

# Surgical Education and Assessment Modules (SEAM) - Anatomy

## Module Overview

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| <p><b>Rationale</b></p>                               | <p>The aim of this module is to apply your anatomical knowledge to surgical disorders, interventions, and procedures. It builds on your baseline knowledge of anatomy and basic sciences.</p> <p>The module is clinically orientated and requires supplementation from anatomical textbooks and atlases. Clinically based scenarios are used throughout the module to guide you to the relevant anatomy, with a series of diagrams and/or images included to assist with your learning. The module requires you to identify both normal anatomy and common anatomical variants.</p> <p>The satisfactory completion of this module should culminate in your own workbook of anatomy relevant to General Surgery, which will provide a useful educational resource throughout your training and in preparation for the Fellowship examination.</p> |                        |
| <p><b>Learning Objectives</b></p>                     | <p>By the end of this module you should be able to:</p> <ol style="list-style-type: none"> <li>1. Recognise anatomy relevant to General Surgery: <ul style="list-style-type: none"> <li>o Anatomy of the Upper limb</li> <li>o Anatomy of the Lower limb</li> <li>o Anatomy of the Thorax</li> <li>o Anatomy of the Abdomen</li> <li>o Anatomy of the Head and Neck and Spine</li> </ul> </li> <li>2. Describe landmarks, incisions, and dissection layers relevant to specific case scenarios</li> <li>3. Identify specific anatomical structures at risk during common General Surgery procedures</li> <li>4. Apply anatomical knowledge to identify causes of common post-operative sequelae</li> <li>5. Apply anatomical knowledge to the interpretation of medical imaging</li> </ol>                                                       |                        |
| <p><b>Topics and keywords</b></p>                     | <p><b>Topic</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>Keywords</b></p> |
| <p><b>Anatomy of the Upper limb</b></p>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |
| <p>Female breast</p>                                  | <p><i>breast, lymphatic drainage, blood supply</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                        |
| <p>Axilla</p>                                         | <p><i>axilla, pectoralis minor, nerves</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                        |
| <p>Arteries, veins, and nerves of the upper limbs</p> | <p><i>carpal tunnel, median nerve</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |
| <p><b>Anatomy of the Lower limb</b></p>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |
| <p>Femoral canal</p>                                  | <p><i>femoral canal, medial boundary</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |
| <p>Femoral triangle and contents</p>                  | <p><i>femoral triangle, inguinal lymph nodes</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                        |
| <p>Arteries, veins, and nerves of the lower limbs</p> | <p><i>ischaemia, femoral artery, peripheral pulses</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |

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| <b>Topics and keywords</b> | <b>Anatomy of the Thorax</b>            |                                                                                                                        |
|                            | Thoracic wall and cavity                | <i>thoracotomy, neurovascular bundle, intercostal catheter</i>                                                         |
|                            | The diaphragm, heart, and lungs         | <i>diaphragm, nerve supply, para-oesophageal hernia, vagal trunks</i>                                                  |
|                            | Oesophagus                              | <i>oesophagus, blood supply, lymphatics, dysphagia, thoracic duct</i>                                                  |
|                            | <b>Anatomy of the Abdomen</b>           |                                                                                                                        |
|                            | Abdominal wall                          | <i>incisional hernia, rectus muscle, umbilical hernia, falciform ligament</i>                                          |
|                            | Inguinal canal                          | <i>inguinal hernia, inguinal canal, numbness</i>                                                                       |
|                            | Testis and epididymis                   | <i>testis, embryology, blood supply, lymphatics, lymphatic drainage, undescended testes</i>                            |
|                            | Stomach                                 | <i>stomach, arterial supply, venous drainage, lymphatics, lesser sac, vagus nerves</i>                                 |
|                            | Cisterna chyli and abdominal lymphatics | <i>lymph nodes, lymphatic drainage, cisterna chyli, thoracic duct</i>                                                  |
|                            | Liver                                   | <i>liver, segments, epiploic foramen, common hepatic artery</i>                                                        |
|                            | Gallbladder and bile ducts              | <i>laparoscopic cholecystectomy, cystic duct, variations</i>                                                           |
|                            | Duodenum                                | <i>duodenum, arterial supply, ampulla, lymphatics</i>                                                                  |
|                            | Small bowel                             | <i>superior mesenteric artery, blood supply, lymphatics, small bowel mesentery</i>                                     |
|                            | Pancreas                                | <i>pancreas, splenic artery, blood supply, lymphatics, common bile duct, uncinata process</i>                          |
|                            | Spleen                                  | <i>splenectomy, blood supply, lymphatics</i>                                                                           |
|                            | Kidneys, ureters, and urinary bladder   | <i>ureter, ureteric injury, gonadal vessels</i>                                                                        |
|                            | Retroperitoneum                         | <i>abdominal aorta, IVC, adrenal glands, blood supply</i>                                                              |
|                            | Anal canal                              | <i>anal canal, anal fissure, sphincter, dentate line</i>                                                               |
|                            | Colon and rectum                        | <i>colon, mesocolon, arterial anatomy, blood supply, nerve supply, lymphatics, greater omentum, rectum, mesorectum</i> |
|                            | The appendix                            | <i>appendix, appendicectomy, variations, blood supply</i>                                                              |
|                            | Pelvic wall, floor, and cavity          | <i>pelvic floor, levator ani, broad ligament, round ligament</i>                                                       |

