

**Advanced Life Support in Trauma**

Code: 102893  
ECTS Credits: 3

Degree	Type	Year	Semester
2502442 Medicine	OT	6	2

**Contact**

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**Use of Languages**

Principal working language: catalan (cat)  
Some groups entirely in English: No  
Some groups entirely in Catalan: No  
Some groups entirely in Spanish: No

**Teachers**

Myriam Nadal Clanchet  
José María Toboso Casado  
Rodrigo Gustavo Medrano Caviedes

**Prerequisites**

Students must have passed the courses that provide training in identifying the pathophysiological consequences of injury and to describe the resulting metabolic response (i.e., Anatomy, Physiology and Clinical Foundations of Surgery).

Students undertake to preserve the confidentiality and professional secrecy of the data that they may access through their study at the health care services, and to uphold professional ethics in all their actions.

**Objectives and Contextualisation**

The concepts underlying the management and evaluation of the polytrauma patient are totally different from those that apply to the care of any other type of patient. Trauma patients require immediate treatment for life-threatening injuries, without a definitive diagnosis or a detailed history. In these cases, prompt decision-making and action are essential; at the same time, it must be ensured that the medical intervention does not cause added harm.

**TRAINING OBJECTIVES**

Students will learn to:

Identify the physiological state of the patient quickly and accurately.

Carry out the resuscitation and monitoring of the patient according to the treatment priorities.

Identify patients who, due to their treatment needs, require transfer to another centre.

The course will equip the student with the tools necessary to:

Identify the correct sequence of priorities for a careful evaluation of the polytrauma patient.

Describe and apply the rules of action and the techniques used for the initial resuscitation and for the period of definitive care in polytrauma patients.

Appreciate that the patient's complete medical history and the mechanism of injury can contribute to the identification of life-threatening injuries.

## Competences

- Be able to work in an international context.
- Communicate clearly and effectively, orally and in writing, with patients, family-members and accompanying persons, to facilitate decision-making, informed consent and compliance with instructions.
- Convey knowledge and techniques to professionals working in other fields.
- Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
- Demonstrate an understanding of the fundamentals of action, indications, efficacy and benefit-risk ratio of therapeutic interventions based on the available scientific evidence.
- Demonstrate basic research skills.
- Demonstrate sufficient supervised clinical experience in hospitals or other healthcare centres, and familiarity with patient-centred care management and the correct use of tests, medicines and other resources of the healthcare system.
- Demonstrate understanding of the causal agents and the risk factors that determine states of health and the progression of illnesses.
- Demonstrate understanding of the importance and the limitations of scientific thought to the study, prevention and management of diseases.
- Demonstrate understanding of the manifestations of the illness in the structure and function of the human body.
- Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
- Design and manage programmes and projects in the field of health.
- Engage in professional practice with respect for patients' autonomy, beliefs and culture, and for other healthcare professionals, showing an aptitude for teamwork.
- Establish a diagnostic approach and a well thought-out strategy for action, taking account of the results of the anamnesis and the physical examination, and the results of the appropriate complementary tests carried out subsequently.
- Establish the diagnosis, prognosis and treatment, basing decisions on the best possible evidence and a multidisciplinary approach focusing on the patient's needs and involving all members of the healthcare team, as well as the family and social environment.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Indicate the most suitable treatment for the most prevalent acute and chronic processes, and for the terminally ill.
- Listen carefully, obtain and synthesise relevant information on patients' problems, and understand this information.
- Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
- Maintain and use patient records for further study, ensuring the confidentiality of the data.
- Obtain and prepare a patient record that contains all important information and is structured and patient-centred, taking into account all age and gender groups and cultural, social and ethnic factors.
- Perform a general and a system-by-system physical examination appropriate to the patient's age and sex, in complete and systematic way, and a mental evaluation.
- Put forward suitable preventive measures for each clinical situation.
- Recognise and take action in life-threatening situations and others that require an immediate response.
- Recognise the role of complexity, uncertainty and probability in decision-making in medical practice.
- Recognize one's role in multi-professional teams, assuming leadership where appropriate, both for healthcare provision and for promoting health.
- Use information and communication technologies in professional practice.

