All for the Beef
Basic Meat Cookery

a teaching and learning resource to support Career and Technology Studies FOD2100 Basic Meat Cookery

SINCE 1874
Alberta Beef

Alberta Beef Producers (ABP) represents more than 18,000 beef cattle producers who are stewards of the land and water resources provided by this province. Our industry is both progressive and historic, highly technical, yet grounded in the practical. From family ranches and farms passed down through generations, to new state-of-the-art feeding and breeding operations, Alberta's producers are a proud reflection of the beef industry. Run by producers for producers, ABP is dedicated to maintaining a truly sustainable, competitive industry for the benefit of all Albertans.

Alberta Beef Producers is proud to support education and provide these resources to teachers and students as a tool for the Alberta Career and Technology FOD2100 course.

The **All for the Beef: Basic Meat Cookery** program resources were conceptualized and developed for Alberta Beef Producers by the education experts and design team at **InPraxis Learning**, led by:

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Alberta Beef thanks our teacher reviewers, who provided valuable suggestions and feedback during the development of the **All for the Beef: Basic Meat Cookery** program resources.

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Julianne Whitburn, Calgary

Alberta Beef also appreciates the support provided by **Canada Beef** through their generous sharing of information, recipes and images used throughout the program components.

contents

The **All for the Beef: Basic Meat Cookery** program components include interactive pdf documents that can be accessed on the Alberta Beef website at **www.albertabeef.org/education**.

- **Explore Meat Cookery Student Sourcebook**
- **Market Cards Sourcebook**
- **Recipe Cards Sourcebook**
- **Chef Safety Skill Cards Sourcebook**
- The **All for the Beef: Basic Meat Cookery Test Bank**

Information to support student learning is integrated throughout this teaching resource and supports, reinforces or expands on information provided to students in the **Explore Meat Cookery Student Sourcebook**.

about

Career and Technology Studies FOD2100: Basic Meat Cookery course asks students to learn the nutritional value of meat and differentiate between various cuts of meat. Students apply this knowledge to the safe handling, storage, preparation and presentation of meat dishes.

All for the Beef: Basic Meat Cookery provides a range of sources and student learning tasks that meet the learning outcomes in the **CTS FOD2100: Basic Meat Cookery** course. These sources and learning tasks can and should be supplemented and supported with additional learning resources and adapted to best meet the learning needs, experiences, interests and contexts of students.

The All for the Beef: Basic Meat Cookery program includes approaches, strategies, tools, assessment and student learning support for both independent and classroom lab-based learning contexts. Consistent with the approach and structure of CTS courses, this resource also facilitates multiple pathways and encourages students to explore and learn based on their interests, prior knowledge and experiences.

The All for the Beef: Basic Meat Cookery program includes the following teacher and student components, all accessed on the Alberta Beef website at www.albertabeef.org/education:

- This All for the Beef: Basic Meat Cookery teaching resource
- **Explore Meat Cookery** Student Sourcebook
- **Market Cards** Sourcebook
- **Recipe Cards** Sourcebook
- **Chef Safety Skill Cards** Sourcebook
- The All for the Beef: Basic Meat Cookery **Test Bank**

Image courtesy of Canada Beef http://canadabeef.ca

All for the Beef: Basic Meat Cookery provides practical, real world focused learning tasks that start with what students should be familiar with – food choices in their daily diets – and extends their knowledge and skills to cooking science and applications.

The test bank and answer key can be requested by email from **Alberta Beef** at www.albertabeef.org/education.

Students require access to a personal or commercial food preparation facility and must have completed **CTS FOD1010: Food Basics** as a prerequisite course.

meeting the needs of FOD2100

All for the Beef: Basic Meat Cookery provides students with opportunities to develop and strengthen competencies through their experiences in this **CTS FOD2100: Basic Meat Cookery** course.

Critical thinking involves the synthesis, analysis and evaluation of information to make informed health and life choices. Students use criteria to make informed decisions regarding nutrition and as consumer.

Problem solving involves exploring options, anticipating consequences and taking action to make health and life choices. Students balance and assess food choices and approaches to creating healthy dishes and meals.

Managing information involves accessing, interpreting and applying information to support healthy choices and well-being. Students use a variety of resources to consider how food trends and concerns affect food choices and preparation.

Creativity and innovation involves exploring or adapting supports for emotional, intellectual, physical, social and spiritual well-being. Students demonstrate initiative and resourcefulness to create and prepare healthy dishes and meals.

Communication involves exchanging ideas and information in oral, written or nonverbal formats to foster well being. Students share information about food choices and exchange recipes and meal preparation approaches.

Collaboration involves working with others to nurture growth, learning and healthy lifestyles for self and others. Students work collaboratively to plan, prepare and evaluate food dishes.

Cultural and global citizenship involves making informed and responsible choices that contribute to the well-being of communities. Students explore the scope and importance of food production in personal and societal contexts.

Personal growth and well being involves balancing emotional, intellectual, physical, social and spiritual well-being to enable students to reach their full potential. Students take responsibility for their own food choices, safe kitchen practices and food safety.

All for the Beef: Basic Meat Cookery focuses on three general learning goals.

1. Know the value, range, sources and use of meat to make informed food choices

2. Understand approaches and strategies used to cook with meats

3. Cook safely with meat products

Within each of these three general goals, students develop competencies, knowledge and skills and meet the specific learning outcomes in the **FOD2100: Basic Meat Cookery** course. The charts that follow illustrate the learning focus for each goal, with a correlation to these specific learning outcomes.

All CTS courses are one credit and can be completed with a flexible time frame. A time allocation for each of the three general learning outcomes provides some general guidelines for hours that students may spend to complete learning activities and meet required curricular outcomes. Use the checkboxes to keep track of your coverage of learning outcomes.

General learning goal	Learning outcomes	Possible time allocation
1 Understand the value, range and use of meat products to make informed food choices	**1. Identify the nutritional importance and current health concerns of meat in the diet** ☐ **1.1** Describe the nutritional importance of meat, including: • Complete protein • Varying levels and types of fat • Iron ☐ **1.2** Describe current concerns about meat, including: ☐ 1.2.1 Health concerns; e.g., cholesterol, fat, amount ☐ 1.2.2 Safety concerns; e.g., cooking ground beef ☐ 1.2.3 Production concerns; e.g., hormones, bovine spongiform encephalopathy (BSE), Escherichia coli (E. coli) **2. Examine the significance of Alberta's meat industry to beef production from pasture to plate** ☐ **2.1** Examine the scope and importance of Alberta's meat industry ☐ **2.2** Identify the key steps in transforming the live animal into wholesale and retail cuts **3. Describe the significance of inspecting and grading of meat** ☐ **3.1** Discuss criteria for evaluating meat quality ☐ **3.2** Interpret the grading system for beef	6 to 7 hours

General learning goal	Learning focus	Possible time allocation
2 Know approaches and strategies used to cook with meat	**4. Identify and describe the factors that affect the tenderness of meat, both before and as a result of cooking** ☐ **4.1** Describe the factors that contribute to the tenderness of meat ☐ **4.2** Describe the key divisions (wholesale cuts) and the retail cuts of the carcass, and identifying the degree of tenderness of each cut ☐ **4.3** Describe the effect of heat on liquids, proteins and fats in meat **5. Identify and describe appropriate cooking methods for a variety of meat cuts** ☐ **5.1** categorize and describe the various types of dry-heat and moist-heat cooking used with meat ☐ **5.2** compare moist-heat and dry-heat cooking methods and examine their effect on meat, focusing on: ☐ 5.2.1 preserving tenderness in tender cuts ☐ 5.2.2 developing tenderness in less tender cuts ☐ 5.2.3 maximizing yields ☐ 5.2.4 determining portion sizes ☐ 5.2.5 achieving optimum flavour and palatability ☐ 5.2.6 identifying and achieving correct doneness according to internal temperature ☐ **5.3** explain chemical and mechanical methods of tenderizing meat prior to cooking, including: ☐ 5.3.1 marinating in acid ☐ 5.3.2 enzymatic tenderizers ☐ 5.3.3 pounding, scoring and grinding	8 to 10 hours

General learning goal	Learning outcomes	Possible time allocation
3 Cook safely with meat	**6. demonstrate knowledge and skills in the planning, preparing and evaluating the preparation of meat** ☐ **6.1** prepare a minimum of five recipes using various cuts of meat, focusing on: ☐ 6.1.1 one moist-heat method; e.g., stew, swiss steak, rouladen, curry, beef bourguignon ☐ 6.1.2 one dry-heat method; e.g., meatballs, hamburgers, kabobs ☐ 6.1.3 one marinated method; e.g., kabobs ☐ 6.1.4 one mechanical tenderized method; e.g., hamburger, swiss steak ☐ 6.1.5 one ethnic or other preparation; e.g., kabobs, rouladen, spaghetti and meat sauce, tacos ☐ **6.2** describe how to determine doneness in cooked beef; e.g., rare, medium, well-done **7. identify and demonstrate safe and sanitary practices** ☐ **7.1** maintain a clean, sanitary, safe work area ☐ **7.2** apply universal precautions related to: ☐ 7.2.1 personal protective equipment (PPE); e.g., hair coverings, aprons, gloves ☐ 7.2.2 hand-washing techniques ☐ 7.2.3 infectious diseases ☐ 7.2.4 blood-borne pathogens ☐ 7.2.5 bacteria, viruses, molds ☐ 7.2.6 safety and first-aid applications; e.g., back safety, cuts, slip and trip hazards ☐ **7.3** use all materials, products and implements appropriately ☐ **7.4** clean, sanitize and store materials, products and implements correctly ☐ **7.5** dispose of waste materials in an environmentally safe manner	**8 to 9 hours**

The **All for the Beef: Basic Meat Cookery** program also provides opportunities to develop, reinforce and assess the basic competencies that are part of all CTS courses, including career opportunities and options.

using this resource

The **All for the Beef: Basic Meat Cookery** program models processes that chefs and cooks use to select foods, understand nutritional implications and prepare, create and present healthy dishes with meat products.

Icons indicate different processes that are part of daily cooking and food preparation skills. These icons are found on student cards and learning sources. Student cards are one-page resources with a specific, skill-based focus. The learning sources are handouts for students that provide information and questions intended to explore concepts and skills.

The **marketplace icon** identifies information related to selecting and shopping for different meat products, including those provided in the **Market Cards Sourcebook**.

The **cook icon** indicates recipes and is found in the **Recipe Cards Sourcebook**.

The **culinary practices icon** identifies and highlights tips, approaches and strategies for cooking with meat. It is found in the culinary practice recipes provided in the **Explore Meat Cookery Student Sourcebook**. These recipes highlight different culinary practice skills.

The **food safety skills icon** emphasizes safe and sanitary kitchen working skills and food safety practices, including tips found on the **Chef Safety Skills Cards Sourcebook**.

The **question icon** identifies questions for students as they work through information in the **Explore Meat Cookery Student Sourcebook** learning sources.

The **prep icon** highlights preparation necessary for cooking, including knowledge of meat choices, grades, quality and nutritional implications.

The **Alberta Beef logo** is used to identify supporting and background information and to identify handouts and tools intended for use with students.

All for the Beef: Basic Meat Cookery components can be accessed on the **Alberta Beef** website at **www.albertabeef.org/education**.

All student learning sources and templates include active fields that students can use to digitally input responses. These learning sources and templates should be saved on students' computers before they input any text.

Once sources or templates are saved, students can open and edit their text and resave the source. Alternatively, students can construct responses with a word processing program, then copy and paste final responses into the fields on the learning sources or templates. Have students print or email their completed learning sources and templates for review, sharing with peers or assessment.

Other icons signal teaching strategies and supports that are integrated throughout this resource:

The **prepare icon** tells you what to prepare for the upcoming activity.

The **scaffold learning icon** indicates alternative strategies and approaches to support different learning needs and contexts of students.

The **extend learning icon** indicates optional suggestions for extending and reinforcing concepts and skills and challenging students to apply their learning to different contexts.

The **video icon** provides weblinks to cooking and recipe process videos that are available on the Internet.

