



Beekeeping and Honey Processing

PEIMS Code: N1300273

Abbreviation: BEEKHP

Grade Level(s): 10-12

Award of Credit: 1.0

Approved Innovative Course

- Districts must have local board approval to implement innovative courses.
- In accordance with Texas Administrative Code (TAC) §74.27, school districts must provide instruction in all essential knowledge and skills identified in this innovative course.
- Innovative courses may only satisfy elective credit toward graduation requirements.
- Please refer to [TAC §74.13](#) for guidance on endorsements.

Course Description:

The course is designed to introduce students to the concepts and practices of beekeeping, honey production, and the learning experiences of on-campus and community apiary with actively managed hives. Beekeeping and Honey Processing examines the management of apiaries, honey bees, and their ecological needs related to current agricultural practices.

The student outcomes outlined in this course are for students to gain an understanding of honey processing and entrepreneurship. Students will understand the knowledge and skills needed to become an entrepreneur through the product and services of honey processing.

Students in Beekeeping and Honey Processing develop an understanding of honey production techniques and practices while emphasizing environmental science related to production decisions. The students will learn about personal protective equipment and how to avoid common hazards associated with beekeeping. To prepare for success, students need opportunities to learn, reinforce, experience, apply, and transfer their knowledge and skills in a variety of settings.

Essential Knowledge and Skills:

- (a) General Requirements. This course is recommended for students in grades 10-12. Recommended prerequisites: Principles of Agriculture, Food and Natural Resources. Students shall be awarded one credit for successful completion of this course.
- (b) Introduction.
 - (1) Career and technical instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.

Beekeeping and Honey Processing

- (2) The Agriculture, Food, and Natural Resources Career Cluster focuses on the production, processing, marketing, distribution, financing, and development of agricultural commodities and resources, including food, wood products, natural resources, horticulture, and other plant and animal products/resources.
 - (3) Beekeeping and Honey Processing is a course designed to provide students with the academic and technical knowledge and skills that are required to pursue a career related to beekeeping, apiary operations, honey harvesting, and related industries. Beekeeping and Honey Processing is a vital part of our U.S. agricultural economy. To prepare for success, students need opportunities to learn, reinforce, experience, apply, and transfer their knowledge and skills in a variety of settings.
 - (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (5) Statements that contain “including” reference content that must be mastered, while those containing the phrase “such as” are intended as possible illustrative examples.
- (c) Knowledge and Skills.
- (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:
 - (A) describe career development and entrepreneurship opportunities in beekeeping, apiary operations, honey harvesting, and related industries;
 - (B) apply competencies related to resources, information, interpersonal skills, and systems of operation in the viticulture industry;
 - (C) demonstrate knowledge of personal, occupational safety practices, and environmental regulations and first-aid procedures associated with apiary operations;
 - (D) identify training, education, and certification requirements for occupational choice; and
 - (E) identify employers' expectations, including appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills.
 - (2) The student develops a supervised agriculture experience program. The student is expected to:
 - (A) plan, propose, conduct, document, and evaluate a supervised agriculture experience as an experiential learning activity;
 - (B) apply proper record-keeping skills as they relate to the supervised agriculture experience;
 - (C) participate in youth leadership opportunities to create a well-rounded experience program; and
 - (D) produce and participate in a local program of activities using a strategic planning process.
 - (3) The student explains the biology and bee behavior. The student is expected to:
 - (A) identify different types of bees and their life spans;

Beekeeping and Honey Processing

- (B) explain the different roles played by the different types of honey bees; and
 - (C) demonstrate knowledge of honey bee development, castes, bee behavior, division of labor, and the life cycle.
- (4) The student analyzes beehive design and development. The student is expected to:
- (A) identify the site characteristics required for successful beehive production;
 - (B) evaluate the factors such as climatic characteristics and food sources for a potential beehive to determine if it is suitable for honey harvesting and pollination;
 - (C) research and compare successful beehives in other parts of the world with similar local conditions; and
 - (D) develop a beehive design and installation plan including shelter concerns, solar, topographical, human and animal habitation, and good neighbor policy.
- (5) The student evaluates technology and practices for weatherizing the hive. The student is expected to:
- (A) demonstrate knowledge of the environmental conditions that lead to bee colonies adapting to extremes in climate conditions- summer, autumn, and winter management; and
 - (B) identify and practice winterizing hives and an effective course of action.
- (6) The student demonstrates beehive management techniques. The student is expected to:
- (A) identify the tools of an apiarist and demonstrate safe usage of tools;
 - (B) demonstrate inspection of a beehive with an emphasis on using protective equipment, how to light a smoker, comb replacement or inspection; and
 - (C) apply beehive-training techniques including diagnosing the brood pattern, adding brood comb to the nest, switching colonies, feeding bees, providing water, removing old combs, extracting honey, and caging queens;
 - (D) identify safety precautions in the field and handling of live bees, caring for the colonies in the hives, extracting of honey and honey comb;
 - (E) explain the proper methods of bee handling to prevent harm to themselves and others; and
 - (F) describe personal protective equipment used to reduce the risk of accidents.
- (7) The student develops an integrated pest management plan for beehives. The student is expected to:
- (A) identify the major insect pests and diseases of honeybees;
 - (B) evaluate the components of integrated pest management related to honeybees; and
 - (C) describe the safe usage of pesticides in honeybee hives.
- (8) The student produces honey using the proper equipment and tools. The student is expected to:

