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**Department of Plant protection .**

**College of Agriculture.**

**University of Salahaddin**

**Subject: Theory Apiculture (Beekeeping).**

**Course Book – *For*  4th` year**

**Lecturer's name Msc. Mohammed Hassan Sallow**

**Academic Year:  2021/2022**

**Course Book**

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| **1. Course name** | **Apiculture theory** |
| **2. Lecturer in charge** | **Msc. Mohammed H. Sallow** |
| **3. Department/ College** | **Plant protection Dep. \ college of Agriculture** |
| **4. Contact** | **e-mail: Sallowmohamed@yahoo.com****Tel: (07703003339 0r; 07508189336)** |
| **5. Time (in hours) per week**  | **For Theory: 2** **Practical:6**  |
| **6. Office hours** | **existent during week days** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **A graduate of the University of Mosul \ college of Agriculture and Forestry \ Plant Protection Department in 1980.****Master in insects (beekeeping) 1985 .I am worked in agricultural research station in Mosul 1987 - 1993 . And as a lecturer in 1997 at Dohuk University College of Agriculture. Since 2000, and so far I am do as lecturer in some subjects in insects & beekeeping in plant protection Dep. college of agriculture \ university of salahaddin.. as well as i am do lecture some subject on beekeeping which organized by the FAO organization for Food and agriculture. for kurdistan beekeeper . And I completion of some research. As well as participated in some scientific conferences such as the second Festival of honey bees in Dohuk beekeeper Association from 2-4 \ 10 \ 2012 and also participated in the activities of the Third Conference of Syrian beekeeper, Damascus University \ college of Agriculture from 13-14 \ 12 \ 2010****As well as the activities of the First Scientific Conference of Plant Protection \college of Agriculture and Forestry \ Mosul University 22-24 \ 11 \ 2011. As well as the second scientific conference of the University of Karbala \college of agriculture.** |
| **9. Keywords** |  |
| **10. Course overview:** **Study beekeeping is one of the very important professions for the agricultural sector, especially the agricultural engineer because of this insect is very active role in pollination most agricultural crops as 80% of agricultural crops depend vaccinated on honeybees has mentioned Einstein in his memoirs that if disappeared bees entirely no longer be life on the face of the earth after 4 years because all plants will disappear from the earth's surface. Additionally the honey bees generate an excellent resource for the owner of crop pollination, honey, royal jelly and other bee products. And also very important for the operation of many hands working both in beekeeping or the production of materials needed for beekeeping supplies as well as to combat bee pests material** |
| **11. Course objective:****: the main goal is to learning the students on the basis & concepts of modern scientific of bee breeding and to identify the most important bee strains deployed in the world and characteristics of each as well as study of how bees breeding are development and to identify some of the scientists who have a prominent role in the advancement of the process of bee-keeping. As well as the study of how to establish the Apiaries & conditions of its establishment and to identify the most important phenomenon of Bees such as false mothers(laying workers ) , Swarming , and Robbing , immigration ---etc. and their causes and how to control them as well as to identify the most important Bees products such as Honey , royal jelly , pollen , Wax , Venom, & their benefit for human . And identify the main pests attack the bees and how to protect or control bees from it . such as fungal , bacterial , Viral diseases , insects ( wax worm , wasps , beetle, louse, …etc) ,, Mites ( such as Varroa , ) , Birds , and some animals (such as Bears), ….etc.** |
| **12. Student's obligation;****Not all students on one level, there is a vast difference between the students in terms of commitment and attention within the lecture and in general, the girls commitment and attention more than males, but as presence to lecture all students presence fear from their punctuation constraint and not out of love for science**.  |
| **13. Forms of teaching****fasciculus (note book) are used also PowerPoint and data chew as well as the white board.**  |
| **14. Assessment scheme**Two seasonal examin = 25 mark Final examin = 40‌ mark ‌ |
| **15. Student learning outcome:**The main objective of the subject is to teach students to follow the modern methods in beekeeping which habitual in the countries of the civilized world. And teaching them the most modern methods in breeding queens as well as methods to control bee pests without harming bees and identify the most important beekeeping problems, especially in the recent phenomenon of disappearance of bees from hives fully and which has become a global phenomenon that puzzled scientists to find causes of it to give answer for it or control it . as well as how to establishment the Apiaries .  |
| **16. Course Reading List and References‌:****1-Phillips E.F. 2006 Beekeeping ,Agrobos (india)****2-Carter George A. 2004 Beekeeping .A guide to the better understanding of bee(their disease &chemistry of beekeeping .****3-Roger A.Morse & kim flottum ,Honey bee pests ,predator & disease.****4-Vonfrisch k.1967 the dance language & orientation of bees .****5- الانصاري , اسامة محمد نجيب 1998 النحل في انتاج العسل وتلقيح المحاصيل . كلية الزراعة \جامعة الاسكندرية .****6- الناجي ,لؤي كريم 1980 تربية النحل ودودة القز وزارة التعليم العالي والبحث العلمي \ جامعة السليمانية .****7- ابوبكر صدر الدين نور الدين 2003 تربية نحل العسل , منظمة الاغذية والزراعة التابعة للامم المتحدة \ العراق** **8-Internet.** |
| **17. The Topics:** | **Lecturer's name** |
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| **18. Practical Topics (If there is any)** |  |
| In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture  | Lecturer's nameex: (3-4 hrs)ex: 14/10/2015 |
| **19. Examinations:**1-write true or false of the following statements.2-Define briefly the following terms (langstroth , giant bees , queen substance , AFB , Royal jelly, Drone ,Robbing….etc.)3-How bees understand each other ?& appoint distance &local of food.4-What are the factors affecting the egg-laying by the queen.5-Define swarming ,what its reasons , harms , &how it can be prevented .6-What is laying worker ,how we can prevented it.7-Mention the methods of colony dividing , uniting.8- What is fermentation , Granulation in honey ,what is the causes of it ,9-Indicate the scientific name & characteristic ot these races a- b- c- …etc.10-Enumerate the most important conditions for establisment of commercial Apiary.11-What is the cause of these pests ( Nosema ,paralysis , chalk brood, Efb,..etc ……..)12- Fill the blank with the suitable term. |
| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |

17-The Topics :-

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| **17. The Topics:** | **Lecturer's name** |
| Syllabus Items | Week No. |
|  Introduction..Beekeeping development in the world …Races of honeybees.Honeybee species (Apis sp.)  | 1-2 |
| Groups of Apis mellifera according to the a-Geographical location (African ,European & Oriental bees). b-Colour (Yellow , Dark &Black bees groups)Standard characteristics of productive race of honey bee. |  3 |
|  The members of the honey bee colony (1-Queen .2-drone .3worker.)The queen cells ., virgin queen , mating of queen .., queen substance …,Egg laying …,Factors affecting egg production …, Drone- laying queen.Variatin in castes `growth in honeybee colony. | 4 |
|   **Life cycle of the different castes of honey bee. and their functions.****The Drone . The Queen \**  | 5 |
|  **The Worker ;** **Workers Labour a- inside hive (house workers)( feeding large larvae,** **Feeding small larvae , building wax comb , feeding queen , ventilation,** **Receving nectar &ripen it. Guarding hive , cleaning hive.** **b-field or foraging workers ( Nectar ,pollen water &propolis gathering.**  | 6 |
|  **Bee language ;- a- Round Dance b- Waggle Dance (video).** **Laying worker … signs of laying workers existance…** **protection from the formation of laying workers.** **How to get rid of laying workers.** | 7 |
| **The Swarming ; its reasons . .., Signs(phenomenon) of swarming…** **Signs of swarming outgoing…..Harms of swarming…** **Catching swarms 1-stopping swarm. 2-how to get a swarm.** **3- Housing the swarm.** **Guarding(precaution) swarming occurrence..****Resisting(preventing) swarming.** | 8 |
| **Absconding (bee Migration)…the reason of it.****Colony dividing …. Times of it … Methods of it ….****Uniting colonies….. Methods to strengthen the colonies …** **Uniting timings …. Uniting steps ….Methods of uniting…** | 9 |
|  **Robbing ..reasons , signs &protection of robbing.** **Establishing Apiaries .1- selection the apiary location.** **2-planning the apiary. 3-construction the honey house.** **4-purchasing the hives &beekeeping tools . 5- selecting bee races for rearing.. 6-number of colonies in the apiary .7- purchasing bees.** | 10 |
|  **Honey bee products :-**1. **Queen rearing. 2-preparing bee dividing for sale.**

**3-honey production ..the chemical composition of honey .** **Granulation & fermentation of honey & the reason & controling of it..** **Honey and health**  | 11 |
| **4-Royal jelly :-the chemical composition of it ….methods of using it. …..Royal jelly and health ..** **5- wax** **6- Bee venom .** **7- Propolis** **8- Pollen**  | 12 |