The **weblink icon** indicates websites that provide additional information, sources or resources.

This **assess learning icon** signals **formative assessment tips** that can be used to monitor student progress and adjust teaching and learning approaches and pacing.

This **assess learning icon** signals **summative assessment strategies** that can be used to evaluate completion of learning requirements for the **FOD2100: Basic Meat Cookery** course.

Each section of **All for the Beef: Basic Meat Cookery** includes teaching suggestions, scaffolding and extend learning strategies and assessment tips. Sections can be implemented through a variety of approaches.

Use the teaching and learning strategies in each section as an integrated approach to cooking with meat products.

Select and structure learning activities within whole class lab-based settings or as independent learning tasks for individual or groups of students.

Image courtesy of Canada Beef http://canadabeef.ca

integrating technology

Digital creation tools can support exploration, research, project creation and sharing. The following apps and online programs are referenced as options in different activities in this teaching resource. Note that some online programs may require sign-in information but do offer free versions.

Some of these programs may also require varying degrees of support when used with students, while others may be more suitable for teacher use. Check for privacy settings in these apps and online programs if you do not want to make students' work public.

Canva, found at www.canva.com, is a web-based graphic design tool and app that can be used to design posters, infographics, presentations, social media and photo collages. Students can sign up with a Google account or through an email address and password.

HyperDoc, found at http://hyperdocs.co, uses interactive Google Docs or Slides that can be created as an instructional activity or lesson. Links to videos, trusted sources, class Padlet boards or other programs and apps can be embedded in a HyperDoc.

Glogster, at http://edu.glogster.com/, is an online platform that allows you or your students to create interactive online posters, with text, images, graphics, audio and videos, and share them with others.

Google Drive provides online storage and creation of **Google Docs**, **Slides**, **Sheets** and **Forms**. It can be used to hold and share learning tasks and sources.

Google Classroom is a set of productivity tools that includes email, documents, and storage. Classroom was designed to save time, keep classes organized and improve communication. Classroom can be used to manage and share learning tasks and sources.

Google Keep is a note-taking app that integrates with Google Docs. Notes, links, images, screenshots and videos can be shared.

Kahoot, at www.getkahoot.com, is a platform that allows students to create learning games from a series of multiple choice questions, with videos, images and diagrams. Students can create kahoots based on what they learn about cooking with meat.

Prezi, found at www.prezi.com, is a presentation tool that can be used as an alternative to traditional slide making programs such as PowerPoint. Instead of slides, Prezi makes use of one large canvas with pan and zoom capabilities. Students can use this tool to create and share recipe collections and learning products.

Padlet, found at www.padlet.com, is a virtual wall that allows sharing of any content (images, videos, documents, text) on a common topic.

Pinterest, found at www.pinterest.com, is a social network that allows you to visually share, and discover, images or videos to your own or others' boards. Padlet and Pinterest boards can be set up to share learning products and recipes with other teachers and classrooms.

notes

at a glance

All for the Beef: Basic Meat Cookery is organized into three sections:

1. **Make food choices**
2. **Build cooking skills**
3. **Cook**

The chart provides an 'at a glance' overview of the sequence and scope of activities, learning sources and assessment options.

Learning focus	Learning sources	Assessment
1 make food choices *Know the value, range and use of meat products to make informed food choices* • Identify a range of meat products in dishes and meals • Analyze nutritional values and importance of meat in the diet • Describe current health, safety and production questions or concerns about meat • Examine Alberta's meat industry • Explore the importance of the meat inspection and grading process • Understand the divisions and tenderness of wholesale and retail cuts of beef	The following materials and student learning resources are referenced and used in **make food choices**. Preview the learning activities for more detail on their use. ☐ Ingredients for the introductory "challenge" **Cheeseburger Roll Ups** ☐ **learning source 1-1: A range of meat products** (**Explore Meat Cookery: pp. 5-8**) ☐ A selection of magazines or online sources with food and meal illustrations ☐ **learning source 1-2: Market choices** (**Explore Meat Cookery: pp. 9-15**) ☐ **learning source 1-3: Nutritional choices** (**Explore Meat Cookery: pp. 16-21**) ☐ **market cards** (**Market Cards Sourcebook**) ☐ **learning source 1-4: Production factors** (**Explore Meat Cookery: pp. 22-29**) ☐ **comparison chart** (**Explore Meat Cookery: p. 68**) ☐ **mind map** (**Explore Meat Cookery: p. 69**) ☐ **t-chart** (**Explore Meat Cookery: p. 71**) ☐ **timeline** (**Explore Meat Cookery: p. 70**) ☐ **market card template** (**Market Cards Sourcebook**)	Assess students formatively throughout the teaching and learning activities and products that students create in this section. Use the **All for the Beef: Basic Meat Cookery checklist (pp. 21-22)** to collaboratively track individual students' progress and encourage them to reflect on their own learning. Assess students summatively by assigning a take-home quiz that asks them to ***design a meal***, complete with a shopping list and nutritional information for the main ingredients. Preview this assessment on page **32**. Assess students summatively by selecting questions from the **All for the Beef: Basic Meat Cookery Test Bank**.

Learning focus	Learning sources	Assessment
2 build cooking skills *Know approaches and strategies used to cook with meat* • Describe the effect of heat on liquids, protein and fats in meat • Explore and compare dry-heat and moist-heat cooking methods to maximize tenderness and yields • Explain chemical and mechanical methods of tenderizing meat • Complete evaluation forms for three or four different meat cooking techniques	The following materials and student learning resources are referenced and used in **build cooking skills**. Preview the learning activities for more detail on their use. ☐ Ingredients for a selection of "culinary practice" recipes that illustrate cooking and tenderizing methods for different cuts of meat ☐ **learning source 2-1: Safe handling practices for meat (Explore Meat Cookery: pp. 30-34)** ☐ **chef safety skills cards** (**Chef Safety Skills Cards Sourcebook**) ☐ **learning source 2-2: Culinary practices recipes** (**Explore Meat Cookery: pp. 35-62**) ☐ **learning source 2-3: Recipe evaluation (Explore Meat Cookery: pp. 63-65)** ☐ **market cards** (**Market Cards Sourcebook**) ☐ **recipe cards** (**Recipe Cards Sourcebook**) ☐ **recipe analysis chart** (**Explore Meat Cookery: p. 74**) ☐ **triple t-chart** (**Explore Meat Cookery: p. 73**) ☐ **if/when then chart** (**Explore Meat Cookery: p. 72**) ☐ **Venn** (**Explore Meat Cookery: p. 75**)	Assess students formatively throughout the teaching and learning activities and products that students create in this section. Use the **All for the Beef: Basic Meat Cookery checklist (pp. 21-22)** to collaboratively track individual students' progress and encourage them to reflect on their own learning. Assess students summatively by challenging them to complete their own ***if/when then chart*** that identifies and describes cooking processes in a recipe of their choice. Preview this assessment on page **48**. Assess students summatively by selecting questions from the **All for the Beef: Basic Meat Cookery Test Bank**.

Learning focus	Learning sources	Assessment
3 cook *Cook safely with meat products* • Demonstrate knowledge and skills by preparing at least five recipes with various cuts of meat • Demonstrate how to determine doneness in cooked beef • Cook and demonstrate each dish through in-class participation, video or photo evidence • Individually evaluate at least one of the presentation dishes cooked for nutrition, preparation time and tasks, cooking processes and quality standards • Demonstrate safe and sanitary kitchen practices	The following materials and student learning resources are referenced and used in **make food choices**. Preview the learning activities for more detail on their use. ☐ Ingredients for a selection of "presentation" meat dishes ☐ **learning source 3-1: Presentation dish planning (Explore Meat Cookery: p. 66)** ☐ **recipe cards** (**Recipe Cards Sourcebook**) ☐ **recipe cards template (Recipe Cards Sourcebook**) ☐ **Venn** (**Explore Meat Cookery: p. 75**) ☐ **recipe analysis chart** (**Explore Meat Cookery: p. 74**) ☐ **chef safety skills cards** (**Chef Safety Skills Cards Sourcebook**) ☐ **learning source 3-2: Presentation dish evaluation** (**Explore Meat Cookery: p. 67**)	Assess students formatively throughout the teaching and learning activities and products that students create in this section. Use the **All for the Beef: Basic Meat Cookery checklist (pp. 21-22)** to collaboratively track individual students' progress and encourage them to reflect on their own learning. Assess students summatively by challenging them to create an ***All for the Beef class blog entry*** that highlights nutritional, processing, handling and cooking information for one meat-based recipe. Preview this assessment on page **62**. Assess students summatively by selecting questions from the **All for the Beef: Basic Meat Cookery Test Bank**.

notes

assessment

All for the Beef: Basic Meat Cookery provides several assessment supports and tools.

Formative assessment tips are integrated throughout the teaching and learning notes in each section of this resource. Formative assessment approaches can include the following strategies:

- Personal reflections that encourage students to apply what they are learning about meat cookery to the food choices they make daily
- Inventories of their past cooking experience and comparisons to what they are learning in the course
- Observations of demonstrated and applied skills during cooking labs
- Application of previous learnings to new content
- Check-in discussion questions

Use the **All for the Beef: Basic Meat Cookery checklist** (pp. **21-22**) to have students self-assess their learning and skill development as they progress through the course.

- Have students check off learning experiences using the "I have..." statements in the second column of the checklist.
- As students gain skills and understandings through these learning experiences, have them check off the "I can..." statements in the first column.

An initial class discussion can provide students with the opportunity to explore occupational and career interests, goals and choices and brainstorm the types of evidence that can support them in a pursuit of these interests. Ask students to revisit knowledge and skills gained from previous foods courses or out-of-school experiences and learning. Home-based students could alternatively be asked to participate in a teacher-led interview.

Encourage students to make connections between what they are learning and potential career or occupational interests as they complete the activities in the course.

Image courtesy of Canada Beef http://canadabeef.ca

In addition to formative assessment strategies, tasks such as the following can be used for **summative assessment** opportunities throughout the course.

- In **make food choices**, students can synthesize their learning about different types of meats by "shopping" for ingredients for a recipe of their choice and analyzing products and nutritional data.

- In **build cooking skills**, students can analyze cooking skills and methods demonstrated or tried through class lab recipes.
- In **cook**, students can apply what they have learned by tracking cooking results and observations in an experience chart.

These summative assessment alternatives can be structured as individual or group assignments that students submit. An **All for the Beef: Basic Meat Cookery criteria checklist** with criteria statements that can be used to create an assessment rubric is provided on pages **23 to 25**. These checklists and criteria statements can be used in the following ways:

- To build assessment criteria for a specific learning task for or with students
- To adapt and combine into task-specific rubrics
- To use as the basis for student-constructed rubrics

Each section provides a **culminating learning task**. **Rubrics** for each of the culminating tasks are provided on pages **26 to 28**. These tasks can be used with approaches such as the following:

- As a culminating assignment provided at the beginning of each section. Discuss assessment criteria for the assignment in advance and use criteria as an advance organizer for what students will learn in the section. Encourage students to complete the assignment as the section's activities are implemented and submit it for credit.
- As a culminating group learning task. Have students work with a small group to complete the learning task and submit for credit. Establish group assessment criteria in advance with students.
- As alternative in-class activities that students complete.

A **rubric template** is also provided on page **29**.

The **All for the Beef: Basic Meat Cookery Test Bank** provides an additional summative assessment tool. Teacher and student versions of the test bank document can be requested from **Alberta Beef** on **www.albertabeef.org/education** and used in the following ways:

- As a final exam for the course. Establish the weight of the exam with students at the beginning of the course.
- As end of section "check-in" quizzes. Select questions from the test bank that address the outcomes in the section. Test questions are organized around outcomes in the **FOD2100: Basic Meat Cookery** course.

