 

Unit Specification

UMA3 – Anatomy and physiology for aesthetic procedures

Unit reference number: K/618/1673

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| **Level: 7****Guided Learning (GL) hours: 20****Credit value: 10** |

## **Learning aim**

This unit will allow learners to develop their understanding of the related anatomy and physiology which influences the application of aesthetic therapies. This unit will allow learners to critically analyse the presenting factors of the patient, informing the planning, preparing and providing of aesthetic therapies. The information within this unit will enable the learner to more effectively conceptualise anatomy and physiology knowledge, to inform product selection and usage.

## **Learning outcomes**

On completion of this unit, learners will:

LO1 Evaluate the role, structure and function of the skin

LO2 Appraise the impacts of influencing factors and dermatological conditions of the skin

LO3 Compare and contrast the differences between and significance of, subcutaneous and deep fat compartments

LO4 Assimilate understanding of the anatomy of facial bone structure

LO5 Appraise the significance of the SMAS layer

LO6 Analyse the significance of retaining ligaments

LO7 Evaluate the musculature and nerve supply of the head and neck

LO8 Evaluate the vasculature to the head and neck

# Unit content

## LO1 Evaluate the role, structure and function of the skin

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| Professional knowledge |
| Taught content to include: |
| **1.1. Structure of skin*** Epidermis: stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum, stratum germinativum, keratinisation, melanocytes, Malpighian layer, columnar cells, keratinocytes, desquamation, acid mantle
* Dermis: Papillary, reticular, Langer’s lines, sebaceous gland, arrector pili muscle, dermal papillae, hair shaft, hair follicle, hair follicle walls (outer root sheath), hair bulb, sweat gland – eccrine and apocrine, sweat pore, sweat duct, Langerhans cells, fibroblasts, mast cells, leucocytes, sensory nerves, motor nerves, Pacinian corpuscle, Ruffini corpuscle, Meissner corpuscle, arteriole, venule, lymphatic vessel, collagen, elastin, hyaluronic acid
* Hypodermis: areolar, adipose, fat cells

**1.2. Physiology and pathophysiology of primary relevant structures (to include processes)*** Fibroblasts, collagen and elastin, hyaluronic acid and hyaluronidase, Keratinocytes, Langerhans cells, melanocytes, epidermis, dermis, subcutaneous layer, superficial musculoaponeurotic system (SMAS), retaining ligaments and spaces, deep fat periosteum and deep fascia.
* Hereditary, inflammatory, benign and malignant (neoplastic), endocrine, hormonal, traumatic, and degenerative processes

**1.3. Function of skin*** For example, layer dependent; thermoregulation, UVR protection, vitamin D production, sensation, physical barrier, tensile strength, visco-elasticity and compressive quality

**1.4. Features of skin microbiome and skin microbiology** * For example, physiological and pathological skin flora, desirable and undesirable categories

**1.5. Contours and skin fold development*** Role of skin laxity, redistribution of fat and biometric changes in dynamic to static line development
* To include classification tools/techniques for example:
* Glogau scale
* Merz
* Fitzpatrick
* Intrinsic and extrinsic factors that have an impact on the ageing skin

**1.6. Anatomical layers of the scalp and face** * The mnemonic 'SCALP' can be a useful way to remember the layers of the scalp
* Skin
* (Dense) Connective Tissue
* Aponeurosis
* Loose Areolar Connective Tissue
* Periosteum
* Facial anatomy layers
* Skin (epidermis and dermis) layer
* Superficial fat (subcutaneous) layer
* SMAS (superficial musculoaponeurotic system)
* Retaining ligament and spaces
* Deep fat layer (absent on the forehead)
* Periosteum, deep fascia
* Bones
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## LO2 Appraise the impacts of influencing factors and dermatological conditions of the skin

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| Professional knowledge  |
| Taught content to include:  |
| **2.1. Common signs of ageing*** Visual-textural, thinning of the tissues, loss of elasticity, vascular and pigmentation irregularities, static rhytide formation, fat loss and descent, bone loss

**2.2. Histological changes*** Thickening of the stratum corneum, reduction of dermal collagen, reduction in hyaluronic acid, decreased sebum production, dilation of blood vessels

**2.3. Intrinsic skin ageing*** For example, degenerative, internally driven, pre-programmed/genetic, synthesis impact(s), functional impact(s) and aesthetic impact(s)

**2.4. Extrinsic skin ageing*** For example, degenerative, externally driven, impact(s) and contributing factors including; ultra-violet radiation, smoking, pollution and stress
* The impact of a range of dermatological conditions upon appearance

