



NDB SHORT COURSES

Part-funded by the Food and Environment Research Agency (Fera), the NDB is organising a series of Short Courses covering important topics in beekeeping and beekeeper education. These 2-day courses will be available in 4 regional areas and are intended to provide beekeeper trainers with in-depth subject matter knowledge and appropriate practical skills. Courses will be led by NDB-qualified tutors and no more than 10 students will participate, per course.

Five NDB Short Courses will be available initially, others are in preparation.

- Adult bee disease – lifecycle, impact, diagnosis, treatment
- Microscopy for beekeepers – set-up and uses in beekeeping
- Balanced nutrition & floral sources – all aspects of pollen
- Teaching for beekeeper tutors – 2 day distillation of C&G7303
- Successful wintering – all aspects of preparing for winter, to thrive in spring

Fuller details of the course content is available in the attached summaries. These intensive Short Courses are to be offered at £95. (It is expected that the applicant’s association will sponsor the student contribution.)

Applications should be made to Ken Basterfield, Course Director.

ken@basterfield.com or phone 01404 815885

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I would be interested in attending a training course (s)
(state which)

Title First Name Surname

Beekeeping Association

Telephone

email
(please print)

(if you do not have an email please give full address)

I have been involved in training new beekeepers for 0-5 yrs 5-10yrs 10-20 yrs 20+yrs

I am involved in training new beekeepers for My association Private company

I have a background in education or training Yes No

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“Microscopy for Beekeepers”

**A 2-day intensive course covering aspects of microscopy
for those planning to teach microscopy to beekeepers.**

Microscopy is a valuable additional skill for beekeepers. Not only is it useful for disease identification but it also helps with basic understanding of honeybee biology. Study of the external and internal anatomy reveals the amazing adaptations which have evolved over millions of years to enable the honeybee to survive. Being able to identify pollen from within the hive, or extracted from honey helps the beekeeper to understand the foraging behaviour of the colony.

During this two day course, we will cover all aspects of microscopy related to beekeeping. Topics covered will include:

- The theory behind the design of optical microscopes
- The compound and dissection microscopes and their uses related to beekeeping
- Limitations of optical microscopes
- Koehler illumination and how to achieve it
- Calibrating a microscope using the eyepiece graticule and stage micrometer
- External honeybee anatomy
- Tools and techniques used for dissection
- Dissection of the head, thorax and abdomen.
- Preservation, softening, bleaching and decalcification of samples
- Preparing temporary and permanent slides
- Extracting pollen from honey samples
- Making reference slides from anatomy, pollen and disease samples
- Sampling a colony for disease and the statistics involved
- Checking honeybee samples for Nosema and Acarine
- Planning and running a microscopy workshop
- An overview of the electron microscope

The course will be limited to no more than 10 students at a time. This classroom and lab based course will combine both theory and practical sessions and is intended to provide tutors with enough information to organise and run their own microscopy workshops for beekeepers.

A limited number of microscopes will be available for use on the course but it is expected that most students will already own, or have access to, microscopes which they can bring with them. Worksheets and assignments used during the course will be useful for student to use in their own courses.

The overall aim is to refresh and expand existing skills to enable beekeeping tutors to deliver microscopy courses to their students.

“Balanced Nutrition & Floral Sources”

A 2-day intensive course covering all aspects of pollen production, its use by bees and its characterisation in pollen loads and honey.

As beekeepers, we watch the comings and goings from a busy hive and have to wonder where they are foraging, what flowers are they visiting and what the resultant honey will be like? We may have a few clues to help us – the colour of the pollen loads on the legs of returning bees or perhaps we have seen a patch of flowers covered in honey bees, but that is about as far as we can go.

Honey bees are able to forage very effectively over a vast area of land in the vicinity of their hives, their choices are frequently unexpected.

During this two day course, we will examine all aspects of pollen, from its production by flowering plants to its extraction from honey and microscopic identification.

Topics covered will include

- The production of pollen by flowering plants and its role in reproduction
- A basic coverage of the anatomy of flowers and sufficient botany to allow an appreciation of the mechanisms by which flowers attract insects and encourage cross-fertilisation
- The use of a wild flower Flora to identify plants growing in the area
- The specialist adaptations in the bee which allow it effectively to forage for pollen, to transport it back to the hive and to store it for future use.
- The preparation of pollen grains for microscopic examination
- The preparation of a set of reference slides, having the pollen grains from known species of local wild flowers
- The use and set-up of stereo, dissecting microscopes and of high-power, compound microscopes in pollen analysis
- The nutritive properties of pollen, the structure of pollen grains and the classification of their features which allows identification
- The use of pollen traps to collect samples of pollen loads and ways in which this can provide an insight into foraging patterns
- The extraction of pollen from samples of honey and the interpretation of the pollen abundance measures so achieved.

The course will be limited to no more than 10 students at a time. This lab-based course will present sufficient theory to allow the extensive practical sessions to be tackled with confidence and understanding. Handouts will be provided, as will all necessary equipment and consumables.

The overall aim is to explore the many fascinating aspects of the honey bees' principal source of protein and, through microscopic analysis of pollen samples taken from the hive, to gain a deeper understanding of the interaction between our bees and their environment.

