

## EDUCATIONAL COURSE IN EMERGENCY RADIOLOGY

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### **Abstract**

*Emergency radiology is the part of radiology primarily focused on acute diagnosing conditions in ER patients.*

*This advanced area of radiology improves the quality of care and treatment of patients and of the emergency medicine as a whole.*

*The educational course in Emergency (ER) Radiology is available for medical students in their 8th and 9th semester.*

*The main objective of the ER course is to obtain knowledge about the indications, possibilities and diagnostic value of the contemporary imaging methods in ER cases.*

*Therapeutic methods under imaging control are also covered by the course.*

*The curriculum of the course consists of 6 lectures and 12 practical classes.*

### **Introduction**

Emergency Radiology (ER) is a subsection of Radiology directed towards providing fast/urgent imaging mainly in acute or critical situations. The main objective of the emergency radiology is delivering reliable diagnostic information within the shortest possible timeframe in order to contribute to the proper patient management/treatment.

Emergency radiology is among the most dynamic areas of diagnostics.

The major difference between emergency radiology and standard/planned/on-call radiology is that ER situations occur at various, unplanned and unpredicted patterns and require immediate action.

ER importance grew tremendously during the past years with the latest achievements in medical imaging. Not only ER uses the latest state-of-the-art imaging techniques, but also combines all major radiology sub-specialties.

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## Materials and Methods

Medical Imaging Dept. at Medical University – Plovdiv is among the oldest, best equipped and best experienced diagnostic centers in Bulgaria (Figure 1).

As a part of its standard teaching curriculum the Medical Imaging Department has developed an additional selectable discipline – Emergency Radiology. An educational course has been developed by an interdisciplinary team to cover the major aspects of ER.

The educational course in Emergency Radiology is currently available for medical students in their 8th and 9th semester.

The main objective is to obtain knowledge about the indications, possibilities and diagnostic value of the contemporary imaging methods in ER cases.

Therapeutic methods under imaging control are also covered by the course.



Figure 1. Medical University - Plovdiv

## Results & Discussion

The curriculum of the course consists of 6 lectures and 12 practical classes.

The ER curriculum covers various aspects of ER Radiology – diagnostic imaging methods, contrast enhanced examinations, imaging topography, traumatic and acute conditions, physical and technical aspects (Table 1).

Table 1. Emergency Radiology course curriculum

ID	Description
1.	Technical capabilities of the imaging methods in the emergency radiology.
2.	Introduction. Abdominal, thoracic and combined trauma.
3.	Imaging techniques:
	<ul style="list-style-type: none"> <li>- Conventional radiology</li> <li>- US</li> <li>- CT</li> <li>- MRI</li> <li>- Intra-venous contrast</li> <li>- Oral contrast</li> </ul>
4.	Side reactions upon contrast-enhanced imaging.
5.	Topographic anatomy.
6.	Traumas:
	<ul style="list-style-type: none"> <li>- Introduction</li> <li>- Traumas of: <ul style="list-style-type: none"> <li>Spleen</li> <li>Liver</li> <li>Pancreas</li> <li>Kidneys</li> <li>Intestinal</li> <li>Bladder</li> </ul> </li> </ul>
7.	Abdominal inflammations
	<ul style="list-style-type: none"> <li>Abscesses</li> <li>Colitis</li> <li>Cholecystitis</li> <li>Appendicitis</li> <li>Pancreatitis</li> <li>Renal Colic</li> </ul>
8.	Thoracic traumas. Emergency conditions of the respiratory system.
9.	Central Nervous System and neck traumas.
10.	Complex transport traumas.
11.	Traumas of major blood vessels.

The teaching process and practical lessons are conducted in small groups and under the close supervision of the experienced departmental staff. Students are given the ability to observe or participate in some of the daily diagnostic procedures and gain experience from real cases and

situations. Various types of imaging equipment are used during the ER procedures. The whole curriculum is balanced in such a way that students get both theoretical knowledge and practical experience from a real department's environment. An internal assessment is planned at the end of each academic year to collect sufficient feedback and help improve the curriculum structure, contents and teaching methods.

### **Conclusion**

Imaging methods take an important part in the diagnostic process due to their high reliability and quality of the data they provide. Emergency Radiology is a time-critical highly-informative sub-section of the Radiology. ER contributes mainly towards directing patients to the right treatment area; taking proper clinical decisions; quick, reliable and in most of the cases non-invasive diagnosis; improved treatment management; better healthcare and patient status.