The test bank is set up as a Word document. Customized tests or quizzes can be developed by cutting and pasting questions into a separate Word document.

all for the beef checklist

I can...	I have...
make food choices	
☐ Identify a range of meat products in dishes and meals	☐ Assessed meats and meat dishes for nutritional value
☐ Analyze nutritional values and importance of meat in the diet	☐ Explained what a complete protein is
☐ Describe current health, safety and production questions or concerns about meat	☐ Described the nutrients that beef provides, including protein, fats and iron
☐ Assess the importance of Alberta's meat industry	☐ Examined and compared health-related concerns about meat
☐ Explore the importance of the meat inspection and grading process	☐ Identified safety concerns involved with handling and cooking meats
☐ Understand the divisions and tenderness of wholesale and retail cuts of beef	☐ Explained concerns involved with the production of meat, including hormones, BSE and E coli
	☐ Described the steps involved in creating wholesale and retail cuts of beef from pasture to plate
	☐ Described how beef is graded, including the grain, marbling and fat
	☐ Interpreted labels to identify quality and tenderness of different cuts of beef
build cooking skills	
☐ Describe the effect of heat on liquids, protein and fats in meat	☐ Described and compared how heat reacts with liquids, proteins and fats in meat in dry-heat and moist-heat cooking methods
☐ Explore and compare dry-heat and moist-heat cooking methods to maximize tenderness and yields	☐ Observed or applied culinary skills in recipes that illustrate the principles of protein cookery with a meat product
	☐ Observed or applied culinary skills in recipes that illustrate how to preserve tenderness in tender cuts
	☐ Observed or applied culinary skills in recipes that illustrate how to develop tenderness in less tender cuts
	☐ Observed or applied culinary skills in recipes that illustrate how to determine portion sizes and maximize the yield in meat
	☐ Observed or applied culinary skills in recipes that illustrate how to achieve optimum flavour and palatability
	☐ Observed or applied culinary skills in recipes that illustrate how to determine doneness

I can...	I have...
☐ Explain chemical and mechanical methods of tenderizing meat ☐ Complete evaluation forms for three or four different meat cooking techniques	☐ Observed or applied culinary skills in recipes that illustrate how to tenderize meat through mechanical methods, such as pounding and slicing ☐ Observed or applied culinary skills in recipes that illustrate how to tenderize meat with acidic marinades ☐ Observed or applied culinary skills in recipes that illustrate how to tenderize meat with enzymatic marinades
cook ☐ Demonstrate knowledge and skills by preparing at least five recipes with various cuts of meat ☐ Demonstrate how to determine doneness in cooked beef ☐ Cook and demonstrate each dish through in-class participation, video or photo evidence ☐ Individually evaluate at least one of the presentation dishes cooked for nutrition, preparation time and tasks, cooking processes and quality standards ☐ Demonstrate safe and sanitary kitchen practices	☐ Prepared and demonstrated a recipe that uses a moist heat method of cooking ☐ Prepared and demonstrated a recipe that uses a dry heat method of cooking ☐ Prepared and demonstrated a recipe that uses a moist heat method of cooking ☐ Prepared and demonstrated a recipe that uses a marinade ☐ Prepared and demonstrated a recipe that uses mechanical tenderizing ☐ Prepared and demonstrated a recipe with an ethnic or other focus ☐ Classified the doneness of recipes as well done, medium, rare, etc. ☐ Evaluated the nutritional factors, preparation and cooking processes used to prepare a recipe ☐ Applied safe and sanitary kitchen practices ☐ Demonstrated appropriate use of kitchen equipment and implements

criteria checklist

criteria	performance	comments
make food choices Identify a range of meat products in dishes and meals	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
make food choices Analyze nutritional values and importance of meat in the diet	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
make food choices Describe current health, safety and production questions or concerns about meat	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
make food choices Assess the importance of Alberta's meat industry	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
make food choices Explore the importance of the meat inspection and grading process	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
make food choices Understand the divisions and tenderness of wholesale and retail cuts of beef	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	

criteria	performance	comments
build cooking skills Describe the effect of heat on liquids, protein and fats in meat	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
build cooking skills Explore and compare dry-heat and moist-heat cooking methods to maximize tenderness and yields	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
build cooking skills Explain chemical and mechanical methods of tenderizing meat	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
build cooking skills Complete evaluation forms for three or four different meat cooking techniques	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
cook Demonstrate knowledge and skills by preparing at least five recipes with various cuts of meat, through in-class participation, video or photo evidence	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
cook Demonstrate how to determine doneness in cooked beef	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	

criteria	performance	comments
cook Individually evaluate at least one of the presentation dishes cooked for nutrition, preparation time and tasks, cooking processes and quality standards	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
all Demonstrate safe and sanitary kitchen practices	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
all Apply communication and thinking skills to problems and challenges	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
all Demonstrate teamwork skills	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	
all Identify and investigate career roles connected to meat production and cookery	☐ Exceptional ☐ Competent ☐ Basic ☐ Requires more support	

make food choices rubric

Criteria	Great	Yes	Almost	Not yet
Understand the divisions and tenderness of wholesale and retail cuts of beef	☐ Selects and identifies the characteristics of an appropriate cut of beef for the meat dish in the meal	☐ Selects a specific and suitable cut of beef for the meat dish in the meal	☐ Identifies the meat that is used in the meat dish of the meal	☐ Indicates the meat used in the meal
Identify a range of meat products in dishes and meals	☐ Combines interesting dishes, including a meat-based dish, to creatively construct a nutritious meal	☐ Combines appropriate dishes, including a meat-based dish, to create a nutritious meal	☐ Selects limited dishes for the meal	☐ Provides limited dishes with few ingredients for the meal
Analyze nutritional values and importance of meat in the diet	☐ Makes accurate comparisons between the nutritional value of more than two main food ingredients in the meal	☐ Makes adequate comparisons between the nutritional value of at least two main food ingredients in the meal	☐ Provides limited information about nutritional values of a food ingredient	☐ Provides little or no information about nutrition facts
Demonstrate basic competencies	☐ Demonstrates ability to effectively organize, summarize and synthesize information to reflect a balanced meat-based meal	☐ Organizes information appropriately to identify a balanced meat-based meal	☐ Provides limited information about nutritional values of a meat-based meal	☐ Includes little information about nutrition facts of a meat-based meal

build cooking skills rubric

Criteria	Great	Yes	Almost	Not yet
Identify cooking and tenderizing approaches used in a recipe for a specific cut of meat	☐ Connects specific cooking and tenderizing processes used in recipe to the specific cut	☐ Identifies the cooking and tenderizing approaches used with the specific cut	☐ Identifies the cooking and/or tenderizing processes involved in recipe	☐ Identifies few or no cooking processes involved in recipe
Applies understanding of cooking approaches to results of recipe	☐ Analyzes multiple causes and effects of a specific moist or dry heat method, accurately linked to the steps involved in the cooking approach used in the recipe	☐ Describes a relevant cause and effect of a specific moist or dry heat method, accurately linked to at least one of the steps involved in the cooking approach used in the recipe	☐ Identifies a cause and/or effect related to one of the steps involved in the moist or dry heat method used in the recipe	☐ Provides limited descriptions of the cause and/or effect of a cooking approach
Applies understanding of tenderizing approaches to results of recipe	☐ Analyzes multiple causes and effects of a specific tenderizing method, accurately linked to the steps involved in the cooking approach used in the recipe	☐ Describes a relevant cause and effect of a specific tenderizing method, accurately linked to at least one of the steps involved in the cooking approach used in the recipe	☐ Identifies a cause and/or effect related to one of the steps involved in the tenderizing method used in the recipe	☐ Provides limited descriptions of the cause and/or effect of a tenderizing approach
Demonstrate basic competencies	☐ Demonstrates ability to effectively organize, summarize and synthesize information about cooking and tenderizing approaches as they are applied in a recipe	☐ Organizes information appropriately to describe the connection between cooking and tenderizing approaches and the steps in a recipe	☐ Provides limited evidence of organizational skills when connecting cooking or tenderizing approaches to steps in a recipe	☐ Provides little or no evidence of organizational skills

cook rubric

Criteria	Great	Yes	Almost	Not yet
Demonstrates understanding of dry heat or moist heat cooking methods	☐ Demonstrates appropriate and skillful application of appropriate cooking method from a recipe	☐ Demonstrates functional application of appropriate cooking method from a recipe	☐ Demonstrates limited application of appropriate cooking method from a recipe	☐ Demonstrates little or no understanding of appropriate cooking methods
Demonstrates understanding of the function of tenderizing methods (mechanical, chemical)	☐ Demonstrates appropriate and skillful application of appropriate method of tenderizing used in a recipe	☐ Demonstrates functional application of appropriate method of tenderizing used in a recipe	☐ Demonstrates limited application of appropriate method of tenderizing used in a recipe	☐ Demonstrates little or no understanding of appropriate methods of tenderizing
Evaluate at least one of the presentation dishes cooked for nutrition, cooking processes and quality standards	☐ Description and evaluation of the dish provides accurate and appealing assessment of its cooking and tenderizing methods, nutritional value and quality standards	☐ Description and evaluation of the dish adequately assesses its cooking and tenderizing methods, nutritional value and quality standards	☐ Description of the dish identifies aspects of cooking and/or tenderizing methods and nutritional value	☐ Description of dish provides little or no identification of cooking and/or tenderizing methods or nutritional value
Demonstrate safe and sanitary kitchen practices	☐ Description and evaluation of the dish integrates comprehensive knowledge of safe and sanitary kitchen practices that are applied when preparing it	☐ Description and evaluation of the dish indicates knowledge of safe and sanitary kitchen practices that are applied when preparing it	☐ Description of the dish includes limited evidence of safe and sanitary kitchen practices that are applied	☐ Provides little or no evidence of knowledge of safe and sanitary kitchen practices

rubric template

Criteria	Great	Yes	Almost	Not yet
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐

notes

1 make food choices

Student learning sources are provided in the **Explore Meat Cookery Student Sourcebook**. Student learning sources are numbered to correspond to each of the three main sections in this teaching resource. They can be photocopied as a student learning booklet or used as digital PDF files. Fillable fields are provided in each student source.

The **market cards** are used with students in this section and are designed to be printed and/or accessed in different ways.

The **Market Cards Sourcebook** can be accessed on **Alberta Beef's** website at **www.albertabeef.org/education** and the cards displayed on an interactive whiteboard for whole class activities.

Fillable fields are provided on each **market card** and are designed for students to develop and use as references for cooking, handling and serving methods that they find in recipes. These fields can be filled digitally and saved or printed and filled in manually.

Cards can be printed single-sided and used as a classroom or lab set of information. Each set of cards can be placed in binders, a file box or folders. Cards can be printed double-sided for individual or small group use.

The **market card template** can be used to add additional meat products.

Image courtesy of Canada Beef http://canadabeef.ca

Understand the value, range and use of meat products to make informed food choices

A variety of learning tasks introduce students to food choices that involve meats. The activities in make food choices encourage them to identify and understand the importance of meat in daily diets.

The following materials and student learning resources are referenced and used in make food choices. Preview the learning activities for more detail on their use.

- ☐ **learning source 1-1: A range of meat products** (**Explore Meat Cookery: pp. 5-8**)
- ☐ A selection of magazines or online sources with food and meal illustrations

- ☐ **learning source 1-2: Market choices** (**Explore Meat Cookery: pp. 9-15**)
- ☐ **learning source 1-3: Nutritional choices** (**Explore Meat Cookery: pp. 16-21**)
- ☐ **market cards** (**Market Cards Sourcebook**)
- ☐ **learning source 1-4: Production factors** (**Explore Meat Cookery: pp. 22-29**)
- ☐ **comparison chart** (**Explore Meat Cookery: p. 68**)
- ☐ **mind map** (**Explore Meat Cookery: p. 69**)
- ☐ **timeline** (**Explore Meat Cookery: p. 70**)
- ☐ **t-chart** (**Explore Meat Cookery: p. 71**)
- ☐ **market card template** (**Market Cards Sourcebook**)

The learning tasks in **make food choices** can be used to lead students to a summative assessment task. This task can be assessed with the **make food choices rubric** (p. **26**).

Assess students by asking them to ***design a meal***, complete with a shopping list and nutritional information for the main ingredients.

