1:Lecture: Lecture: introduction to the nature of lichens and their role in the biosphere lichens including why study lichens and role of microscopy).

2: Practical (dissecting microscopy): Aided by members of the Shropshire/Staffordshire Lichen Group:

2.1:Examine the twig with lichen and familiarise yourself with the main macroscopic of lobes, upper and lower surface, fruiting bodies .

(up to 15 twigs i.e. one each; Not all structures covered in this element-only sufficient to undertake compound microscopy practical on thallus and fruiting body)

3: Practical (dissecting and compound microscopy). Aided by members of the Shropshire and Staffordshire Lichen Group:

3.1: Cut a thick section of Xanthoria **thallus** to examine the layers under dissecting microscope *(View PowerPoint, refer to instructional handout and cut your own section [cortex, algae, medulla, lower cortex]*

3.2i : Cut a thin section of the fruiting body and mount in water for examination of layers and structures and spores under the compound microscope. To perform a squash if necessary *(View a PowerPoint Refer to Instructional sheet on cutting sections and squash; refer to apothecial [fruiting body] anatomy handout).*

3.2ii: Staged tutor led examination of the layers and structures of the fruiting body section performed in 3.2i, mounted in water under the compound microscope
(View/Follow PowerPoint on staged examination , refer to handout on apothecial anatomy [lichen layers/structures -epithecium, hymenium, hypothecium, exciple, asci ; paraphyses and spores if visible].

-either in section (or squash(see 3.3) if section too thick) examine spores (describe and measure)

3.2iii: Self-study or with partner to examine the layers and structures of the section of the fruiting body.
(Refer to Apothcial [fruiting body] anatomy handout [lichen structures as listed in 3.2ii above [i.e. lichen layers/structures -epithecium, hymenium, hypothecium, exciple, asci ; paraphyses and spores if visible].]

3.3: Perform a squash of the material from 3.2 or from another section and examine the structures.
(View PowerPoint, refer to the standard instructional handout on how to cut a section [from point 12; [Structures-spores, asci, paraphyses, photobiont i.e. algae])

-measure the spores in microns.

3.4: Cut a thin section of the fruiting body and mount directly in KOH for examination of layers and structures but especially for colour changes, and spores under the compound microscope. To perform a squash if necessary
(Refer to Instructional sheet on cutting sections and squash; refer to apothecial [fruiting body] anatomy handout).

3.5: Perform ink vinegar staining of the sample from 3.4 or a second section or a squash and examine under the compound microscope for structures [esp. spores and paraphyses]
(View video; refer to instruction sheet on method and fruiting body anatomy diagrams)

Ideally if time 3.6: Cut a section of the second sample (Lecanora) , mount in water, examine under a compound microscope and examine for crystals in the apothecium using polarised light.*(View PowerPoint; refer to instructional handout).*

4: Lecture: Summary slide (1 slide) and 'Where next ?' for those interested in taking lichenology further.

END