

## Program Number 31-623-1 Technical Diploma • Three Terms

### ABOUT THE PROGRAM

Food Manufacturing and Processing is a unique technical diploma program designed with the help of local food industry partners to meet the needs of the workplace by providing the knowledge, skills, and abilities essential to food production. Employment in food manufacturing continues to remain strong, even with changes in the economy. This program is a combination of sanitation, hazard analysis and critical control points, lean manufacturing principles, quality concepts, and high speed packaging. Graduates of this program are prepared for entry level leadership roles in the food manufacturing industry.

### PROGRAM OUTCOMES

- Develop critical thinking and problem-solving skills
- Apply appropriate regulations and guidelines
- Identify, monitor, evaluate and report health and sanitation hazards
- Demonstrate ability to set up, operate and monitor production processes
- Apply good manufacturing processes
- Apply tactics and strategies in utilization of quality improvement processes

### ADMISSIONS STEPS

- Work with Admissions Specialist to:
  - Submit Application and \$30 Fee
  - Complete an Assessment for Placement (Accuplacer or ACT)
  - Submit Official Transcripts (High School and Other Colleges)
- Meet with Program Advisor/Counselor to Discuss Program Details

### APPROXIMATE COSTS

- \$132 per credit (resident)
- \$198 per credit (out-of-state resident)
- Other fees vary by program (books, supplies, materials, tools, uniforms, health-related exams, etc.) Visit [gotoltc.edu/payingforcollege](http://gotoltc.edu/payingforcollege) for details.

### PLACEMENT SCORES

Accuplacer/ACT scores will be used to develop your educational plan. Contact your program advisor/counselor for details.

### CAREER & EDUCATION ADVANCEMENT OPPORTUNITIES

LTC credits transfer to over 30 universities. For more information visit [gotoltc.edu/transfer](http://gotoltc.edu/transfer).

### CONTACT

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| Catalog No.   | Class Title                                 | Credit(s)       |
|---------------|---|-----------------|
| <b>Term 1</b> |   |                 |
| 31462341      | Industrial Technology - Production          | 3               |
| 10623103      | Introduction to Manufacturing Lab Science   | 2               |
| 10804107      | College Mathematics                         | 3               |
| 10103124      | Introduction to MS Project - Level 1        | 1               |
| 10623104      | Food and Lab Practices                      | 2               |
| 10623101      | Quality Concepts                            | 3               |
|               |   | <b>14</b>       |
| <b>Term 2</b> |   |                 |
| 31462340      | Industrial Technology - Packaging           | 1               |
| 10623105      | Applied Food Microbiology                   | 3               |
| 10196190      | Leadership Development                      | 3               |
| 10623106      | Food Processing Regulations                 | 2               |
| 10623118      | Lean Manufacturing Overview                 | 3               |
| 10801197      | Technical Reporting                         | 3               |
|               |   | <b>15</b>       |
| <b>Term 3</b> |   |                 |
| 10804120      | Statistics                                  | 3               |
| 10623107      | Dairy, Meat & Poultry Science               | 2               |
| 10109161      | Sanitation Sterilization in Food Production | 2               |
| 10623161      | Hazard Analysis in Food Production          | 3               |
| 10623110      | Lean Six Sigma - Measure & Analyze          | 4               |
|               |   | <b>14</b>       |
|               |   | <b>TOTAL 43</b> |

*Curriculum and Program Acceptance requirements are subject to change. Program start dates vary; check with your advisor/counselor for details.*



**APPLIED FOOD MICROBIOLOGY**...provides an overview of the relationship of microorganisms to foodborne illness and intoxications. Requires no previous knowledge or experience with biology. Includes discussion of the organisms commonly identified in foodborne illness while exploring how microorganisms can affect food quality, spoilage, and safety. Explores the growing use of probiotics with the food industry. Lab activities include techniques and procedures used in the identification and qualification of pathogens.

**COLLEGE MATHEMATICS**...is designed to review and develop fundamental concepts of mathematics pertinent to the areas of: 1) arithmetic and algebra; 2) geometry and trigonometry; and 3) probability and statistics. Special emphasis is placed on problem solving, critical thinking and logical reasoning, making connections, and using calculators. PREREQUISITE: 10834109 Pre-Algebra or equivalent

**DAIRY, MEAT AND POULTRY SCIENCE**...introduces the fundamentals of food science in meat, dairy and poultry in the inspection, product evaluation, fabrication, product processing, and preservation on all food products. Physical, chemical, physiological, and microbiological properties of food as related to composition and quality. Fundamentals in processing techniques, product quality assurance, and food safety programs in dairy, in products obtained from animals (meat, eggs, dairy, by-products).

**FOOD AND LAB PRACTICES**...introduces participants to good manufacturing practices, good lab practices, standard operating procedures, allergens, and labeling including ingredients and label requirements. Students will be able to document control practices.