**2.5. Dermatological conditions impacting appearance** * For example, deleterious effects of; pigmentary lesions, acne, melasma autoimmune conditions, dermatitis, psoriasis, rosacea, drug eruptions and scarring
* Know when to refer to dermatological specialist

**2.6. The inflammatory process*** Triggers, inflammatory hormone response, inflammatory messengers, the production of additional inflammatory signalling “hormones”, causing vasodilation and activation of nerve cells. Immune cell response, production of yet more inflammatory hormones, as well as enzymes, free radicals, and chemicals that damage the skin

**2.7. Position and location of rhytide and folds*** For example, horizontal forehead line (frontalis m), frown lines (glabella complex m), crows’ feet (orbicularis oculi), bunny lines, nasolabial folds, barcode lip lines (orbicularis oris), marionette lines (depressor anguli oris m), labiomental crease (mentalis)

**2.8. Surface anatomical regions of the face*** Upper third
* Frontal, temple gabellar, lateral and medical canthus, orbital region
* Mid third
* Malar prominence, dorsal region, tear trough, preauricular region, nasolabial fold, alar triangle, zygomatic, buccal regions, infra orbital region, nasojugal groove, tragus
* Lower third
* Philtrum column, vermillion border, cupids bow marionette line, pogonion, gnathion, mental region, mandibular angle, infraorbital region, buccal region, alar region
* Neck
* Submental region, clavicle region, décolleté
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## LO3 Compare and contrast the differences between and significance of, subcutaneous and deep fat compartments

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| Professional knowledge  |
| Taught content to include:  |
| **3.1. Histology of fat and fat types*** Location and action of superficial fat pads in the upper, middle and lower areas of the face. For example, malar, nasolabial
* The location and action of deeper fat pads in the upper, middle and lower areas of the face; the capsules or retaining ligaments. For example, suborbicularis oculi fat (SOOF), retro-orbicularis oculi fat (ROOF) buccal fat, deep medial cheek fat, pre-zygomatic space
* Change in distribution, accumulation and atrophy leading to facial volume loss. The loss of volume in deeper pads – lack of support for superficial pads. Bony landmarks become more visible
* Effects of atrophy and hypertrophy on the facial features. Appearance of fat pads becoming more discernible as separate ‘pockets’ of fat. How fat migrates with ageing, rather than representing a tightly packed mosaic

**3.2. Biomimicry with soft tissue fillers*** Superficial – the properties of soft tissue filler to emulate endogenous superficial fat
* The properties of soft tissue filler to emulate endogenous deep fat
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## LO4 Assimilate understanding of the anatomy of facial bone structure

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| Professional knowledge  |
| Taught content to include:  |
| **4.1. Mechanism of bony resorption*** Resorption of bone tissue, the process by which osteoclasts break down the tissue in bones and release the minerals, resulting in a transfer of calcium from bone tissue to the blood
* Bone resorption leading to biometric volume loss – phases of resorption – first, second, third
* Differences between resorbed and un-resorbed bone surfaces, the role of Tartrate-Resistant Acid Phosphatase (TRAP) enzyme in bone resorption, factors affecting bone resorption
* Impact on structural support of the face – how and where bone is resorbed with ageing
* Anatomy of bony changes in upper third
* Anatomy of bony changes in middle third
* Anatomy of bony changes in lower third
* Difference between male and female bone structure and resorption
* Difference of bone structure between different ethnicities

**4.2. Biomimicry with soft tissue fillers*** The properties of soft tissue filler to emulate endogenous bone
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## LO5 Appraise the significance of the SMAS layer

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| Professional knowledge  |
| Taught content to include:  |
| **5.1. Anatomy of the SMAS*** The different fat pad compartments. One continuous, organized fibrous network connecting the facial muscles with the dermis. It consists of a three-dimensional scaffold of collagen fibers, elastic fibers, and fat cells

**5.2. Relevance of SMAS in surgery*** Different facial regions show specific morphological characteristics, therefore region-specific surgical interventions may be necessary in facial rejuvenation. Manipulation of the SMAS producing longer lasting facial rejuvenation and facelift results

**5.3. Relevance of SMAS in aesthetics*** Effects of SMAS manipulation on facial rejuvenation and facelift results
* Type 1 SMAS architecture is located lateral to the nasolabial fold with relatively small fibrous septa enclosing lobules of fat cells, whereas
* Type 2 SMAS architecture is located medial to the nasolabial fold, where the SMAS consists of a dense collagen-muscle fibre meshwork

**5.4. SMAS and ageing*** Loss of vitality and relaxation, directly affecting the elasticity of the epidermis and the formation of various types of wrinkles
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## LO6 Analyse the significance of retaining ligaments

