

**Texas Master Beekeeper Program  
Apprentice Level Study Guide**

- I. Honey bee diseases
  - a. Know how to diagnose and treat for:
    - i. American Foulbrood (AFB)
    - ii. European Foulbrood (EFB)
    - iii. Nosema (both *Nosema apis* and *Nosema ceranae*)
    - iv. Chalkbrood
    - v. Sacbrood
    - vi. Parasitic Mite Syndrome (PMS)
    - vii. Deformed Wing Virus (DWV)
  
- II. Honey bee pests
  - a. Know how to diagnose, manage, and treat:
    - i. Varroa mites
    - ii. Small Hive Beetles (SHB)
    - iii. Wax moths
    - iv. Tracheal mites
    - v. *Tropilaelaps clareae*
    - vi. Bee louse
  
- III. Honey bee physiology
  - a. 3 body segments: head, thorax, abdomen
  - b. Parts of the body
  - c. Organs: Johnston organ, crop, spiracles, heart, nervous system, etc.
  
- IV. Honey bee biology
  - a. Fertilized vs. unfertilized eggs / haploid vs. diploid sex determination
  - b. Understand the different tasks of a worker honey bee
    - i. Be able to define temporal polyethism
  - c. Queens
    - i. How are new queens produced
    - ii. Mating behaviors
    - iii. Pheromones – Queen mandibular pheromone (QMP)
    - iv. Indicators of queen failure
  - d. Development time and life longevity of: workers, drones, queen
    - i. Understand the development stages (egg, larvae, pupae, adult)
  - e. Races of honey bees: Russian, Italian, German, Caucasian, Carniolan
  
- V. Swarming behavior
  - a. 3 types of queen cells: swarm, supercedure, emergency
    - i. Be able to distinguish between the different types of queen cells
  - b. Indicators of swarming

- c. How to prevent swarming
  - d. Factors for nest site selection
  
- VI. Management
  - a. Bee space – 3/8 of an inch
  - b. Understand the concept of Integrated Pest Management (IPM) for beekeeping
  - c. Methods for prevention of swarming
  - d. How to keep bees in an urban environment
  - e. Identify when it's time to re-queen a colony
  - f. Pest and disease control
  - g. Methods for winterizing hives
  
- VII. Beekeeping equipment
  - a. Know proper names and purposes for commonly used equipment
  - b. How to properly light a smoker
    - i. What is the purpose of a smoker?
  
- VIII. Historical
  - a. Rev. Langstroth, Johannes Mehring, Moses Quinby, Karl von Frisch, Brother Adams, C.L. Farrar
  
- IX. Honey Production and Products of the hive
  - a. Major Texas honey varieties: Chinese Tallow, Mesquite, Huajillo
  - b. Sugars within honey
  - c. When to extract
  - d. Water content of honey and consequences
  - e. Indicators of a strong honey flow
  - f. Reason for different colors of honey
  - g. Factors for strong honey production in a hive
  - h. Propolis – contents and purposes in a hive
  - i. Uses of honey and hive products by humans
  
- X. Other
  - a. Texas Apiary Inspection Service
    - i. Purpose – regulates apiary industry in Texas
    - ii. Beekeeping laws regarding: Apiary registration, brand numbers, movement permits
  - b. Texas Master Beekeeper requirements for the Advanced level