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|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <b>Topics and keywords</b>              | <b>Anatomy of the Head and Neck and Spine</b>                                                                                                                                                                                                                                                                                                  |                                                                           |
|                                         | Thyroid and parathyroid glands                                                                                                                                                                                                                                                                                                                 | <i>thyroid, strap muscles, arterial supply, recurrent laryngeal nerve</i> |
|                                         | Submandibular gland                                                                                                                                                                                                                                                                                                                            | <i>submandibular gland, facial artery, lingual nerve</i>                  |
|                                         | Parotid gland                                                                                                                                                                                                                                                                                                                                  | <i>parotid gland, cranial nerve, parotidectomy</i>                        |
|                                         | Triangles of the neck                                                                                                                                                                                                                                                                                                                          | <i>anterior and posterior triangles, carotid sheath</i>                   |
|                                         | Surgical airway                                                                                                                                                                                                                                                                                                                                | <i>airway, tracheostomy, tracheal rings</i>                               |
| <b>Recommended Further Reading</b>      | Educational material provided within this module is not intended to be complete, and is not a textbook. Trainees are expected to undertake further reading in order to complete the module successfully.                                                                                                                                       |                                                                           |
|                                         | <b>Recommended Reading</b>                                                                                                                                                                                                                                                                                                                     | <b>Learning Objective</b>                                                 |
|                                         | <i>an@tomedia online</i> . McGraw Hill Education, 2014. <a href="http://www.anatomediamediaonline.com.ezproxy.surgeons.org/">http://www.anatomediamediaonline.com.ezproxy.surgeons.org/</a>                                                                                                                                                    | ALL                                                                       |
|                                         | Agur, AM, Dalley, AF. <i>Grant's Atlas of Anatomy</i> . Lippincott Williams & Wilkins, 13th edition: Philadelphia, 2012.                                                                                                                                                                                                                       | ALL                                                                       |
|                                         | Last, RJ. <i>Last's Anatomy: Regional and Applied</i> . Sinnatamby, CS. (Ed). Churchill Livingstone, 12th edition: Edinburgh, 2011.                                                                                                                                                                                                            | ALL                                                                       |
|                                         | Netter, FH. <i>Atlas of Human Anatomy</i> . Saunders/Elsevier 7th edition: Philadelphia, 2019.                                                                                                                                                                                                                                                 | ALL                                                                       |
|                                         | Rohen, JW., Yokochi, C., Lutjen-Drecoll, E. <i>Color Atlas of Anatomy: A Photographic Study of the Human Body</i> . Lippincott Williams & Wilkins, 6th edition: Baltimore, 2006.                                                                                                                                                               | ALL                                                                       |
| <b>Prerequisites</b>                    | N/A                                                                                                                                                                                                                                                                                                                                            |                                                                           |
| <b>How this module will be assessed</b> | <p>The e-learning module comprises 54 clinical scenarios and opportunities for Formative Assessment. Trainees are expected to provide a copy of their completed Anatomy workbook to their Supervisor during the end-of-term assessment.</p> <p>The Summative Assessment comprises twenty (20) Type A and Type X multiple choice questions.</p> |                                                                           |

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## Learning Activities & Formative Assessment

| Cognitive level | Learning Objective                                                                       | Module Topic                                                                              | Learning Activity                                                                                                                                                                                                                                     | Formative Assessment                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Analyse</b>  | Recognise anatomy relevant to General Surgery                                            | Anatomy of the Upper limb<br>Anatomy of the Lower limb                                    | The module comprises 54 clinical scenarios related to five anatomy topic areas that are relevant to General Surgery.                                                                                                                                  | Learners will be presented with Type A and Type X multiple choice questions addressing topics covered in the clinical scenarios including: <ul style="list-style-type: none"> <li>- blood supply of the breast</li> <li>- abnormal obturator artery</li> <li>- intercostal space</li> <li>- liver</li> <li>- cystic artery</li> <li>- duodenum</li> <li>- superior thyroid artery</li> </ul> |
| <b>Apply</b>    | Describe landmarks, incisions, and dissection layers relevant to specific case scenarios | Anatomy of the Thorax<br>Anatomy of the Abdomen<br>Anatomy of the Head and Neck and Spine | Each clinical scenario contains a number of questions with space provided for free text answers.<br><br>Learners will answer the questions and will then be presented with detailed Anatomy diagrams and images, and suggestions for further reading. |                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Evaluate</b> | Identify specific anatomical structures at risk during common General Surgery procedures |                                                                                           | The responses entered by the learner to all 54 clinical scenarios will be exported to form an Anatomy workbook resource, which will provide a useful educational resource throughout training and in preparation for the Fellowship examination.      |                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Apply</b>    | Apply anatomical knowledge to identify causes of common post-operative sequelae          |                                                                                           | Learners will be presented with practice Type A and Type X multiple choice questions addressing topics covered in the clinical scenarios including:                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Apply</b>    | Apply anatomical knowledge to the interpretation of medical imaging                      |                                                                                           | <ul style="list-style-type: none"> <li>- axillary dissection</li> <li>- femoral canal</li> <li>- oesophagus</li> <li>- testis</li> <li>- middle colic artery</li> <li>- inferior thyroid vein</li> </ul>                                              |                                                                                                                                                                                                                                                                                                                                                                                              |