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| Professional knowledge  |
| Taught content to include:  |
| **6.1. Retaining ligaments histology*** Made up of cells and extracellular matrix. The extracellular matrix is made up of fibres in a protein and polysaccharide matrix, secreted and organised by cells in the extracellular matrix. Variations in the composition of the extracellular matrix determine the properties of the connective tissue. Specialised forms of extracellular matrix makes up tendons and cartilage
* Attaching soft tissues to the facial skeleton, linking all layers of the face. Ligaments are attached to the periosteum and deep muscle fascia and fan out through the SMAS. Secured at the dermis via the increased number of progressively finer retinacular cutis fibres

**6.2. True ligaments vs false ligaments** * The retaining ligaments of the face can be classified as true and false. True retaining ligaments are a series of fibrous bands that run from the periosteum to the dermis. False retaining ligaments tether the intervening facial tissue layers to each other
* Different descriptions, nomenclature, and clinical significance in facial aesthetic procedures of the retaining ligaments of the upper, middle and lower face

**6.3. How ageing affects retaining ligaments*** Loss of flexibility and vitality resulting in a loosening of these ligaments
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## LO7 Evaluate the musculature and nerve supply of the head and neck

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| Professional knowledge  |
| Taught content to include:  |
| **7.1. Position and action/interaction of the muscles of the head and neck*** Frontalis, temporalis, corrugator supercilii m, procerus, depressor supercilii m, orbicularis oculi, nasalis, levator labii superioris alaeque nasi, zygomaticus minor, zygomaticus major, orbicularis oris, modeolus, risorius m, platysma m, depressor anguli oris m, depressor labii inferioris m, mentalis m, masseter, buccinators, levator anguli oris m, sterno-cleido mastoid, pterygoids – medial and lateral, levator palpebrae superioris, levator labii superioris

**7.2. Structure of the peripheral nervous system, face and neck*** 12 pairs of cranial nerves, 31 pairs of spinal nerves
* 5th Cranial nerve (Trigeminal), 7th Cranial nerve (Facial) and 11th Cranial nerve (Accessory)

**7.3. Location and level of facial nerve branches within the facial structure*** Lateral face below the zygomatic arch, branches remain deep to the investing deep fascia. In the anterior face (and above the lower border of the zygoma) the branches are more superficial in relation to their muscles

**7.4. The importance of true ligament location in identifying blood and nerve location*** Fix points. The transition in levels through the layers occurs at the retaining ligament boundary, greatest level of protection at this junction
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## LO8 Evaluate the vasculature to the head and neck

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| Professional knowledge  |
| Taught content to include:  |
| **8.1. Location of the main arteries of the face and head*** Facial a, superior labial a (including nasal branches), inferior labial a, angular a, supra orbital a, supratrochlear a, dorsal nasal a, infraorbital a, temporal a, transverse facial a, common carotid, internal carotid, ophthalmic, external carotid, facial, superficial temporal, maxillary, mental a, ophthalmic a and branches, retinal a and branches
* Anastomosis of facial arteries and significance and potential concerns of end arteries

**8.2. Location of the main veins of the face and head**External jugular, posterior external jugular, internal jugular, common facial, anterior facial, maxillary, superficial temporal |

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| Guide to taught content |
| The content contained within the unit specification is not prescriptive or exhaustive but is intended to provide helpful guidance to teachers and learners, with the key areas that will be covered within the unit and relating to the kinds of evidence that should be provided for each assessment objective specific to the unit learning outcomes. |

# Assessment methods

**Summative external objective examination (MA7D1.EX1)**

Externally set and externally marked examination.

The examination assesses knowledge and understanding from the breadth of the content within this unit. The external objective examination contributes to the assessment outcome of the qualification. The external objective examination will take place at the end of the period of learning.

**Summative final practical assessment (MA7D1.PE1)**

Externally set, internally marked and externally quality assured. The final practical assessment contributes in main to the assessment outcome of the qualification, whilst simultaneously addressing the learners’ ability to demonstrate relevant knowledge and understanding of the skin, underlying systems and structures. The practical assessment will take place on the final case study supervised procedure, at the end of the period of learning.

Learners will be required to undertake a practical assessment for the following procedures:

* 1 administration of botulinum toxin
* 1 administration of dermal fillers

**Formative clinical case studies**

Externally set, internally marked and externally quality assured.

The case studies contribute to the assessment outcome of the qualification. This method of assessment is considered a low priority for these outcomes but practical knowledge will be naturally occurring during the case studies and will enable learners’ to demonstrate their relevant knowledge and understanding of the skin, its underlying systems and structures.

**Document History**

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| **Version** | **Issue Date** | **Changes** | **Role** |
| v1.0 | 14/07/2020 | First published | Product and Regulation Manager |
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