- Write patient records and other medical documents that can be understood by third parties.

## Learning Outcomes

1. Acknowledge the importance of research to medical progress.
2. Adapt the therapy procedure and the surgical technique, if appropriate, in accordance with the available data.
3. Anticipate and compare information for good decision-making.
4. Apply basic surgical manoeuvres in practice with simulated models.
5. Approach the physical examination not only from the diagnostic perspective, but also the therapeutic perspective, with special emphasis on surgical procedures.
6. Back decision-making with the best scientific evidence.
7. Be able to work in an international context.
8. Build diagnostic and therapeutic algorithms based on the best scientific evidence, taking into account the facilities available.
9. Calculate the surgical risk indices, both general and by apparatus, and adjust the indications accordingly.
10. Categorise emergency situations in accordance with the available indices of seriousness.
11. Choose a therapy option in accordance with available information and patient preference.
12. Choose content in accordance with the rules of evidence-based medicine.
13. Choose the best possible research design to respond to the hypothesis put forward.
14. Convey knowledge and techniques to professionals working in other fields.
15. Critique original or review scientific papers.
16. Define the statistical methodological bases.
17. Demonstrate basic research skills.
18. Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
19. Describe biomedical bibliographic databases and ways to filter the information provided.
20. Describe the mechanisms of action of physical and chemical agents on the organism.
21. Distinguish the bases of the different surgical specialisations to integrate and lead the treatment in acute and chronic patients with multiple conditions.
22. Distinguish the implications of different interventions regarding functional and morphological changes.
23. Encourage the search for answers to the questions that arise during surgery.
24. Enumerate the alarm signs that require urgent attention to the patient.
25. Establish a working hypothesis and its objectives.
26. Establish rapport as the first important step in all medical procedures, both in elective and emergent situations and leave a written record of the information transmitted and the wishes of the patient.
27. Estimate the risks and benefits of the various therapy options.
28. Evaluate the appropriate scientific methodology for a biomedical paper.
29. Formulate and discuss the results obtained.
30. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
31. Further investigate the risk factors of morbidity and mortality in operations.
32. Gather information and select the most important facts about the patient, both in normal visits and emergencies.
33. Identify all prophylactic measures to reduce indices of morbidity and mortality to the minimum.
34. Identify emergency situations and establish an order of priorities.
35. Identify funding sources and set up a budget.
36. Identify the ethical bases for decision-making in the field of surgery.
37. Identify the legal bases for creating, maintaining and using databases that contain medical information.
38. Integrate all pre-operative information for decision-making.
39. Justify decisions taken based on the information obtained.
40. Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
41. Make a critical analysis of the objectives to be achieved with surgery, contrasting this with the adverse effects that may be involved.
42. Manage the information available and set levels of discussion in multidisciplinary groups.
43. Obtain the most important data, both on the illness being treated and on factors influencing morbidity and mortality.

44. Participate in the whole process of patient-care, from diagnosis to aftercare.
45. Perform the initial assessment automatically and acknowledge the actions that require an immediate response.
46. Present results orally or in writing.
47. Provide clear, comprehensible information on the therapy options to patients and their families.
48. Provide the bases for preparing clinical guides and constructing diagnostic and therapeutic algorithms.
49. Recognise when a patient is in the terminal phase and avoid therapeutic obstination.
50. Transmit information clearly and accurately, leaving no room for possible misunderstandings.
51. Transmit the information on the surgical procedure to be performed and draw up a document of informed consent.
52. Use information and communication technologies in professional practice.
53. Use the scales that assess the general (physical and mental) state of the patient.
54. Use the specific bibliographic sources that will help to develop further one's knowledge.