- Have students design their meal, including a meat-based dish with a suitable retail cut of beef. Include the characteristics and suitability of the cut of beef selected for the meal.
- Create a shopping list. Provide an optional challenge by asking students to research the cost of their meal by visiting a grocery store and pricing out the main ingredients.
- Use the **EATracker.ca** website at **www.eatracker.ca** to research nutritional information for the main ingredients in the menu.
- Encourage students to present their meal in a format such as a file folder or digital bulletin board, with a description and photos or illustrations on the front and shopping, pricing and nutritional information inside the folder.

Discuss criteria for assessment with students and either use the **make food choices rubric** or collaboratively create one.

Select from the questions in the **All for the Beef: Basic Meat Cookery Test Bank** for this section. These questions can be obtained by email request on **www.albertabeef.org/education**.

1 teaching notes

Understand the value, range and use of meat products to make informed food choices

food review challenge

Organize an introduction to the course with a ***recipe challenge*** that asks students to review basic food preparation skills they already have from prerequisite Foods courses.

Prepare and set out the following food items at food stations around the classroom, along with the **Cheeseburger Roll Ups** recipe. This **recipe card** is included in the **Recipe Cards Sourcebook**, which can be accessed on the Alberta Beef website at www.albertabeef.org/education.

- Cooked ground beef
- Whole wheat tortillas
- Grated cheese
- Pickles
- Apples
- Ricotta cheese

Assign groups of students to each station and provide them with a time limit to prepare the **Cheeseburger Roll Ups** recipe. Challenge students to create their own lunch or snack versions of the recipe from some or all of the ingredients at their station.

scaffold learning

Demonstrate the **Cheeseburger Roll Ups** recipe to students instead of asking them to cook. Ask students for their ideas for adapting the recipe to different meals or snacks.

Hold a taste test with different ingredients that are used or can be added to the recipe to identify student favourites.

watch videos

As an alternative to the introductory recipe challenge, introduce the course with meat dish videos selected from the **Think Beef** website resources at www.thinkbeef.ca/resources/. Other beef dish videos can be found on the **Blend and Extend** website at www.blendandextend.ca/recipes/videos/.

Recipe and image courtesy of Canada Beef http://canadabeef.ca

prepare

Select a variety of magazines for students to use for the ***introductory dish*** or ***meal search*** activity below. Magazines such as *Canadian Living* and *Chatelaine* often include food and meal sections. Some grocery stores also provide complementary magazines with dishes and meals.

explore weblinks

As an alternative to print magazines in the activity below, have students browse different online food magazines or grocery store ads.

extend learning

Students can be asked to work with a partner or in a small group and use their media search results to create a ***three-meal menu*** for three different meals that include meat-based dishes, including a breakfast, lunch and dinner.

Encourage students to bring examples of favourite recipes from home that include meat products as at least one of the ingredients. Establish a classroom display or create a digital bulletin board resource with these recipes. If appropriate, select from suitable recipes to use as the course progresses.

As a class, brainstorm a list of different types of meat products. Encourage students to discuss how these meat products are – or are not – part of their daily food choices. Provide students with **learning source 1-1: A range of meat products** and ask them to review and respond to the information in this resource. Encourage students to share examples of favourite meat dishes and food combinations in meals.

Provide copies of different magazines at tables or stations. Ask students to form groups at each table. Alternatively, form random groups by numbering students or by preselecting group members.

Provide students with a set amount of time, between 10 and 15 minutes, to identify at least three different meat-based dishes or meals that are represented in the magazines. Tell students that they may find dishes or meals in:

- Images or photographs
- Advertisements
- Food or meal sections

Ask students to create a ***criteria list*** by identifying what appeals to them about different dishes or meals, including taste or smells, food combinations, nutritional value, appearance or presentation and cooking methods. Tell students that they will use these criteria throughout the course to assess recipes they will prepare.

making food choices

Introduce the range of beef products provided to consumers with **learning source 1-2: Market choices**. Have students use the information in this learning source, along with the **market cards**, found in the **Market Cards Sourcebook** on the Alberta Beef website at www.albertabeef.org/education, to start a ***product reference guide*** for different cuts of meat, their characteristics, and examples of recipes that illustrate how to cook, how to tenderize and how to serve the cut. Each market card provides some basic information.

Suggest that students research and collect additional information on cooking, tenderizing and serving, as well as add examples of recipes that use the different retail beef cuts, as they complete the course. A **market card template** is also provided for additional meat products. The product reference guide can be created in print form or through an online bulletin board.

scaffold learning

Divide the **market cards** between groups of students. Alternatively, have students select five or six different retail cuts of meat that they would be most likely to use in recipes that they have made or are interested in making. The **recipe cards**, found in the **Recipe Card Sourcebook**, can provide a source of recipes. **Market cards** can be completed as a class and posted in an online bulletin board app, such as **Padlet** or **Pinterest**.

assess learning

Have students "shop" for the ingredients needed for a meat-based recipe of their choice. Students may be given the option to shop locally or "virtually," using supermarket flyers or internet sources from a local store or supermarket.

- Create a shopping list.
- Visit the store and identify products, brands, nutritional information and prices.

Create a ***receipt*** that shows the products and pricing. Students can also be asked to create a receipt for one of the dishes or meals they identified in the previous activity.

explore weblinks

The **Canadian Beef** website provides the *Cuts by Colour* app on their website at https://canadabeef.ca/cuts-by-colour/. This interactive app allows students to compare and identify wholesale and retail cuts of beef.

Students can also access *The Roundup™ App* on tablets or smartphones. Information on this app is found at https://canadabeef.ca/theroundup/.

extend learning

Encourage students to watch a cooking competition show, such as *Masterchef* or *Top Chef*. Identify recipes and the different types of meat products or protein sources that chefs use. How prevalent or common are these ingredients in dishes they typically eat?

Students can also be encouraged to develop and administer an ***informal survey*** to find out the role that meat products play in the daily diets of friends or family members. Work with students to create two to three questions for their survey. Have them bring back their survey results, collate and compare them.

Encourage students to consider how the survey has identified current concerns about meat consumption or different food choices that individuals make concerning meats in their diets.

Explore the nutritional implications and importance of meat in the diet with **learning source 1-3: Nutritional choices**.

- Ask students to review what they know about the nutritional benefits of meat in the diet.
- Encourage students to consider why it is important to understand nutritional information in the context of meal and dishes that combine different foods. Explore the concepts of "food synergy" and "whole foods," referenced in an article excerpt in the learning source.
- Have students compare the ***nutritional profile*** of two different cuts of beef with that of one other meat or food product. Ask students to work with a partner or group to locate or create ***food labels*** for these products, post them on a classroom or online bulletin board, and compare protein, fats, vitamins and minerals.

explore weblinks

Health Canada provides a presentation on nutrition labelling and claims at www.canada.ca/en/health-canada/services/food-nutrition/food-labelling/nutrition-labelling/educators/ready-use-presentation.html. This presentation can be downloaded and shared with students, focusing on the *Meat and Alternatives* food group.

Direct students to the **EATracker.ca** website recipe analyzer at www.eatracker.ca/recipe_analyzer.aspx. Students can input single or multiple ingredients to get a quick nutrient analysis.

assess learning

Have students use the **comparison chart**, in the graphic organizers section of the **Explore Meat Cookery Student Sourcebook**, to make ***nutritional comparisons*** between four different types of meat – beef, veal, pork and lamb. Ask them to specifically address protein, cholesterol, fat and iron content.

watch videos

If possible, set up four stations with internet access. Have students rotate through each station and watch the following videos from **Canada Beef**. Find links to these videos on the Alberta Beef website at www.albertabeef.org/education. Discuss the nutritional implications of beef in daily diets.

- Beef Stacks Up
- Seeking Protein
- What Does Your Protein Look Like: Steak or Shake
- Who Am I?

UPDATE??

information to support student learning

Nutrient data is used for a variety of applications. These include:

- Nutrition labelling
- Menu planning and recipe analysis
- Food intake analysis and diet counselling
- Nutrition education and information

Nutritional labelling is mandatory in Canada. The food industry also uses nutrient information to determine if a food meets nutrient or health claims. Nutritional fact tables are found on most processed and packaged foods, with the information is based on serving size.

The following foods are not required to provide a nutrition facts table:

- Fresh vegetables and fruit
- Raw meat and poultry (except when it is ground) and seafood
- Individually sold one-bite confections
- Milk sold in refillable glass containers
- Individual servings of food meant to be eaten immediately
- Foods prepared or processed in-store from its ingredients, like bakery items and salads

Nutritional values of foods can be affected by different factors, including geographic location, season and the soil used to grow plants and feed to raise animals. For example, cows fed mostly on pasture in the summer produce butterfat higher in Vitamin A than in the winter.

Nutritional values can also be affected by the ways in which foods are manufactured or processed, including the use of heat, light, oxygen, enzymes or microorganisms.

Find the full infographic on the **Alberta Beef** website at **www.albertabeef.org/education.** Students are encouraged to access the full version in **learning source 1-3: Nutritional choices**.

Source: *Guide to Developing Accurate Nutrient Values* (Archived June 24 2013): Health Canada. www.hc-sc.gc.ca/fn-an/label-etiquet/nutrition/reg/guide-nutri_val_tc-tm-eng.php

The way that food is transported or stored can also affect nutrient values. For example, Vitamin C can be lost easily as an orange matures, and the proportion of starch to sugar in a potato changes during storage, whereas the amount of protein in a steak is relatively stable. Nutrient levels can also be affected as foods age and as a result of changes in temperature, light conditions, humidity and exposure to air.

understanding production

Invite students to share ideas about factors that they think affect choices that people make about the inclusion of meat products in their diets. Provide prompts for this discussion, including:

- Vegetarian, vegan or faith-based dietary choices
- Allergies or food intolerances
- Nutritional concerns related to cholesterol and fat in the diet
- Food safety concerns related to storage, handling and cooking, including Escherichia coli (E. coli)
- Food production concerns, such as animal welfare, hormones, antibiotics, animal health (e.g., bovine spongiform encephalopathy), food safety and the environment

Most consumers have distinct food preferences, likes and dislikes. The retail availability of food products is influenced by consumer choices and trends in purchasing. Some of these trends include food safety, organic and local food preferences and food production practices. Use **learning source 1-4: Production factors** to introduce students to some consumer trends and concerns and career areas in the beef industry. Students can use a ***mind map***, ***timeline*** or ***t-chart*** graphic organizer, as suggested in the learning source and provided in the graphic organizers section of the **Explore Meat Cookery Student Sourcebook**, to identify the range of careers involved in beef production.

Provide students with the opportunity to work in groups, select **one** of the production factors in the learning resource and prepare a ***briefing note*** or ***infographic*** on this factor. Schedule time throughout the course for each group of students to present a quick overview of their production factor, using their briefing notes or infographics. Encourage students to consider how these factors affect choices to purchase and use different types of meat.

Alternatively, students can be asked to focus primarily on careers in the beef cattle industry. Have these students work individually, with a partner or in a small group to research and create a ***career profile infographic*** on **one** career. After group presentations, ask students to discuss what they can learn about food choices from an overview of food production.

assess learning

After listening to student overviews of their production factor ***briefing notes*** or ***infographics***, have students individually reflect on the extent to which different factors influence their personal choices about meat consumption. To what extent are they influenced by messages in advertising or social media that may present erroneous information about hormone or antibiotic use? To what extent are they influenced by trends in food preferences, such as organic or buy local?

extend learning

Students focus on the beef industry in this activity. Groups can also be asked to research other meat products, such as veal, pork or lamb.

explore weblinks

Canadian beef producer organizations provide information on trends, issues and concerns involved in the beef production industry. The **Beef Cattle Research Council** website at www.beefresearch.ca provides some excellent teacher background information on a number of relevant production and food safety topics.

Alberta Beef provides information and infographics on the *Consumer* drop down menu, under *Worried about. . . ?* as well as on the **All for the Beef** website at http://allforthebeef.ca/.

The **Canadian Beef** website has a thorough overview of the beef production industry at https://canadabeef.ca/canadian-beef-advantage/#top. Note that this overview focuses on the advantages of Canadian beef for U.S. consumption.