Beekeeping and Honey Processing

- (A) describe the tools and equipment used in honey production, including but not limited to, bee brush, fume board, honey drip tray, nectar detector, escape board, and extractor;
 - (B) demonstrate the safe usage of honey harvesting tools;
 - (C) explain the use of technology in modern honey production systems; and
 - (D) apply training and extract honey using appropriate procedures.
- (9) The student identifies procedures and regulations for sanitation and safety in the food industry. The student is expected to:
- (A) identify food industry inspection standards, including hazard analysis and critical control points;
 - (B) identify the appropriate chemicals used in food industry; specifically in honey processing;
 - (C) identify safety and governmental regulations involved in the processing and labeling of foods;
 - (D) demonstrate knowledge of procedures relating to the safe manufacture of foods through hygienic food handling and processing;
 - (E) develop and maintain sanitation schedules; and
 - (F) research food safety laws.
- (10) The student demonstrates an in-depth understanding of entrepreneurship and how to grow a business. The student is expected to:
- (A) develop concepts based on terms entrepreneurship and entrepreneur;
 - (B) define small, medium, and large-sized businesses;
 - (C) visualize and communicate a business model; and
 - (D) collaborate with a team on the development of a project.
- (11) The student completes the process for development, implementation, and evaluation of a marketing plan and a financial forecast. The student is expected to:
- (A) identify and explain the target market for honey related products;
 - (B) create and conduct a customer survey;
 - (C) analyze the survey results;
 - (D) structure modification recommendations based on survey results; complete a detailed market analysis;
 - (E) analyze and explain different types of market strategies;
 - (F) direct a social media marketing campaign for honey processed products; and
 - (G) develop and explain a projected income statement, cash budget, projected, balance sheet, projected sources and uses of funds statement.
- (12) The student explains the scope and nature of distribution of the honey-related products. The student is expected to:
- (A) define effective channels of distribution strategies, including activities associated

Beekeeping and Honey Processing

- with transportation, storage, product handling, and inventory control;
- (B) explain how distribution can add value to goods, services, and intellectual property; and
 - (C) determine costs associated with distribution.

Recommended Resources and Materials:

Standards-aligned curriculum in Agricultural Science using iCEV's Agricultural Science curriculum

Texas A&M University, "The Texas A&M Honey Bee Lab," accessed December 14, 2021,
<http://honeybeelab.tamu.edu>

Recommended Course Activities:

- Evaluate hive site and health of bee colonies; record observations
- Raise bees to produce honey
- Extract and package of honey produced by local honey bees
- Construct or assemble and maintain beehives using hand tools
- Demonstrate quality control procedures in compliance with applicable regulatory and licensing requirements including packaging and distribution
- Determine optimal location for pollination and move beehives accordingly
- Force bees' evacuation from hive using smoke pot or other tools in order to harvest honey
- Manage marketing and sales distribution of bee and honey products

Suggested methods for evaluating student outcomes:

Students will be evaluated for comprehension of concepts through written assignments and testing in addition to ongoing monitoring by the teacher and student self-assessment. Application of concepts will be evaluated through hands-on exercises.

Teacher qualifications:

An assignment for Beekeeping and Honey Processing is allowed with one of the following certificates:
Agriculture, Food & Natural Resources Grades 6-12
Vocational Agriculture Production 6-12

Additional information:

ServeSafe Manager Certification. Costs for online course exam are listed as: \$38 scantron, \$36 online voucher with proctor present and proctor to administer per Texas law.

Study Materials & Resources, <https://www.servsafe.com/access/ss/Catalog/ProductList/189>