## Content

### Theory (TE)

1. Need for the course. Trimodal distribution of mortality: Trauma, Primary Survey and Secondary Survey
2. Adjuncts of the primary and secondary surveys
3. Airway Management. Ventilation. Objective signs of airway obstruction. Objective signs of inadequate ventilation. Techniques for maintenance of the airway / definitive airway: endotracheal intubation, surgical airway
4. Shock in polytrauma
5. Chest trauma. Life-threatening chest trauma: Tension pneumothorax, Open pneumothorax, Unstable thorax, Massive hemothorax, Cardiac tamponade. Traumatic rupture of the aorta. Indications for thoracotomy for resuscitation
6. Abdominal trauma. Open trauma. Blunt trauma. Current indications for peritoneal lavage Diagnosis. Indications for abdominal ultrasound "in situ". Indications for computerized tomography. Indications for urgent laparotomy
7. Traumatic brain injury. Skull fractures. Intracranial lesions (epidural, subdural hematoma, contusion and intracerebral hematoma, diffuse lesions). Management of cranial trauma according to the Glasgow Scale
8. Musculoskeletal trauma. Life-threatening injuries: Pelvic trauma. Crush syndrome. Injuries to limbs: open fractures and dislocations, vascular lesions, compartment syndrome, secondary neurological injury in fracture/dislocation (neurological assessment of the peripheral nerves of the upper and lower limbs). Principles of immobilization
9. Spinal cord trauma
10. Trauma scores
11. Prehospital selection

### Clinical laboratory practices (PLAB)

#### WORK STATION 1: AIRWAY

##### Objective:

To assess clinical situations and acquire skills in airway management and ventilation

##### Skills:

- Placing of oropharyngeal and nasopharyngeal cannulas
- Tracheal intubation in mannequins
- Use of oximeters

## WORK STATION 2. SHOCK

Objective:

To assess patients in shock, identify causes of shock, initial treatment.

Skills:

- Obtaining femoral, jugular and subclavian venous access in mannequins

## WORK STATION 3. MUSCULOSKELETAL INJURIES

Objective:

To recognize musculoskeletal injuries that endanger limbs; to identify patients with compartment syndrome; to perform correct splinting of musculoskeletal injuries.

Skills:

- Neurovascular assessment of an injured limb.
- Application of splints

## Methodology

This Guide describes the framework, contents, methodology and general norms of the course, in accordance with the current study schedule. The final organization of the course at each Hospital Teaching Unit (i.e., with regard to the number and size of groups, the calendar and dates of examinations, specific assessment criteria and examination review procedures) will be specified and explained on the Unit's web page and also on the first day of class by the teachers responsible for the course at the particular Unit.

If the tutors consider appropriate, and depending on the resources available at each Teaching Unit, some of the contents of the theory classes may be taught and evaluated in the simulation classes using the corresponding methodology.

For the present academic year, the following teachers have been appointed by the Departments to take charge of the course (at Faculty and Teaching Unit level):

Department(s) responsible: DEPARTMENT OF SURGERY Head of Faculty: name (e-mail) Salvador Navarro Soto Person in charge at the Units:

UDHSP UDHVH UDGtIP UDHPT  
F Caballero Myriam de Nadal JM Toboso S Navarro

In the current exceptional circumstances, at the discretion of the teachers and also depending on the resources available and the public health situation, some of the theoretical classes, practicals and seminars organized by the Teaching Units may be taught either in person or virtually

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

## Activities

Title	Hours	ECTS	Learning Outcomes
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Type: Directed