The **Think Beef** website provides position papers on issues related to beef production and consumption at http://thinkbeef.ca/the-thinkbeef-position/.

Find a comprehensive overview of careers in the beef cattle industry on the **BeefCareers.ca** website at https://beefcareers.ca/.

information to support student learning

Consumers insist on safe and wholesome foods, but their perception of what is a risk of food safety differs somewhat from that of the processor, foodservice operator or food scientist.

Consumers put "handling/ preparation/ storage of food" at the top of their list while industry and scientists put microbial contamination at the top of their list. However, the public is becoming increasingly aware of food-born illnesses which result from bacterial and microbial contamination.

Food industry practices

When all producers, processors, wholesalers, retailers, food service operators and consumers take steps to ensure meat is safe, risks of food-borne illness will decrease.

Producers, processors, wholesalers and retailers are adopting new methods to combat microbial contamination in foods. These new methods combine in a process called **HACCP** (pronounced HA-sup). The letters stand for hazard analysis critical control point.

HACCP is mandatory in Canada and abroad as a simple, logical, science-based system for food processing, preparation, serving and inspection that will ensure the highest standards of food safety. There are seven basic principles to HACCP:

1. Identifying potential hazards
2. Determining critical control points where those hazards can be controlled
3. Determining the critical limits for safe processing
4. Putting monitoring in place to keep within those limits
5. Identifying action to take when problems do occur
6. Verifying that procedures work
7. Installing an effective record-keeping system

The HACCP process is designed to minimize the risk and maximize prevention. With the use of HACCP, industry can ensure the food it sells is safe. Food inspection can focus on the important control points and make more efficient and effective use of inspectors' time.

Organic or not?

To meet consumer preferences, Canadian beef is produced both organically and by conventional methods. While there are several differences in the way organic beef is produced, the beef produced by both organic and conventional producers is equal in quality, nutrition and safety.

Organic beef production must meet requirements set out in the *National Standard of Canada for Organic Agriculture*. The label on organic beef must bear the name of the independent certification body as assurance that it has been produced according to organic standards.

Conventional beef production permits the use of growth hormones and veterinary products that have been approved for that use by Health Canada, the same agency that approves medicines for humans. In organic production, the use of growth hormones is not allowed.

Find out more about organic production practices in **Canada Beef's** *Organic factsheet* at **https://canadabeef.ca/wp-content/uploads/2015/04/3208_CANBEEF_factsheet_ORGANIC-2016.pdf**

The **Glass Walls Project** videos feature Temple Grandin and provide tours inside meat and poultry packing and processing plants, including a beef plant. Preview these videos at **www.youtube.com/playlist?list=PLkBbso1kwZ3bZTqN5MBLqHWGpRqPCH7gK**.

Humane handling and animal welfare

Good handling practices for cattle ensure top quality beef and humane treatment of animals. The cattle industry continually monitors and improves animal handling to ensure humane care. The norm at processing plants is calm and quiet handling.

Cattle are moved into the processing plant with a minimum of handling to decrease stress and bruising. Clanging and banging noises are eliminated as much as possible. Anything that may cause excitement and stress is minimized or eliminated.

Scientists have determined that a penetrating captive bolt gun is an effective method of euthanasia for ruminants such as cattle. The animal is rendered suddenly unconscious and **cortisol** levels (a stress hormone) indicate that there is no pain.

The animal is simultaneously suspended by the hind legs and bled. Exsanguination ensures rapid death. The hide is removed as the carcass is moved quickly into the main processing plant. Quick removal of the hide ensures sanitary handling of the meat during processing.

Alberta Beef supports responsible animal care and handling. Producers in Alberta follow the **Code of Practice for the Care and Handling of Beef Cattle**, which promotes sound management and welfare practices for housing, care, transportation and other animal husbandry practices. The Code can be accessed at **www.nfacc.ca/pdfs/codes/beef_code_of_practice.pdf**.

E. coli concerns

The digestive systems of all animals, including humans, are home to billions of essential bacteria. **Escherichia coli** or **E. coli** are one family of naturally-occurring bacteria in our digestive tracts.

Most strains of E. coli do not cause illness in healthy humans and are beneficial to the synthesis of vitamins. Some strains of E. coli, however, cause cramps and diarrhea in humans.

One virulent strain, called **O157:H7**, produces a toxin that can cause severe illness. E. coli O157:H7 can be found in cattle, other farm animals and wildlife, including deer. Bacteria can be transferred to meat, including ground meat, unpasteurized milk and cider, and many fruits and vegetables. E. coli 0157:H7 can also be transmitted from person to person through unwashed hands, and from contact with contaminated water or manure.

Risks from illness from E. coli 0157:H7 are greatest for young children, the elderly, pregnant women, and anyone with a weakened immune system. However, everyone needs to guard against these bacteria.

Preventing E. coli

Every link in the food and drinking water chain is vigilant in guarding against bacteria. The cattle industry has spent millions of dollars on research projects with the goal of reducing or eliminating the problem. Research projects include attempts to develop a vaccine to prevent E. coli 0157:H7 in cattle, management practices to prevent shedding of E. coli 0157:H7 bacteria and prevention of meat contamination during processing.

On the farm, beef producers have strict on-farm manure management plans. Regulations currently in place in most provinces prohibit deliberate contamination of water sources. Large livestock production operations are required to construct manure-contaminated facilities away from water sources.

To enhance and maintain its reputation for product quality and safety, the Canadian cattle industry developed the **Verified Beef Production Plus™** program. This HACCP-based on-farm food safety program is delivered across Canada and includes an option of a third-party audit. This national program is anchored with the good production practices of the original *Quality Starts Here* program and is recognized by the Canadian Food Inspection Agency. The Verified Beef Production Plus™ program is designed to complement additional food safety efforts further up the supply chain, and also contains modules on biosecurity, environmental stewardship, and animal care.

Science and technology have provided producers with new ways to water cattle away from streams and lakes. A variety of watering systems operating on solar power and wind power are available. Beef producers work with processors to identify practices such as steam pasteurization that reduces risk of meat contamination within plants. HACCP programs are increasingly used to identify and correct potential hazards to food safety before the product is packaged and sent to the consumer.

BSE

Bovine Spongiform Encephalopathy, or **BSE**, is a progressive, fatal disease of the nervous system of cattle. It is what is known as a **transmissible spongiform encephalopathy** (TSE). Other TSEs include scrapie in sheep, chronic wasting disease in deer and elk, and Creutzfeldt-Jakob disease in humans. BSE is associated with the presence of an abnormal protein called a **prion**. There is no treatment or vaccine currently available for the disease.

The protection of public health, food safety and animal health has been and continues to be a fundamental concern for the Government of Canada. In relation to BSE, the Government of Canada, through Health Canada and the Canadian Food Inspection Agency (CFIA), have responded to the challenges presented by developing a comprehensive suite of internationally recognized, science-based measures to effectively minimize the likelihood of exposure, amplification and spread of BSE within the cattle population and to protect consumers from any potential human health risks.

Find out more, including links to biosecurity and food safety, on the **Canadian Food Inspection Agency's** website at www.inspection.gc.ca/animals/terrestrial-animals/diseases/reportable/bse/eng/1323991831668/1323991912972. Find out more about Creutzfeldt-Jakob disease at www.phac-aspc.gc.ca/cjd-mcj/index-eng.php.

Hormonal growth promotants and beef

Hormone implants are small, slow-release pellets placed under the skin in an animal's ear to enhance production of natural hormones. The use of hormone implants directs growth towards muscle and away from fat, which boosts growth rate and means less feed is needed for the animal to gain weight.

Beef producers use hormonal growth promotants because they:

- Improve meat quality by increasing the development of lean meat and decreasing fat content
- Increase feed efficiency, allowing more growth with less feed
- Reduce costs for producers, reducing the price of meat and meat products for consumers and keeping beef production in Canada competitive with other beef producing nations

Find the full infographic on the **Alberta Beef** website at www.albertabeef.org/education. Students are encouraged to access the full version in **learning source 1-4: Production factors**.

UPDATE??

The safety of growth promoting hormones in beef has been extensively reviewed by many government regulatory authorities and international agencies including **Health Canada** and the U.S. **Food and Drug Administration**, as well as by expert committees of the United Nations **World Health Organization** and the **Food and Agricultural Organization**. The safety of growth promoting hormones has also been evaluated by an expert panel convened by the World Trade Organization in response to concerns raised by Canada, the United States, and the European community.

In all cases, the evaluation process concluded that the use of growth promoting hormones, in accordance with Canadian practice, does not present a risk to those consuming beef or beef products.

Use of growth promoting hormones is permitted in Canada, the United States and many other highly developed countries around the world.

How does the number of hormones in beef compare to that of humans? The greatest source of hormones for humans does not come from foods or plant or animal origin. The greatest source is the human body itself. For example, an adult woman would have to eat 95.3 "cow's worth" of beef produced using hormone implants per day to match her own daily circulating concentration of estrogen.

In fact, for humans the greatest exposure to hormones from an external source comes from the oral contraceptives (birth control pills) used by more than 40 million women worldwide. The average daily dose from oral contraceptives is 2500 times greater than the amount found in a serving of beef.

Antibiotics in conventional and organic farming

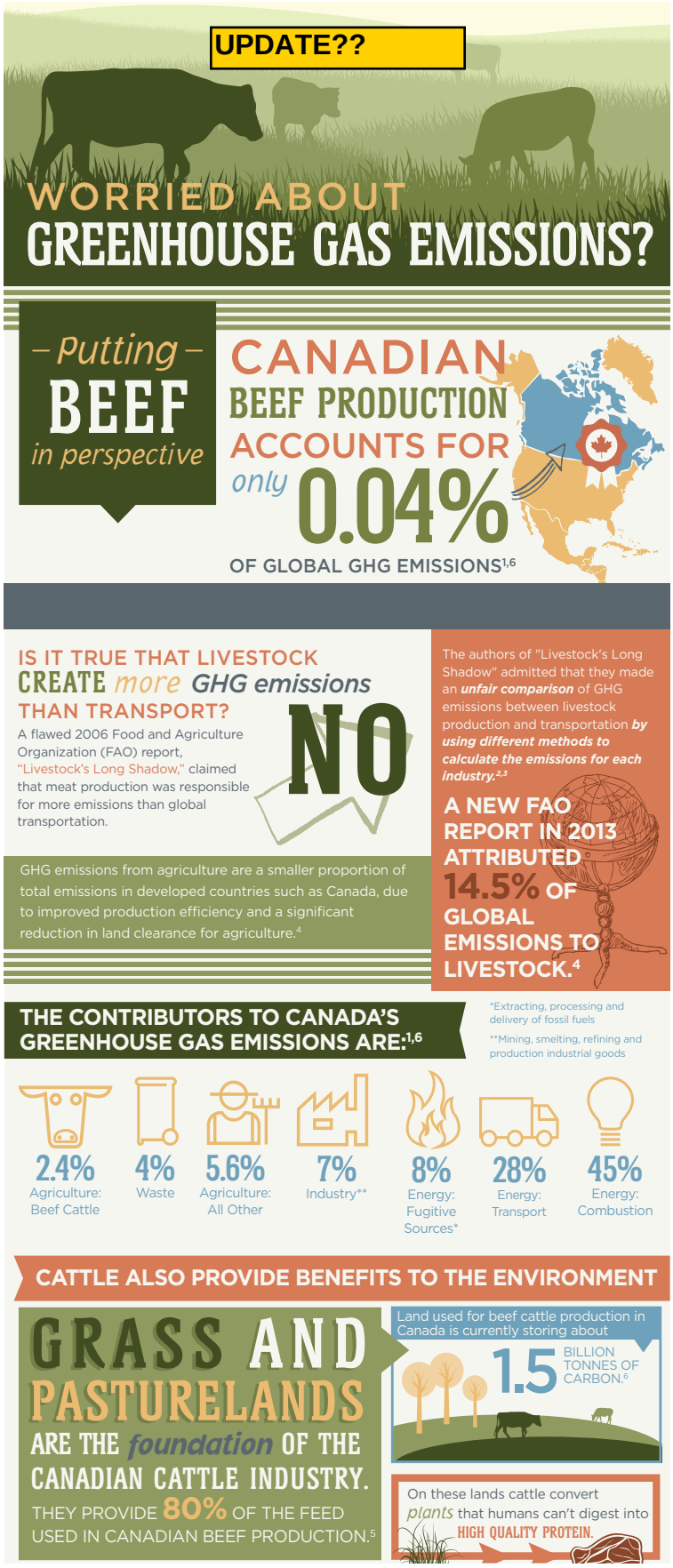
In both organic and conventional methods of beef production, the use of biological, cultural and physical treatments may be utilized for the treatment of health problems.