**FOOD PROCESSING REGULATIONS**...prepares the learner to identify, locate, understand, and apply the federal and state regulations governing the food industry to the manufacturing site and processing operations. Review USDA product recall regulations and third party audits.

**HAZARD ANALYSIS IN FOOD PRODUCTION**...develops the ability to identify the critical safety issues involved in the handling, processing, packaging and sanitation control for safe food production. Students will analyze hazards and critical control points in food production methods and develop record keeping and verification skills needed for the implementation and maintenance of a HACCP plan. Case studies in poultry, dairy processing, cheese, meat, and thermal vegetable processing will be examined.

**INDUSTRIAL TECHNOLOGY - PACKAGING**...introduces participants to the types of packaging machinery and processes. Topics will include; safety, packaging materials, package sealing, machine operations, and food safety. Participants will operate a packaging machine and perform basic maintenance and troubleshooting of a packaging machine. The course is taught at Plymouth High School on the Viking-Masek E250 high speed vertical packaging machine.

**INDUSTRIAL TECHNOLOGY-PRODUCTION**...introduces participants to the basics of workplace safety, quality processes, print reading, production processes and basic maintenance awareness. Learners will experience both classroom and lab/shop activities. Upon successful completion learners will be well prepared to pass the Manufacturing Skill Standards Council examinations in Safety, Quality Practices and Measurement, Manufacturing Processes & Production and Maintenance Awareness.

**INTRODUCTION TO MANUFACTURING LAB SCIENCE**...introduces the learner to beginning laboratory concepts and procedures. Emphasis will be placed on general laboratory safety, basic equipment utilization, and calibration techniques. An introduction to scientific inquiry will be addressed. Proper techniques in documentation as it relates to quality control in verification of a quality system will be introduced. Concepts in data analysis will be reviewed as it relates to creation of a laboratory notebook.

**INTRODUCTION TO MICROSOFT PROJECT - LEVEL 1**...is a software tool used to enter, analyze, track, and summarize information about a project. This course prepares the learner to enter and edit tasks, durations, task dependencies, and lag and lead times. The learner will use the project time scale and calendar, review project statistics, work with a network diagram, create and assign resources, and track the progress of a project. This class is offered in a self-paced format.

**LEADERSHIP DEVELOPMENT**...allows the learner to apply the skills and tools necessary to fulfill his/her role as a modern leader. Each learner will demonstrate the application of evaluating leadership effectiveness and organization requirements, individual and group motivation strategies, implementing mission and goals, ethical behavior, personal leadership style and adaptation, impacts of power, facilitating employee development, coaching, managing change, and effective conflict resolution. COREQUISITE: Microsoft PowerPoint skills or equivalent

**LEAN MANUFACTURING OVERVIEW**...expands the learner's ability to develop skills to prioritize and sequence work, execute work plans, implement controls, and create and analyze performance evaluations. It allows the student to explore the execution of quality initiatives and continuous improvement plans in addition to the control and handling of inventories.

**LEAN SIX SIGMA - MEASURE AND ANALYZE**...provides the student with skills and tools to collect and analyze data to solve problems and improve processes within an organization. Various techniques for process mapping are explored including SIPOC, FMEA, VSM, standard work sheets, and spaghetti diagrams. Statistical tools are explored including probability, confidence intervals, measurement systems analysis, hypothesis testing, and TAKT time analysis to create and implement a data collection plan. MiniTab introduction is included.

**QUALITY CONCEPTS**.... provides an overview of quality systems, methods and analysis using Minitab software. Basic quality philosophies such as Deming's principles, continuous improvement, quality costs, supplier relations and inspection theory will be presented. The components of a basic quality system compatible with ISO9000 and Six Sigma will be explored. Minitab software will be taught and utilized to collect and analyze data. Techniques such as pareto, trend analysis, histograms, cause and effect diagrams and corrective/preventive action techniques will be applied to the data in order to address problems and improve processes. COREQUISITE: Microsoft Word and PowerPoint skills or equivalent

**SANITATION STERILIZATION IN FOOD PRODUCTION**...covers how every food production operation needs to have a food safety system in place that is designed specifically to guarantee that the food being processed and packaged will be safe to eat. In this course learners will examine the microbiology behind the sanitation and sterilization practices in place in the food processing and production industry. Learners will gain a keen perspective on the importance of sanitation and sterilization and will practice sanitation and sterilization techniques.

**STATISTICS**...is an introductory statistics course. Topics covered include types of statistics, measurement standards, data collection, data analysis, inspection and sampling, data control charts, probability, and auditing.

**TECHNICAL REPORTING**...provides students with the skills to prepare and present oral and written technical reports. Types of reports may include lab and field reports, proposals, technical letters and memos, technical research reports, and case studies. PREREQUISITE: 10831103 Intro to College Wrtg or equivalent and COREQUISITE: 10838105 Intro Rdg & Study Skills equivalent