences. It will ensure that all of the training and tools that FPSC currently holds map into the overall framework.
- 6. Develop new courses, as applicable.** FPSC may need or want to develop new courses to fill gaps in the framework where no courses/learning currently exists.
- 7. Accredite courses/learning offered by others.** FPSC can use the framework and learning objectives to develop a system to accredit employer training, private training and public institutions' offerings. If courses/programs/learning is assessed and meets the required learning objectives, learners could achieve credit within the LRF. This incentivizes learning and helps to professionalize the sector, while providing benefits for all offering high-quality training to the sector.
- 8. Establish a process for prior learning assessment.** As the LRF system and processes become more complete and comprehensive, FPSC will benefit from establishing a process for assessing individuals' prior learning. This will allow learners to receive credit related to specific LRF units for previously achieved learning.

Accreditation will allow for FPSC Certificates to be related to other training in the marketplace and will provide for some certainty of quality and consistency (that it meets national standards) in the training being provided by others.

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(Continued on next page...)

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