Cattle sometimes get sick, just like people, pets and other livestock. Antibiotics can help protect animal health by limiting the spread of disease. The appropriate use of antibiotics ensures humane care and animal welfare, providing care to sick cattle.

A specified withdrawal time must pass after the last treatment to ensure that there are no antibiotic residues left in the beef. The Canadian Food Inspection Agency regularly tests for residues. In 2013, over 99.9% of both domestic and imported beef products were free from residues. If residues are found, the beef is not allowed to enter the food chain.

In an organic production facility, the use of veterinary drugs is restricted. Vaccines are permitted where the targeted diseases are communicable to livestock and cannot be treated by other means. If an animal is treated with chemical veterinary drugs or antibiotics for an illness, beef from this animal is considered non-organic.

Find the full infographic on the **Alberta Beef** website at **www.albertabeef.org/education**. Students are encouraged to access the full version in **learning source 1-4: Production factors**.



Environmental practices

Alberta beef producers are committed to producing beef in an environmentally sustainable manner. Alberta Beef supports policies, programs and educational efforts that uphold this vision.

They also formally recognize beef producers who have incorporated environmental protection into their management strategies.

Share examples of exemplary environmental practices that are recognized through *Alberta Beef's Environmental Stewardship Award*. Watch videos that feature award winners and their stories on the **Alberta Beef** website at **www.albertabeef.org/page/esa**.

Find the full infographic on the **Alberta Beef** website at **www.albertabeef.org/education**. Students are encouraged to access the full version in **learning source 1-4: Production factors**.

2 build cooking skills

Image courtesy of Canada Beef http://canadabeef.ca

Student learning sources are provided in the **Explore Meat Cookery Student Sourcebook**. Student learning sources are numbered to correspond to each of the three main sections in this teaching resource. They can be photocopied into a student learning booklet or used as digital PDF files. Fillable fields are provided in each student source.

The **chef safety skill cards** are used in this section and are designed to be printed and/or accessed in different ways, depending on the knowledge and skill level of students.

The **Chef Safety Skills Cards Sourcebook** can be accessed on **Alberta Beef's** website at www.albertabeef.org/education and the cards displayed on an interactive whiteboard for whole class activities. These cards have active checkboxes that students can complete and save in a folder for tracking and assessment.

The **chef safety cards** are intended for students to develop and use as references for safe cooking and food handling practices. Checklists can be filled digitally and saved or printed and filled in manually.

Cards can be printed single-sided and used as a classroom or lab set of information. Each set of cards can be placed in binders, a file box or folders. Cards can be printed double-sided for individual or small group use.

Know approaches and strategies used to cook with meat

A variety of learning tasks build understandings and skills involved with meat cookery. The activities in **build cooking skills** encourage students to develop understandings of principles of protein cooking, including consideration of temperature, the use of chemical and mechanical tenderizers and the length of cooking time.

The following materials and student learning resources are referenced and used in **build cooking skills**. Preview the learning activities for more detail on their use.

- ☐ Ingredients for a selection of "culinary practice" recipes that illustrate cooking and tenderizing methods for different cuts of meat

- ☐ **learning source 2-1: Safe handling practices for meat (Explore Meat Cookery: pp. 30-34)**
- ☐ **chef safety skills cards** (**Chef Safety Skills Cards Sourcebook**)
- ☐ **learning resource 2-2: Culinary practices recipes** (**Explore Meat Cookery: pp. 35-62**)
- ☐ **learning resource 2-3: Recipe evaluation (Explore Meat Cookery: pp. 63-65)**
- ☐ **recipe cards** (**Recipe Cards Sourcebook**)
- ☐ **market cards** (**Market Cards Sourcebook**)
- ☐ **recipe analysis chart** (**Explore Meat Cookery: p. 74**)
- ☐ **triple t-chart** (**Explore Meat Cookery: p. 73**)
- ☐ **Venn** (**Explore Meat Cookery: p. 75**)
- ☐ **if/when then chart** (**Explore Meat Cookery: p. 72**)

The learning tasks in **build cooking skills** can be used to lead students to a summative assessment task. This task can be assessed with the **build cooking skills rubric** (p. **27**).

Assess students by challenging them to complete a ***cooking skills analysis*** that identifies and describes cooking and tenderizing steps and processes in an assigned or selected recipe. Students can use the **if/when-then chart**, in the graphic organizers section of the **Explore Meat Cookery Student Sourcebook**, or create one of their own.

- Identify the meat-based recipe, ingredients and necessary cooking approaches at the top of the chart.
- Use an **if/when-then chart** to describe results when different cooking processes are applied to the meat.

  For example, a marinating steak is selected for a stir fry recipe. If a moist heat cooking method is used, then what are the advantages and disadvantages for this cut of meat? If a dry heat cooking method is used, then what are the advantages and disadvantages for this cut? If a chemical or mechanical tenderizing method is used, then what is the result with the meat cut?
- Assign a recipe, or require that students look for and select one, to analyze the cooking methods used.

Discuss criteria for assessment with students and either use the **build cooking skills rubric** or collaboratively create one.

Select from the questions in the **All for the Beef: Basic Meat Cookery Test Bank** for this section. These questions can be obtained by email request on www.albertabeef.org/education.

2 teaching notes

Know approaches and strategies used to cook with meat

cooking process survey

Plan a quick introductory ***class survey*** that explores types of foods students prepare at home, the extent to which they are involved in food preparation and what they know about meat preparation methods.

Ask students to respond individually to three or four questions such as the following. These questions and response options can be placed in a grid on the board, and students asked to come up and list or tally their responses.

When do you plan ahead for meals? ☑ Every day ☑ Only on weekends ☑ Only on holidays or special occasions ☑ When we grocery shop ☑ Other	**What meat-based dishes have you prepared or cooked?**
How frequently are you involved in food preparation at home? ☑ Daily ☑ Weekly ☑ Monthly ☑ Not at all	**What cooking methods are you aware of or have you used to prepare meats?** ☑ Stewing ☑ Braising ☑ Roasting ☑ Simmering ☑ Boiling ☑ Steaming ☑ Broiling ☑ Grilling ☑ Frying ☑ Sautéing ☑ Searing ☑ Deep Frying

Using students' lists of cooking methods as examples, introduce them to different meat preparation methods.

- **Dry heat** cooking methods refer to processes where no additional moisture is added to the cooking cycle. They are most commonly used for the more tender and marbled cuts of beef, like striploin, tenderloin, sirloin and rib.

- **Moist heat** methods involve the addition of moisture, usually water, to the process which has a tenderizing effect and moistens the beef. Moist heat is usually applied to cuts from the round. A combination of dry and moist methods can be used also, especially on the medium-tender cuts of the chuck, flank, plate, brisket and shank.
- **Tenderizing** involves making the meat more tender by breaking the elastin into smaller pieces or by breaking down the collagen connective tissue.

scaffold learning

Start the activity with a demonstration of a dish, such as the **Beef and Mushroom Thai Lettuce Cups**, which involves at least two different cooking processes like skillet frying, steaming (vegetables) and simmering.

This recipe also provides an overview of the effect of heat on liquids, protein and fat in meat. It is included in **learning source 2-2: culinary practice recipes**, provided in the **Explore Meat Cookery Student Sourcebook**. Alternative **recipe cards** can be accessed in the **Recipe Cards Sourcebook** on the **Alberta Beef** website at www.albertabeef.org/education. Ask students to identify skills that the recipes require.

assess learning

Have students pre-assess their comfort level with different food preparation and cooking processes that involve meats.

Ask them to use a **triple t-chart**, in the graphic organizers section of **Explore Meat Cookery Student Sourcebook**, to create an ***inventory of cooking processes*** they think or know are involved with meat cookery. Encourage students to add information to their charts as they use each type of cooking process. Have students sort the cooking processes they identify into dry heat methods, moist heat methods and tenderizing methods.

Image courtesy of Canada Beef http://canadabeef.ca

extend learning

As an alternative to doing a class survey, students can be asked to individually survey two or three other people about their experience and recommendations for cooking with meat. Suggest that students survey at least one non-family member.

Have students bring back their individual survey results, collate and compare them. Use them to create a ***tip sheet*** of shared strategies for cooking with meats.

Ask students to use the **recipe cards**, found in the **Recipe Cards Sourcebook**, to identify recipes that use different cooking processes.

Provide a random selection of three to five recipes to pairs or small groups. Ask pairs or groups to list cooking processes involved in each recipe.

The image illustrates the tenderness level and cooking methods for the various beef wholesale cuts. Make connections back to what students have learned about wholesale and retail cuts in **make food choices**.

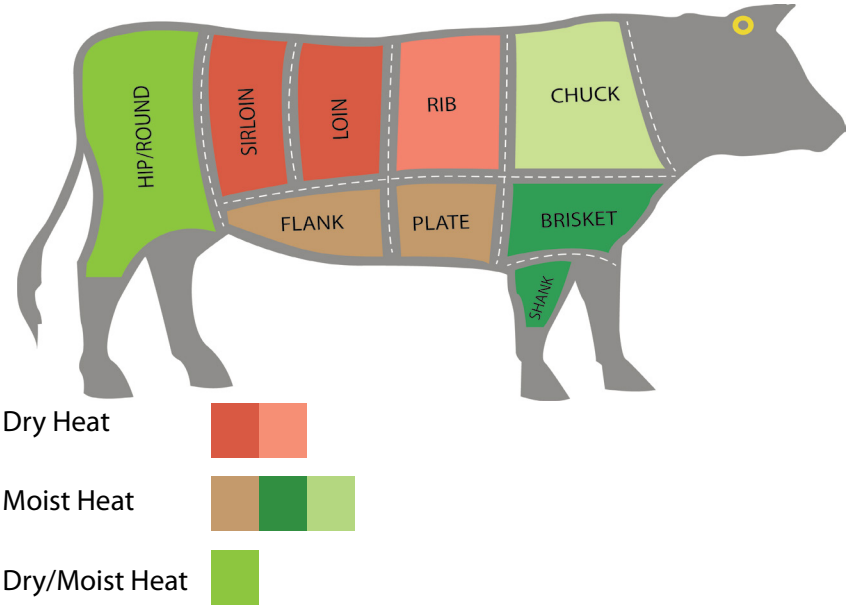


Image used and adapted with the permission of Canada Beef http://canadabeef.ca

food quality and safety inventory

Like all perishable foods, the quality and safety of meat products are best when they are properly handled during both storage and cooking. Provide students with **learning source 2-1: safe handling practices for meat**. Review the scope of safe handling of meats with students, including the four basic safety practices:

- **Clean** – wash hands and surfaces frequently
- **Separate** – don't cross-contaminate
- **Cook** – cook to proper temperatures
- **Chill** – refrigerate promptly

Provide students with **chef safety skills cards**, found in the **Chef Safety Skills Cards Sourcebook**, to help them identify and review ways that important safe and sanitary cooking and food handling practices are applied in the kitchen. Have students ***inventory*** those practices they know and can demonstrate, using the checkboxes on the **chef safety skill cards**. Tell students they will be expected to apply these practices as they work with different cooking techniques and recipes.

Allow students to select a recipe from the **recipe cards** to complete the activity in **learning source 2-1: safe handling practices for meat** that asks them to identify how safe and sanitary practices can be applied to a recipe.

