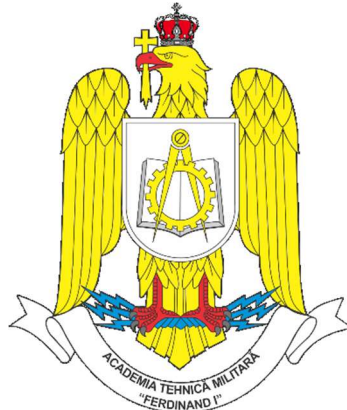


**ROMANIA**  
**MINISTRY OF NATIONAL DEFENCE**  
**MILITARY TECHNICAL ACADEMY**  
**“FERDINAND I”**



**FACULTY A**  
**Faculty of Integrated Armament Systems, Military Engineering**  
**and Mechatronics**



**DEPARTMENT OF ARMAMENT ENGINEERING AND**  
**MECHATRONICS (A1)**

**Programme of study - 1st cycle - License**  
**WEAPONS, ARTILLERY DEVICES AND FIRE CONTROL SYSTEMS**

**1<sup>st</sup> Year:**

**Fundamental Disciplines:** *Mathematical Analysis; Algebra, Analytic and Differential Geometry; Physics; Chemistry of Explosive Materials; Technical Drawing and Engineering Graphics; Computer-Aided Graphics; Techniques and Computer Programming Languages; Probability Theory and Statistical Processing of Experimental Data for Weapons, Missiles and Ammunition Systems*

**Disciplines in the Field of Study:** *Study and Technology of Materials; Mechanical Treatments and Dimensional Control; Electrotechnics and Electromagnetic Devices; Mechanics and Mechanical Vibrations I; Internship I*

**Complementary and Military Disciplines:** *Communication, Public Relations and Negotiation Techniques; English; French; Politology; Psychology and Sociology; Topography; History; Sport*

**2<sup>nd</sup> Year:**

**Fundamental Disciplines:** *Special Mathematics; Technical Optics; Physics of Explosions; General Management*

**Disciplines in the Field of Study:** *Mechanics and Mechanical Vibrations II; Thermodynamics; Mechanisms and Fine Mechanics Issues; Strength of Materials; Numerical; Optimization Theory; Electronics; Fluid Mechanics; Aerodynamics; Automatics; Interior Ballistics; Internship II*

**Complementary and Military Disciplines:** *English; French; Sport*

**3<sup>rd</sup> Year:**

**Fundamental Disciplines:** *Basic Logistics*

**Disciplines in the Field of Study:** *Machinery Parts; Exterior Ballistics and Missile Flight Dynamic; Firing Theory; Management of Military Technical and Economic Activities*

**Specialty Disciplines:** *Artillery Devices; Automatic Weapons; Ammunition and Fuses; Construction and Exploiting of Missiles; Sighting and Stabilization Systems for Firing Control Systems; Experimentation, Acceptance and Reliability of Weapon Systems; Computing and Construction of Automatic Weapon Mechanisms; Construction and Exploiting of Artillery Weapons; Reactive Weapon and Launching Devices; Internship III*

**Complementary and Military Disciplines:** *Economy and Accountancy; English; French; Sport*

**4<sup>th</sup> Year:**

**Disciplines in the Field of Study:** *Weapons, Missiles and Ammunition Logistics; Terminal Ballistics of Weapon Systems; Military Tactics*

**Specialty Disciplines:** *Manufacturing and Repairing Technologies for Weapon Systems; Firing Control Systems; Acting and Command Systems; Computing and Construction of Artillery Weapon Mechanisms; Optoelectronic Devices; Dynamic of Missiles Launching Devices; Integrated Weapon Systems; Maintenances of Weapon Systems; Testing and Evaluation of Weapon Systems; Computer Aided Design of Weapons, Missiles and Ammunition; Robotics Elements Applied in Weapon Systems; Internship IV*

**Complementary and Military Disciplines:** *Geography; Management of Projects; Sport*



**Programme of study - 1st cycle - License**  
**AIRCRAFT WEAPONS, MISSILES, AMMUNITION AND EJECTION SEATS**

**1<sup>st</sup> Year:**

**Fundamental Disciplines:** *Mathematical Analysis; Differential Equations; Algebra, Analytic and Differential Geometry; Radiation Physics; Chemistry of Explosive Materials; Technical Drawing and Engineering Graphics; Computer-Aided Graphics; Techniques and Computer Programming Languages; Probability Theory and Statistical Processing of Experimental Data for Weapons, Missiles and Ammunition Systems*

**Disciplines in the Field of Study:** *Study and Technology of Materials; Mechanical Treatments and Dimensional Control; Electrotechnics and Electromagnetic Devices; Mechanics and Mechanical Vibrations I; Internship I*

**Complementary and Military Disciplines:** *Communication, Public Relations and Negotiation Techniques; English; French; Politology; Psychology and Sociology; Topography; History; Sport*

**2<sup>nd</sup> Year:**

**Fundamental Disciplines:** *Special Mathematics; Technical Optics; Physics of Explosions; General Management*

**Disciplines in the Field of Study:** *Mechanics and Mechanical Vibrations II; Thermodynamics; Mechanisms and Fine Mechanics Issues; Strength of Materials; Numerical; Optimization Theory; Electronics; Fluid Mechanics; Aerodynamics; Automatics; Interior Ballistics of Rifled Weapons; Internship II*