Robert Smith, NDB

“Teaching Beekeeping ”

A 2-day intensive course covering some educational theory, schemes of work, session plans and assessment methods, aimed at teaching the craft and science of beekeeping

It is important in these days of rapid increase in the numbers of new beekeepers that beekeeping is taught correctly. Many good and experienced beekeepers are not trained teachers and have not studied teaching methods. This course seeks to give some help to tutors to deliver beekeeping information effectively at all levels from beginners to those aiming at Master Beekeeper level.

Many of the principles and practices of teaching and presentations are common across all disciplines. However, there are inevitably issues which are specific to the subject matter so this course introduces aspects of beekeeping into its content.

During this two day course, we will examine the preparation and delivery of beekeeping courses.

Topics covered will include

- How adults learn
- Audience assessment
- Planning a course
- Schemes of work
- Session plans
- A/V aids including PowerPoint
- Effective delivery
- Student assessment
- Self assessment

The course will be limited to no more than 10 students at a time. In appropriate seasons it will include practice sessions in an apiary where possible; otherwise model or empty hives will be used.

Handouts will be provided, as will all necessary equipment and consumables.

The overall aim is to enable beekeeping tutors to improve their delivery of beekeeping courses by understanding how their students learn and how to prepare their material in a structured and competent manner.

Bridget Beattie, NDB

Adult Bee Diseases

A 2-day intensive course for beekeeping tutors covering the lifecycle, impact, diagnosis, and treatment of adult bee diseases.

In the climate of the British Isles, the honey bee faces a cyclical challenge: survival, build-up, harvest, decline, and survival once more. After surviving a long winter confinement, colonies are stretched and stressed by the demands of brood raising in order to provide a foraging force for the relatively short window of forage abundance. It is at this time that adult bee diseases and disorders become most apparent. Anything that hampers the ability of the colony to forage and to nurture its young will have a direct impact on its ability to thrive in this season and to survive the coming winter. As beekeepers we need to have an understanding of the potential diseases, and the skills with which to recognise and treat these so that our bees can remain healthy.

During this two day course, we will develop an understanding of how colony health is affected by Acarine, Amoeba, Nosema, and the common viruses, and how these disorders can be managed. Practical work will complement this by providing field diagnosis and laboratory skills to allow positive diagnoses to be made, supporting timely and appropriate treatments.

Topics covered will include

- Overview of honeybee anatomy, including respiratory and digestive systems
- The causative organisms of Nosema, Acarine, Amoeba, and virus diseases, including their lifecycle and spread
- Differentiating between *Nosema apis* and *Nosema ceranae*
- The site of infection and nature of the damage caused by each of the adult bee diseases
- Appropriate treatments
- Discussion of dysentery and its relationship with adult bee diseases
- Field diagnosis techniques for Nosema, Acarine, and virus diseases
- Taking, storing, and posting adult bee samples for disease diagnosis
- The set-up and use of dissecting microscopes
- Elemental dissection of honey bee digestive and respiratory organs
- Laboratory diagnosis of Acarine using dissecting microscope
- The set-up and use of compound microscopes
- The preparation and staining of samples on microscope slides
- Laboratory diagnosis of Nosema using compound microscope

The course will be limited to no more than 10 students at a time. This classroom-based course is intended to provide tutors with sufficient information and skills regarding the recognition, diagnosis, and treatment of adult bee diseases to pass on to their own students. Handouts will be provided to be used as tutor notes by students in delivering their own courses.

Ken Basterfield, NDB

“Successful Wintering”

A 2-day intensive course for beekeeping tutors covering all aspects of the care of honey bee colonies so that they may survive winter and thrive in spring.

Over the last few years there have been dramatic increases in winter colony losses reported across the world. Levels of over 50% have been reported from some parts of the United States and in this country the losses have ranged from 15% to 40% each year for the last 3 years. This compares with expected losses of about 5-10% in past years. There are a number of factors that mitigate against winter losses and it is for all beekeepers to develop management practices and monitoring techniques to improve honey bee colony survival rates. Every lost colony is a waste of resources and a reduction in the pollinating force where we beekeepers have a duty of care.

During this two day course, we will consider all the factors that weaken a colony throughout the active season and thus reduce the chances of survival during the season of dearth. Worker honey bees live a lot longer during winter and thus if they are bred poorly or subject to low levels of disease they will not survive and be able to rear the first broods laid by the queen when the next season starts.

Topics covered will include

- Current world situation on Honey bee colony losses
- The importance and adaptation for winter stasis
- Colony dynamics
- The aging process in honey bees
- Threat posed by the Varroa mite and Nosema
- How to minimise viral damage to the individual honey bee and the colony
- Initiation of winter preparations
- Early spring management
- Nutrition and storage
- Control of other disturbances to colonies
- Good hive design for winter
- How to plan for winter

The course will be limited to no more than 10 students at a time. This classroom-based course will present sufficient theory and practical guidance on successful wintering and is intended to provide tutors with enough information to pass on to their students about the importance of wintering and how to give colonies the best chance to survive. The session will involve group working and delivering short presentations. Handouts will be provided to be used as tutor notes for student to use in their own courses..

The overall aim is to explore the success factors for overwintering honey bees colonies and to gain a deeper understanding of how our bees have adapted to our temperate climate.

Ivor Davis, NDB