Conduct a discussion to review safe and sanitary practices with questions such as:

- Why do meats require careful storage and handling? (*These foods are more likely to support the growth of harmful microbes if not stored or handled carefully.*)
- When it is most important to wash hands and surfaces? Why? (*Hands should be frequently washed to ensure bacteria are not transferred to food or kitchen equipment.*)
- What is meant by cross-contamination? (*Cross contamination happens when harmful microbes are passed from contaminated food, dirty utensils, hands, counters, or equipment to another food item or to clean hands, utensils, or food preparation surfaces. Harmful microbes may be in raw meat or chicken juices, dirty utensils, cutting boards or dirty hands. Food Safety Smart Curriculum*. The University of Rhode Island: p. 74.)
- How should cross-contamination be avoided when handling meats? When storing meats? (*Encourage students to reiterate strategies like frequently washing hands and keeping working surfaces, containers and utensils clean when handling products. Identify strategies like considering placement of stored meats in the refrigerator to avoid touching or dripping on other foods, ensuring storage containers are clean and not reused for different products and avoiding touching food in storage containers.*)
- How important are minimum cooking temperatures when cooking meat? (*Foods should be heated to a minimum internal temperature to eliminate harmful bacteria. A chart with temperature rules for different meats is provided in* **learning source 2-1: Safe handling practices for meat**.)
- Why is it important to keep fresh meats refrigerated? (*Refrigeration slows bacterial growth.*)

scaffold learning

Provide students with the choice of demonstrating appropriate food safety and handling skills that they already have or learn these skills if they are new.

explore weblinks

The Government of Canada provides several food safety resources on their website at www.canada.ca/en/health-canada/services/general-food-safety-tips.html.

Find information on safe food handling practices on the **Fight Bac** campaign website at www.fightbac.org. Note that this is a U.S. website.

culinary skill practice

The culinary practice recipes in **learning source 2-2: Culinary practice recipes** address different meat cooking approaches. Information on meat cuts, cooking and tenderizing methods, and determining doneness are provided in the introduction and with each recipe, along with video links and questions. These recipes can be used in all or some of the following contexts:

- The culinary practice recipes are meant to be used to explore cooking and tenderizing approaches in the context of recipe preparation, with videos to watch and questions to answer.
- Review the introductory information provided in the initial pages of the learning source with an initial discussion about meat cuts and appropriate cooking methods.
- Schedule a round of guided practice cooking labs with students. You can choose to use the **culinary practice recipes** and feature the cooking processes listed below to illustrate principles of meat cookery. Alternatively, you can have students analyze the recipes to answer the questions and use other recipes to demonstrate or practice and apply skills.
- Provide demonstrations of some of the recipe steps and have students work with partners or groups to complete the recipes.

Image courtesy of Canada Beef http://canadabeef.ca

Students can complete the questions included with these recipes as they are used or demonstrated, or independently on their own. Tell students they can also use **market cards** from the **Market Cards Sourcebook** to help them respond to some questions in the culinary practice section provided in each recipe. Additional or alternative **recipe cards** can also be selected from the **Recipe Cards Sourcebook**.

Select and use or adapt the recipes that are most appropriate for your class, or replace them with your own.

- Use the **Beef and Mushroom Thai Lettuce Cups** recipe to discuss the effect of heat on liquid, protein and fat in meat.
- Use the **Warm Orange Beef Salad** recipe to illustrate a chemical tenderizing method with the use of a marinade, and sautéing as a dry heat cooking method,
- Use the **Beef and Pesto Roulade with Greens** recipe to illustrate pounding as a mechanical tenderizing method and oven roasting as a dry heat cooking method; explore temperature as a measure of doneness.

- Use the **Grilled Beef Steak Sandwich with Melted Onions** recipe to illustrate a combination of marinating as a chemical tenderizing method and piercing with a fork as a mechanical tenderizing method; grilling as a dry heat cooking method (Note that this recipe requires marinating overnight).
- Use the **Zippy Western Beef Steak** recipe to explore a quick version of a slow simmering moist heat cooking method.
- Use the **Italian Beef Meatball Soup** to illustrate moist heat cooking with ground beef meatballs, grinding as a mechanical tenderizing method and temperature as an important measure of doneness.
- Use the **Beef and Barley Soup** recipe to illustrate braising as a moist heat cooking method (Note that this recipe requires a longer cooking time).
- Use the **Beef Involtini with Asparagus** recipe to demonstrate pounding and/or piercing as a method of mechanical tenderizing and pan searing as a dry heat cooking method; use a thermometer to determine doneness.
- Make the **Speedy Sloppy Joes** to discuss safe food storage and handling tips, especially for ground beef.
- Use the **Beefy Bundles** recipe to explore marinades and other chemical tenderizers.
- Use the **Rush Hour Roast Beef Dinner** recipe to explore the different types of roasts and illustrate oven roasting as a dry heat cooking method and temperature as a measure of doneness.

All recipes and images in these recipes courtesy of Canada Beef http://canadabeef.ca

Have students work with their partners or groups to evaluate the recipes, using the guiding questions in **learning source 2-3: Recipe evaluation**. This evaluation form is intended for use as a learning tool while students are using the **culinary skills recipes**. Have students keep track of cooking and tenderizing methods as they observe or participate in cooking each recipe. Tell students that they will also be asked to apply this evaluation model to one of the recipes they cook for credit in this course.

Suggest that students use the cards in the **Chef Safety Skills Cards Sourcebook** to help them provide explanations for food safety and sanitary practices observed with the culinary skills recipes.

Students can also be asked to use a **Venn** to make comparisons between cooking methods or between cooking processes and equipment. Have them identify and compare the type of equipment commonly used with moist heat cooking methods, dry heat cooking methods or both. Students can use the **Venn** in the graphic organizers section of the **Explore Meat Cookery Student Sourcebook**, or create one of their own.

scaffold learning

The ***culinary practice recipe labs*** can be organized in a number of different ways, depending on students' skill level and classroom context:

- **Culinary practice recipes** can be teacher-led, with rotating student participation
- Student pairs or groups can be given responsibility for preparing and demonstrating one of the recipes for other groups or the whole class
- Individual students can be assigned a lead role for planning and sharing a demonstration
- **Culinary practice recipes** can be divided to focus on three areas – dry heat, moist heat and tenderizing techniques

Students can alternatively use **learning source 2-2: Culinary practice recipes** to independently complete the culinary practice questions and activities.

Provide these learning sources as a package for students. Encourage them to use the video weblinks to help them complete the questions in each **culinary practice recipe**.

Use the **recipe analysis chart**, in the graphic organizers section of the **Explore Meat Cookery Student Sourcebook**, if students need some additional support in understanding a recipe. For practice, students can be asked to locate recipes from magazine and internet sources and analyze them by completing the chart.

explore weblinks

The **Canadian Beef** website provides a *Cooking Know How* section, with videos, cooking tips and recipes. Some of these videos are referenced in the culinary skills recipes. Find resources on the following cooking approaches at https://canadabeef.ca/cooking-know-how/:

- Ground beef
- Burgers
- Fast fry and Stir fry
- Grilling
- Pan searing
- Marinating steak
- Simmering steak
- Stewing beef
- Pot roast
- Rotisserie roast
- Oven roast

Find additional recipes and information on the **Think Beef** website at http://thinkbeef.ca/category/recipes/ as well as on the **Canadian Beef** website at https://canadabeef.ca/all-recipes/.

watch videos

Find beef dish videos that can supplement those used during culinary practice labs on the **Blend and Extend** website at www.blendandextend.ca/recipes/videos/.

information to support student learning

Beef offers a wide range of cuts with varying characteristics; there are lots of meal possibilities with beef. Some cuts can be cooked quickly while others are best slow-cooked.

The chart that follows sorts through some of the major differences for beef cuts. Many of the cuts included here can be found in the **market cards**. Other names are included to help you interpret recipes for non-Canadian sources. The same beef cut may have different names depending on the country, region or even the restaurant. This chart can support discussion of cooking methods in **learning source 2-2: Culinary practice recipes**.

Summary of beef cuts and cooking methods

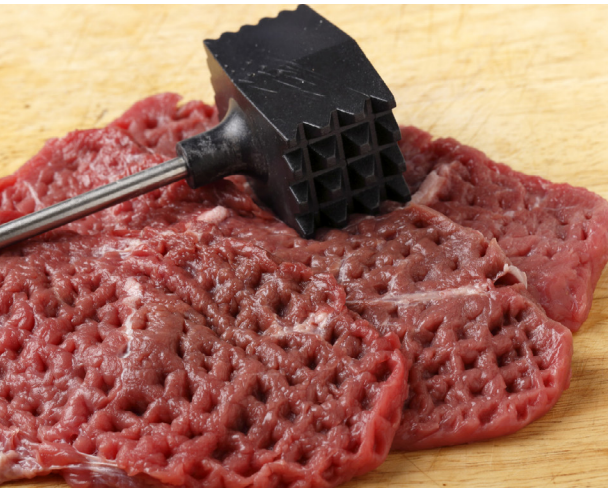
Wholesale Cut	Examples of Retail Cuts	Description	Best Cooking Methods	Other Names
Chuck	• Bottom and Top Blade Simmering Steaks	Less Tender Cut	• Braise, pot roast or stew using low temperature cooking	Chuck Steak; Top Chuck Steak; Flat Iron Steak
	• Cross Rib Pot Roast	Less Tender Cut	• Braise, pot roast or stew using low temperature cooking	
Rib	• Rib Eye Premium Oven Roasts • Rib Eye Grilling Steaks	Less Tender Cut	• Boil, barbecue, or pan fry • Use little or no added fat • Oven roast without a lid	Delmonico Steak; Spencer Market Steak; Entrecôte
	• Prime Rib Premium Oven Roasts • Rib Eye Grilling Steak	Tender Cut	• Oven roast without liquid and without a lid • Pan fry steaks	Standing Rib Roast
	• Simmering Short Ribs (layers of meat and fat, with/without rib bones attached)	Tender Cut	• Braise or stew using low temperature cooking and liquid of broth, wine or tomato sauce	
Loin	• Tenderloin Grilling Steaks • Tenderloin Premium Oven Roasts	Tender Cut (One of the leaner cuts)	• Pan fry steaks • Oven roast without liquid and without cover/lid	Filet Mignon; Filet Steak; Tenderloin Tip; Chateaubriand; Beef Wellington; Club Steak
	• Wing, T-bone or Porterhouse Grilling Steaks	Tender Cut (Almost as tender as tenderloin with more flavour)	• Pan fry steaks • Slice thinly for stir-fries or skewers • Cube for kabobs	
	• Strip Loin Grilling Steak • Premium Oven Roast	Tender Cut (A boneless Short loin)	• Pan fry steaks	New York Steak; Strip Steak; Kansas City Steak; Delmonico; Entrecôte
	• Top Sirloin Grilling Steaks • Top Sirloin Premium Oven Roasts	Tender Cut	• Pan fry steaks	Top Butt Steak; Pin-Bone Sirloin; Wedge Bone Sirloin

Wholesale Cut	Examples of Retail Cuts	Description	Best Cooking Methods	Other Names
Hip	• Sirloin Tip Oven Roast • Sirloin Tip Marinating Steak	Moderately Tender (Sirloin tip is most tender of the 4 cuts from the Hip)	• Oven roast without liquid and without cover/ lid using low cooking temperature • Steaks best pierced all over and marinated 8-24 hours	Knuckle
	• Inside Round Oven Roast • Inside Round Marinating Steak	Moderately Tender (Very lean)	• Oven roast without liquid and without cover/ lid using low cooking temperature	Rouladen; Top Round; London Broil (US)
	• Eye of Round Oven Roast • Eye of Round Marinating Steak	Moderately Tender (Very lean)	• Steaks best pierced all over and marinated 8-24 hours • Oven roast without liquid and without cover/ lid using low cooking temperatures • Steaks best pierced all over and marinated for 8 to 24 hours	
	• Outside Round Oven Roast • Outside Round Marinating Steak		• Oven roast without liquid and without cover/ lid using low cooking temperature • Steaks are best pierced all over and marinated for 8 to 24 hours	Bottom Round
Flank	• Flank Marinating Steak	Less Tender Cut (Robust flavour; coarser, more fibrous texture)	• Steaks best pierced all over and marinated for 8 to 12 hours • Carve cooked steak thinly across the grain to maximize tenderness	London Broil
Brisket	• Brisket Point	Less Tender Cut (Coarser, more fibrous texture)	• Braise, pot roast or stew using low temperature cooking or marinate or use meat tenderizers before cooking at low temperature with dry heat	Brisket Center-Cut

Tenderizing

Using tools to tenderize

Physically trying to make the meat more tender by breaking elastin (tough connective tissue also known as gristle) into smaller pieces is called mechanically tenderizing. It fools the jaw into thinking the meat is more tender.