**Complementary and Military Disciplines:** *English; French; Sport*

**3<sup>rd</sup> Year:**

**Fundamental Disciplines:** *Basic Logistics*

**Disciplines in the Field of Study:** *Machinery Parts; Exterior Ballistics and Missile Flight Dynamic; Aircraft Firing and Bombing Theory; Management of Military Technical and Economic Activities*

**Specialty Disciplines:** *Modern Aviation Platforms; Airborne Radiolocators, Electronic and Radioelectronic Devices; Aircraft Automatic Weapons; Aircraft Ammunition and Fuses; Missiles and Aviation Rocket Engines; Modeling and Simulation of Aircraft Weapon Systems; Aircraft Rescue Systems; Arming Principles of Aviation Platforms; Computing and Construction of Aircraft Bombs and Submunitions; Acting Systems for Aircraft Weapons and Missiles; Experimentation, Acceptance and Reliability of Aircraft Weapon Systems; Internship III*

**Complementary and Military Disciplines:** *Economy and Accountancy; English; French; Sport*

**4<sup>th</sup> Year:**

**Disciplines in the Field of Study:** *Aircraft Weapons, Missiles and Ammunition Logistic; Terminal Ballistics of Aircraft Weapon Systems; Military Tactics*

**Specialty Disciplines:** *Manufacturing and Repairing Technologies for Aircraft Weapon Systems; Computing and Construction of Control and Acting Systems for Aircraft Rescue Systems; Sensors and Control Systems for Aircraft Missiles; Airport, Airborne and Air Navigation Equipments; Mathematical Models and Simulation of Aerodynamical Phenomena; Dynamic of Aircraft Missile Guidance; Integrated Avionics and Weapons Systems; Testing and Evaluation of Aircraft Weapon; Maintenance of Aircraft Weapon Systems; Computer Aided Design of Aircraft Weapons, Missiles and Ammunition; Unmanned Aerial Vehicles; Internship IV*

**Complementary and Military Disciplines** *NBC Protection; Geography; Management of Projects; Sport*



## Programme of study - 1st cycle – License AMMUNITION, MISSILES, EXPLOSIVES AND POWDERS

### 1<sup>st</sup> Year:

**Fundamental Disciplines:** *Mathematical Analysis; Algebra, Analytic and Differential Geometry; Physics; Chemistry of Explosive Materials; Technical Drawing and Engineering Graphics; Computer-Aided Graphics; Techniques and Computer Programming Languages; Probability Theory and Statistical Processing of Experimental Data for Weapons, Missiles and Ammunition Systems*

**Disciplines in the Field of Study:** *Study and Technology of Materials; Mechanical Treatments and Dimensional Control; Electrotechnics and Electromagnetic Devices; Mechanics and Mechanical Vibrations I; Internship I*

**Complementary and Military Disciplines:** *Communication, Public Relations and Negotiation Techniques; English; French; Politology; Psychology and Sociology; Topography; History; Sport*

### 2<sup>nd</sup> Year:

**Fundamental Disciplines:** *Special Mathematics; Technical Optics; Physics of Explosions; General Management*

**Disciplines in the Field of Study:** *Mechanics and Mechanical Vibrations II; Thermodynamics; Mechanisms and Fine Mechanics Issues; Strength of Materials; Numerical; Optimization Theory; Electronics; Fluid Mechanics; Aerodynamics; Automatics; Interior Ballistics; Internship II*

**Complementary and Military Disciplines:** *English; French; Sport*

### 3<sup>rd</sup> Year:

**Fundamental Disciplines:** *Basic Logistics*

**Disciplines in the Field of Study:** *Machinery Parts; Exterior Ballistics and Missile Flight Dynamic; Firing Theory; Management of Military Technical and Economic Activities*

**Specialty Disciplines:** *Artillery Devices; Automatic Weapons; Modeling and Simulation of Explosives Phenomena; Construction and Exploiting of Fuses; Construction and Exploiting of Ammunition; Construction and Exploiting of Missiles; Construction and Exploiting of Artillery Weapons; Experimentation, Acceptance and Reliability of Weapon Systems; Analysis Methods for Explosives Identification; Standardization and Codification in the Field of Weapons, Missiles and Ammunition Systems; Internship III*

**Complementary and Military Disciplines:** *Economy and Accountancy; English; French; Sport*

### 4<sup>th</sup> Year:

**Disciplines in the Field of Study:** *Weapons, Missiles and Ammunition Logistics; Terminal Ballistics of Weapon Systems; Military Tactics*

**Specialty Disciplines:** *Manufacturing and Repairing Technologies for Explosives, Missiles and Ammunition; Pyrotechnic Security and Explosives and Ammunition Associated Risks; Detonics; Methods and Techniques of Ballistic Protection and NBC; Reactive Weapons and Launching Devices; Pyrotechnic Systems with Military Applications; Acceptance, Supervision, Demilitarization of Explosives, Missiles and Ammunition; Maintenance of Weapons, Missiles and Ammunition; Testing and Evaluation of Explosives, Missiles and Ammunition; Computer Aided Design; Robotics Elements Applied in Weapon Systems; Internship IV*

**Complementary and Military Disciplines:** *NBC Protection; Geography; Management of Projects; Sport*

