

Higher National Unit specification

General information for centres

Unit title: Aromatherapy Chemistry

Unit code: F1BT 35

Unit purpose: This Unit is designed to give the candidate the knowledge of chemistry and related theory to the study of Aromatherapy.

On completion of the Unit the candidate should be able to:

- 1 Understand the basic principles of organic chemistry.
- 2 Identify and describe key families of compounds that occur in essential oils.
- 3 Explain the theory behind the main methods of analysis.

On completion of the Unit the candidate should be able to:

Credit points and level: 1 HN credit at SCQF level 8: (8 SCQF credit points at SCQF level 8*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Recommended prior knowledge and skills: It is strongly recommended that the candidate has knowledge of basic chemistry which may be evidenced by an Access to Chemistry or Intermediate 2 Chemistry qualification or above.

Core Skills: There are opportunities to develop the Core Skill of Communication at SCQF level 6 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Assessment: This Unit could be assessed by a combination of open and closed-book assessment along with a practical report.

Higher National Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Understand the basic principles of organic chemistry

Knowledge and/or Skills

- ◆ Key hydrocarbons their range and diversity
- ◆ Identifying and naming key hydrocarbons
- ◆ Understanding molecular formula

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ explain why hydrocarbons are so numerous, diverse and why their identification is important in aromatherapy
- ◆ identify and draw the structures of key hydrocarbons
- ◆ explain why molecules with the same molecular formula may display structural and geometric isomerism

Assessment Guidelines

Assessment of this Outcome can be a combination of open and closed-book questions.

Outcome 2

Identify and describe key families of compounds that occur in essential oils

Knowledge and/or Skills

- ◆ Identify key terpenes
- ◆ Essential oil hydrocarbons
- ◆ Research into their therapeutic properties

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Unit title: Aromatherapy Chemistry

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can:

- ◆ identify and draw the isoprene subunit of monoterpenes and sesquiterpenes
- ◆ name and describe some key monoterpenols, sesquiterpenols and phenols
- ◆ identify the important functional group in a variety of essential oil compounds

Assessment Guidelines

Assessment of this Outcome can be a combination of open and closed-book questions.

Outcome 3

Explain the theory behind the main methods of analysis

Knowledge and/or Skills

- ◆ Qualitative and Quantitative analysis
- ◆ Chromatography (TLC, HPLC and GC)
- ◆ Mass Spectrometry (GC-MS)
- ◆ Infrared Spectroscopy
- ◆ Optical rotation
- ◆ Specific gravity
- ◆ Refractive index
- ◆ Sensory detection

Evidence Requirements

Candidates will need evidence to demonstrate the knowledge and/or skills by showing that they can:

- ◆ explain the basic theory behind each of the above methods of analysis as well as the benefits and drawbacks of each
- ◆ perform thin layer or paper chromatography of a plant extract

Assessment Guidelines

Assessment of this Outcome can be a combination of open and closed-book questions as well as the practical report.

Administrative Information

Unit code: F1BT 35
Unit title: Aromatherapy Chemistry
Superclass category: RD
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History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

Unit title: Aromatherapy Chemistry

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

Outcome 1 is designed to introduce candidates to the basic principles of organic chemistry. Here, the reasons for the diversity of hydrocarbons should be explained with reference to bonding and their importance in aromatherapy emphasised. The notion of the homologous series could be covered next by drawing and naming the alkanes, followed by the identification of the cycloalkanes, alkenes, alkanols, alkanals, alkanolic acids, esters and arenes. Then, by the use of models and some practical demonstrations using limonene or citral or by using polarising lenses, candidates could go on to investigate functional, geometric and optical isomers.

Outcome 2 is designed to introduce candidates to the more complex structures of the terpenes. Candidates should be introduced to the monoterpenes, sesquiterpenes, monoterpenols, sesquiterpenols and phenols. They should then be familiar with the more complex simplified structures and be able to identify the alkanal, alkanone, acid and lactone groups in a variety of compounds. For all examples used in this section, mention should be made of which oil they are found in and what properties the group of compounds they belong to is believed to possess. Extensive use of models, or modelling software could be used throughout this Unit.

Outcome 3 explains the theory behind the main methods of analysis and the pros and cons of each. Candidates should work through the theory of each method and perform an analysis (TLC or paper chromatography) of an extract. (The extracts produced by the Botany for Aromatherapy class could be used here.) Visits to laboratories that use some of these methods could be arranged, simplified lab versions demonstrated, or videos used to illustrate the theory. Candidates should be familiar with the output from each method (chromatograms etc) and how to interpret simple spectra.

Guidance on the delivery and assessment of this Unit

Throughout the delivery of this Unit candidates should be reminded of the importance of chemistry to aromatherapy or to their appreciation of the world around them. Hence, where possible, reference should be made to oils that contain examples of each type of hydrocarbon.

It is also important that practical demonstrations of theory should be used where possible. Where this is not feasible, video demonstrations of these experiments could be used.

Higher National Unit specification: support notes (cont)

Unit title: Aromatherapy Chemistry

Opportunities for developing Core Skills

Although skills in written communication are not formally assessed, candidates should be expected to respond to and present written materials to a standard which would be acceptable in the vocational area. As candidates research information a range of complex source materials should be analysed and key points identified, evaluated and summarised. Written reports should express essential complex ideas and information accurately and coherently, be formally structured and use accurate language, spelling, punctuation and syntax. Use of up to date software packages for word processing and editing where practical could support the development of writing skills. The production of early drafts of notes will ensure assessor involvement at all stages of writing and support the development of communication skills.

Open learning

This Unit is not viable for open and distance learning, due to the nature of the practical work requirements. For further information and advice please refer to *Assessment and Quality Assurance for Open and Distance Learning (SQA, February 2001 — publication code A1030)*.

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).

General information for candidates

Unit title: Aromatherapy Chemistry

This Unit is designed to give you the knowledge of chemistry and related theory to the study of Aromatherapy.

On completion of the Unit you should be able to:

- ◆ Understand the basic principles of organic chemistry
- ◆ Identify and describe key families of compounds that occur in essential oils
- ◆ Explain the theory behind the main methods of analysis

This Unit is designed to expand on existing aromatherapy knowledge and skills. You will learn more about the important compounds present in essential oils as well as some of the methods used in separation and analysis. You will have the opportunity to analyse some essential oils and to discover for themselves some of the laboratory techniques involved.