LABORATORY PRACTICALS (PLAB)	4	0.16	2, 3, 4, 31, 6, 28, 9, 10, 8, 15, 16, 17, 18, 20, 19, 21, 22, 41, 11, 53, 5, 14, 24, 13, 26, 25, 27, 30, 42, 37, 36, 35, 34, 33, 23, 38, 39, 40, 43, 47, 44, 29, 46, 48, 45, 49, 32, 12, 7, 50, 51, 54, 52, 1
THEORY (TE)	11	0.44	2, 3, 4, 31, 6, 28, 9, 10, 8, 15, 16, 17, 18, 20, 19, 21, 22, 41, 11, 53, 5, 14, 24, 13, 26, 25, 27, 30, 42, 37, 36, 35, 34, 33, 23, 38, 39, 40, 43, 47, 44, 29, 46, 48, 45, 49, 32, 12, 7, 50, 51, 54, 52, 1
Type: Supervised			
TUTORSHIPS	16	0.64	2, 3, 4, 31, 6, 28, 9, 10, 8, 15, 16, 17, 18, 20, 19, 21, 22, 41, 11, 53, 5, 14, 24, 13, 26, 25, 27, 30, 42, 37, 36, 35, 34, 33, 23, 38, 39, 40, 43, 47, 44, 29, 46, 48, 45, 49, 32, 12, 7, 50, 51, 54, 52, 1
Type: Autonomous			
PROJECT PREPARATION / PERSONAL STUDY/ ARTICLE READING / REPORTS OF INTEREST	40.25	1.61	2, 3, 4, 31, 6, 28, 9, 10, 8, 15, 16, 17, 18, 20, 19, 21, 22, 41, 11, 53, 5, 14, 24, 13, 26, 25, 27, 30, 42, 37, 36, 35, 34, 33, 23, 38, 39, 40, 43, 47, 44, 29, 46, 48, 45, 49, 32, 12, 7, 50, 51, 54, 52, 1

## Assessment

The final EVALUATION will be based on the theoretical and practical syllabus included in the programme.

1. Multiple-choice test on the contents taught in the theoretical classes: 20 multiple choice questions (with five answer options of which only 1 will be correct). 0.20 points will be deducted for each wrong answer. 30% of the final grade
2. Evaluation of the practical contents. A practical assessment of the knowledge acquired will be carried out, both on a practical and theoretical level. 50% of the final grade
3. Continuous assessment during the course. 20% of the final grade
4. In order to qualify to take the exam, students must have attended 80% of the theoretical and practical classes.

Students who do not attend the theoretical and practical assessment tests will not be considered for examination and will lose their course registration fee

### RECOVERY.

In accordance with the official calendar of the Teaching Units, patients who fail the final evaluation may resit the examination. The recovery examination will have the same format as the final evaluation, and the marks will be distributed in the same way.

## Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Attendance and active participation in class and	20%	0	0	2, 3, 4, 31, 6, 28, 9, 10, 8, 15, 16, 17, 18, 20, 19, 21, 22, 41, 11, 53, 5, 14, 24, 13, 26, 25, 27, 30, 42, 37, 36, 35, 34, 33,

in seminars				23, 38, 39, 40, 43, 47, 44, 29, 46, 48, 45, 49, 32, 12, 7, 50, 51, 54, 52, 1
Practical evaluations: objective clinical and structured assessment	50%	2	0.08	2, 3, 4, 31, 6, 28, 9, 10, 8, 15, 16, 17, 18, 20, 19, 21, 22, 41, 11, 53, 5, 14, 24, 13, 26, 25, 27, 30, 42, 37, 36, 35, 34, 33, 23, 38, 39, 40, 43, 47, 44, 29, 46, 48, 45, 49, 32, 12, 7, 50, 51, 54, 52, 1
Written assessments with objective tests: multiple choice tests	30%	1.75	0.07	2, 3, 4, 31, 6, 28, 9, 10, 8, 15, 16, 17, 18, 20, 19, 21, 22, 41, 11, 53, 5, 14, 24, 13, 26, 25, 27, 30, 42, 37, 36, 35, 34, 33, 23, 38, 39, 40, 43, 47, 44, 29, 46, 48, 45, 49, 32, 12, 7, 50, 51, 54, 52, 1

## Bibliography

American College of Surgeons Committee on Trauma .Initial assessment and management. In Advanced Trauma Life Support Reference Manual. Chicago: American College of Surgeons;2018

Trauma Sixth Edition. Mc Graw Hill Medical. Feliciano, D, Mattox K, Moore E. 2017

[Schwartz's principles of surgery / editor-in-chief: F. Charles Brunicaardi ; associate editors: Dana K. Andersen ... \[et al.\].](#) New York : McGraw-Hill Education, cop. 2015

## Software

there is no specific software