- Pounding the meat with a meat mallet helps soften the elastin, which cannot be softened with moisture.
- Cutting against the grain shortens muscle fibres into shorter fibres that are easier to chew. The grain is the direction of the long muscle fibres. It also cuts through the connective tissue making it easier for you to chew the meat. Cutting against the grain is used in slicing roasts and steaks for a stir-fry.
- Scoring the meat is the same as cutting against the grain except you don't cut all the way through the meat. Little slits are made on the surface of the meat. This cuts through some of the connective tissue and prevents the meat edges from curling. Scoring can be used on simmering steaks.
- Grinding meat is done with a special machine. This completely breaks up the connective tissue making a simmering cut tender. The most common ground meat is ground beef.
- Cubing meat into small pieces means cutting through connective tissue and shortening muscle fibres. This helps to tenderize the meat.

Kitchen chemistry

Using a liquid with special ingredients that will help act on the collagen connective tissue to make it more tender is called chemical tenderizing.

- Commercial tenderizer: These tenderizers have proteolytic enzymes that can break down proteins in the meat. Usually the meat should be in such a tenderizer for 30 minutes. Anything longer than 30 minutes will cause the meat to become mushy.
- Marinades: They can help tenderize and add flavour to any cut of beef. Marinades can have these ingredients:
    - An acidic ingredient like lemon juice, orange juice, or tomato sauce or juice. These will break down the collagen around the meat
    - Fresh fruits with natural enzymes like papaya, pineapple or kiwi.

These enzymes will break down the meat and collagen. Spices are also added for flavouring. Marinating is a slower method than using enzymes. The marinade must be in contact with the meat for at least six to eight hours in the fridge, but ideally 12 to 24 hours is best for steaks or roasts.

Kabobs or meat sliced into stir fry sized pieces can be marinated for three to six hours.

For both of these chemical methods, the tenderizer or marinade works where it touches the meat. It is best to pierce or score the meat all over on both sides with a fork, beforehand. This allows the liquid to better penetrate the muscle fibre.

Image courtesy of Canada Beef http://canadabeef.ca

weblinks

Canada Beef provides an overview of cooking and tenderizing methods as well as indicators of doneness for different cuts of beef at https://canadabeef.ca/cooking-methods/.

notes

3 cook

Image courtesy of Canada Beef http://canadabeef.ca

Student learning sources are provided in the **Explore Meat Cookery Student Sourcebook**. Student learning sources are numbered to correspond to each of the three main sections in this teaching resource. They can be photocopied into a student learning booklet or used as digital PDF files. Fillable fields are provided in each student source.

The **recipe cards** used in this section and are designed to be printed and/or accessed in a number of ways.

The **Recipe Cards Sourcebook** can be accessed on **Alberta Beef's** website at www.albertabeef.org/education and the cards displayed on an interactive whiteboard for whole class activities.

Fillable fields are provided on each card and are designed for students to develop and use as references for cooking, handling and serving methods. These fields can be filled digitally and saved or printed and filled in manually.

Each set of cards can be placed in binders, a file box or folders. Recipe cards can also be grouped into recipes that use dry heat, moist heat and tenderizing cooking methods.

Chef safety skills cards are also used in this section. These cards have active checkboxes that students can complete and save in a folder for tracking and assessment.

Cook safely with meat

These learning tasks ask students to demonstrate and apply understandings and skills involved with meat cookery. The activities in **cook** encourage students to use principles of meat cookery and safe and sanitary kitchen practices as they prepare and present five different dishes.

The following materials and student learning resources are referenced and used in **cook**. Preview the learning activities for more detail on their use.

- ☐ Ingredients for a selection of "presentation" meat dishes
- ☐ **learning source 3-1: Presentation dish planning (Explore Meat Cookery: p. 66)**
- ☐ **recipe cards** (**Recipe Cards Sourcebook**)

- ☐ **recipe card template** (**Recipe Cards Sourcebook**)
- ☐ **chef safety skills cards** (**Chef Safety Skills Cards Sourcebook**)
- ☐ **Venn** (**Explore Meat Cookery: p. 75**)
- ☐ **recipe analysis chart** (**Explore Meat Cookery: p. 74**)
- ☐ **learning source 3-2: Dish evaluation (Explore Meat Cookery: p. 67)**

The learning tasks in **cook** can be used to lead students to a summative assessment task. This task can be assessed with the **cook rubric** (p. **28**).

Assess students by challenging them to create an ***All for the Beef class blog entry*** that highlights nutritional, processing, handling and cooking information for a meat-based recipe. Students can be asked to create their blog entry for one of the recipes they present for course credit as an alternative to the dish evaluation form referenced in this section.

- Suggest that students explore the blog entries at **http://thinkbeef.ca/category/blog/** for examples of blog entries based on a beef dishes and cooking.
- Collaboratively develop a template or format for the blog with students. The blog can be paired with the final dish evaluation that students complete in this section.
- Present a recipe, discussing its nutritional benefits and tips for handling and cooking meat. Add a "Did you know" feature to the blog that indicates cooking, tenderizing or doneness tips. Encourage students to add observations and reflections on their recipe results.
- Discuss criteria for assessment with students and either use the cook rubric or collaboratively create one.
- If the opportunity exists, post students' blogs on a school or class website. Provide opportunities for students to add optional photos or videos to their blogs. Alternatively, have students create a print collection of blogs and share with another class or family members.

Discuss criteria for assessment with students and either use the **cook rubric** or collaboratively create one.

Select from the questions in the **All for the Beef: Basic Meat Cookery Test Bank** for this section. These questions can be obtained by email request on **www.albertabeef.org/education**.

3 teaching notes

Cook safely with meat

cook meat dishes

Plan a series of ***presentation dish labs*** that involve students in cooking a selection of meat-based dishes. Students are required to cook at least one dish with each of the following methods:

- One moist-heat method; e.g., stew, swiss steak, rouladen, curry, beef bourguignon
- One dry-heat method; e.g., meatballs, hamburgers, kabobs
- One marinated method; e.g., kabobs
- One mechanical tenderized method; e.g., hamburger, swiss steak
- One ethnic or other preparation; e.g., kabobs, rouladen, spaghetti and meat sauce, tacos

Provide students with **learning source 3-1: Presentation dish planning**. Identify and discuss the five presentation dishes that students will cook. The **recipe cards**, found in the **Recipe Cards Sourcebook**, offer different recipes that students can use.

The presentation dish labs can be structured in a number of different ways, depending on your class setting, time and limitations:

- In a larger class setting, have groups of students independently cook an assigned dish at cooking stations. Plan a series of classes so students have the opportunity to cook one assigned dish from each category.
- In smaller class settings, have pairs work together to cook an assigned dish.
- In individualized settings, have students individually select and plan the presentation dish they will cook from each category.

Consider ways that students can demonstrate meat cookery competencies, including through in-class participation, video or photo evidence of cooking approaches and presentation.

The chart that follows provides an overview of available recipes in each category. Record additional or alternative recipes in the bottom row of the chart. Use the **recipe card template**, provided in the **Recipe Cards Sourcebook**, to add alternative recipes to these choices.

A moist heat method	A dry heat method	A marinated method	A mechanically tenderized method	An ethnic or other preparation
☐ Braised Beef Short Ribs	☐ Beef Cheeseburger Mini Loaves	☐ Asian Beef Noodles	☐ Grilled Beef Club	☐ Beef and Apple Samosas with Apple Chutney Dip
☐ Chunky Beef Chili	☐ Cheeseburger Roll Ups	☐ Beef Kabobs with Peanut Sauce	☐ Involtini Of Beef Steak	☐ Goulash Style Hamburger Soup
☐ Corn and Black Bean Chili	☐ Classic Meatloaf with Pepper Jelly Glaze	☐ Beef Miami Ribs	☐ Philly Cheese Steak Sandwich	☐ Korean Beef Lettuce Cups
☐ Hearty Beef Minestrone Soup	☐ Cowboy Cupcakes	☐ Hawaiian Beef Kabobs	☐ Tika Masala Beef Skewers	☐ Moroccan Beef Stir Fry
☐ Hurry Beef Curry	☐ Egg and Beef Fried Rice	☐ Mucho Mexican Marinated Beef Steak		☐ Thai Stir Fry
☐ Skillet Ground Beef Stroganoff	☐ Italian Turkey and Beef Bombs	☐ Teriyaki Temptation Marinated Beef Steak		
	☐ Tortilla Beef Pie			
My recipes				
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

These recipes have been provided courtesy of Canada Beef http://canadabeef.ca

Note that many of these recipes combine or cross over more than one cooking and tenderizing method. Have students explore why cooking methods are combined, using a **Venn**, in the graphic organizers section of the **Explore Meat Cookery Student Sourcebook**, or the **recipe analysis chart** to identify and compare multiple cooking and tenderizing methods used in one recipe.

scaffold learning

Students who can complete the course requirements independently can be given the option to work with a family member at home to prepare and present their dishes.

Those students who need more structured guidance can be given a set of pre-selected recipe cards from which to select and cook their presentation dishes.

If necessary, review meat cooking processes from the demonstration recipes completed in **section 2: build cooking skills**.

extend learning

Ask students to bring in a favourite recipe book. Identify and select a meat dish that can be added to the class set of presentation dishes. Discuss the ingredients and cooking processes in the dish.

Students can use the **recipe card template**, provided in the **Recipes Cards Sourcebook**, to add favourite recipes to a class recipe book.

assess learning

Students can use **learning source 3-1: Presentation dish planning** as a tracking tool in one or more of the following ways:

- As students cook assigned dishes from each of the five categories, have them note the recipe, ingredients and equipment as well as their observations and results.
- If practical to involve students in recipe selection, have them use the chart with the recipe card to individually plan ingredients and equipment required for each dish.
- After presentation recipes are cooked in class, have students use the chart as an "experience chart." Identify the recipe, ingredients and equipment they now have experience with and document their results and observations.

Image courtesy of Canada Beef http://canadabeef.ca

Remind students to ensure that they apply appropriate safety and sanitary cooking skills as they demonstrate their cooking skills.

Tell students they can also use the **chef safety skills cards,** found in the **Chef Safety Skills Cards Sourcebook**, to help them identify and apply safe food and kitchen practices. Have students ensure that they add appropriate safe cooking practices to their recipe evaluations.

Once students have completed cooking five presentation dishes, have them select one dish to evaluate. Provide students with **learning source 3-2: Presentation dish evaluation** and ask them to individually complete the evaluation.

extend learning

Have individuals, pairs or groups select what they think is their best presentation recipe and hold a "***taste of (your school or class)" event*** for invited guests.

Alternatively, challenge students to each contribute one or two of their favourite presentation recipes to compile a ***recipe book***.

assess learning

Ask students to reflect on their experiences in this course by responding to questions such as the following:

- What did you learn about nutrition in this course?
- What is the next meat dish you would like to try? Why?
- What surprised you the most about what you learned about meat cookery?
- Which activity would you redo if you had the chance? Why?
- What do you think was your strongest success? Why?

scaffold learning

Students who complete the course requirements independently may be asked to demonstrate their cooking through one of the following approaches:

- A ***video*** that demonstrates how the dish is prepared, cooked and presented
- A ***photo display*** that demonstrates and documents, with a series of photographs, the preparation, cooking and presentation of the dish
- A ***PowerPoint, Prezi or other digital presentation*** that demonstrates and documents the preparation, cooking and presentation of the dish

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