

Period Assigned: Practical 4

**Month-wise plan for Practical**

Month	Weekly schedule	Practical Exercise to be covered
July	5 <sup>th</sup> week	Study of the life history of honey bee, <i>Apis cerana indica</i> from photographs - Egg, larva, pupa, adult (queen, drone, worker)
August	1 <sup>st</sup> week	Study of the life history of honey bee, <i>Apis mellifera</i> from specimen/photographs - Egg, larva, pupa, adult (queen, drone, worker)
	2 <sup>nd</sup> – 3 <sup>rd</sup> week	Study of natural bee hive and identification of queen cells, drone cells and brood
	4 <sup>th</sup> week	Study of morphological structures of honey bee through photographs – mouth part, antenna, wings, legs (antenna cleaner, mid leg, pollen basket), sting apparatus.
September	1 <sup>st</sup> week	Study of artificial hive (Langstroth/Newton), its various parts and beekeeping equipment.
	2 <sup>nd</sup> week	Permanent/temporary mount of antenna cleaner, mid leg and pollen basket OR mount of pollen grains from flowers
	3 <sup>rd</sup> – 4 <sup>th</sup> week	Analysis of honey – purity, biochemical analysis (Any two constituents)
October	3 <sup>rd</sup> week	Visit to an apiary/honey processing unit/institute and submission of a report.
	4 <sup>th</sup> -5 <sup>th</sup> Week	Study of bee pasturage – <ul style="list-style-type: none"> <li>• Visit to fields/gardens/orchards for studying the bee activity (role in pollination and nectar collection).</li> <li>• Making of herbarium of nectar and pollen yielding flowering plants</li> </ul>
November	1 <sup>st</sup> week	Revision and report submission
	2 <sup>nd</sup> week	Practical examination

**Curriculum Plan  
Dr. Tarkeshwar**

B.Sc. (H) Zoology III Year  
**Paper: Paper: SEC- Apiculture**

**Month-wise plan for Theory**

Period Assigned: Theory 02,

Units to be taught:

Month	Week-wise Dates	Unit	Topic to be covered
July	4 <sup>th</sup> – 5 <sup>th</sup> week	1. Biology of Bees	<ul style="list-style-type: none"> <li>• History, Classification and Biology of Honey Bees</li> <li>• Different species of honey bees - <i>Apis dorsata</i>, <i>Apis cerana indica</i>, <i>Apis florea</i>,</li> </ul>
August	1 <sup>st</sup> - 2 <sup>nd</sup> week	1. Biology of Bees	<ul style="list-style-type: none"> <li>• Different species of honey bees - <i>Apis mellifera</i>, <i>Melipona</i> sp.</li> <li>• Social Organization of Bee Colony,</li> <li>• Behavioural patterns (Bee dance, swarming)</li> </ul>
	2 <sup>nd</sup> – 3 <sup>rd</sup> week	2. Rearing of Bees	<ul style="list-style-type: none"> <li>• Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth; Bee Pasturage;</li> <li>• Selection of Bee Species for Apiculture – <i>Apis cerana indica</i>, <i>Apis mellifera</i>;</li> <li>• Bee Keeping Equipment</li> </ul>
	4 <sup>th</sup> -5 <sup>th</sup> Week		<ul style="list-style-type: none"> <li>• Methods of Extraction of Honey (Indigenous and Modern) &amp; processing;</li> <li>• Apiary management</li> <li>• Honey flow period and Lean period</li> </ul>
September	1 <sup>st</sup> – 2 <sup>nd</sup> week		<ul style="list-style-type: none"> <li>• Bee communication: round dance and waggle dance and foraging behaviour</li> <li>• Communication and the senses (Chemical, Tactile, Auditory, Visual);</li> </ul>
	3 <sup>rd</sup> week	3. Diseases and Enemies	<ul style="list-style-type: none"> <li>• Bee Diseases, control and preventive measures;</li> <li>• Enemies of bees and their control</li> </ul>
	4 <sup>th</sup> - 5 <sup>th</sup> week	4. Bee Economy	<ul style="list-style-type: none"> <li>• Products of Apiculture Industry (Honey, Bees Wax, Propolis, Royal jelly, Pollen etc.) &amp; their uses;</li> <li>• Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens.</li> </ul>
October	3 <sup>rd</sup> week	5. Entrepreneurship in Apiculture	<ul style="list-style-type: none"> <li>• Bee Keeping Industries – Recent Efforts,</li> </ul>
	4 <sup>th</sup> – 5 <sup>th</sup> week		<ul style="list-style-type: none"> <li>• Employment opportunities, Economics in small scale and large-scale beekeeping,</li> <li>• Scope for women entrepreneurs in beekeeping sector</li> </ul>
November	1 <sup>st</sup> -2 <sup>nd</sup> week		<ul style="list-style-type: none"> <li>• Presentation, Revision</li> </ul>