Course description

Department/Unit /	UENM / C691A			**Academic Year**	2023/2024
Title	Laboratory Course - Testing and Characte			**Type of completion**	Course-credit
Long Title	Laboratory Course - Testing and Characterazation of Energetic Materials				
Accredited/Credits	Yes, 15 Cred.			**Type of completion**	Combined
Number of hours	Tutorial 16 [HRS/WEEK]				
Occ/max	Status A	Status B	Status C	**Course credit prior to**	NO
Summer semester	2 / -	0 / -	0 / -	**Counted into average**	NO
Winter semester	0 / -	0 / -	0 / -	**Min. (B+C) students**	not determined
Timetable	Yes			**Repeated registration**	NO
Language of instruction	English			**Semester taught**	Summer semester
Optional course	Yes			**Internship duration**	0
Evaluation scale	S|N				
No. of hours of on-premise	0				
Auto acc. of credit	No				
Periodicity	K				
Substituted course	None				
Preclusive courses	N/A				
Prerequisite courses	N/A				
Informally recommended courses	N/A				
Courses depending on this Course	N/A				

Course objectives:

Mastering the safe handling of energetic materials (EM) when causing them to explode. Creating a comprehensive idea of methods for determining the basic explosive parameters of EM - the principle of determining and evaluating results.

Requirements on student

Protocols submitted and approved; credit paper with the result of min. 50b. of 100b.

Content

Introduction - safety, operating procedures, manipulation with explosives
Determination of friction sensitivity
Determination of impact sensitivity
Determination of sensitivity to electrostatic discharge
Determination of ignition temperature and induction period
Casting of explosive charges
Transmission of detonation in open air (resp. Sympathetic detonation test)
Using oscilloscope and other DAQ systems in EM testing
Measurement of blast waves in air
Detonation velocity measurement
Determination of work ability of EM by ballistic mortar and brisance
DDT-test (deflagration to detonation transition test)
Controlled explosive effects.

Prerequisites - other information about course preconditions

C095A Laboratory of synthesis and identification of EM
C893A Theory of Explosions I.

Competences acquired

After completing the course, the student is able to safely manipulate EM when causing them to explode and orientation in the methods used to determine the basic explosive parameters of energy materials, including their evaluation.

Fields of study

Guarantors and lecturers

- **Guarantors:** Ing. Marcela Jungová, Ph.D.
- **Tutorial lecturer:** Ing. Marcela Jungová, Ph.D. (100%), doc. Ing. Robert Matyáš, Ph.D. (100%), doc. Ing. Jiří Pachman, Ph.D. (100%), Ing. Vojtěch Pelikán, Ph.D. (100%), Ing. Jakub Šelešovský, Ph.D. (100%)

Literature

- **Basic:** *Instructions for laboratory excercise in Laboratory course - testing and characterazation of energetic materials.*.
- **Recommended:** EMTAP manual. .
- **Recommended:** Orrange book ? manual of tests. .
- **Recommended:** Suceska M. *Test methods for explosives*.
- **Recommended:** M. Krupka. Testing of Energetic Materials. UPCE.

Teaching methods

Laboratory work

Assessment methods

Written examination

Student performance assessment

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Engineering of Energetic Materials	Follow-up study	Full-time	Engineering of Energetic Materials	1	2023	2023	povinné předměty	A	1	LS