Program and Degree: **BSc in Aerospace Engineering**	
Course Description	
Course Title	**Principles of Rocketry**
Prerequisites	Principles of Propulsion
The course aims	Students' acquaintance with the Fundamentals of motion of Rockets and Missiles and how to generate the propulsion force in them and the principles of their control and sustainability
Contents	1- Eequations of Thrust force, equations of motion of rockets in the gravity field-counting atmosphere Drag, the relationship between engine work duration and the initial acceleration of the rocket. Rocket free motion, single and multi-stage rockets 2- Rockets with chemical fuel: types of solid and liquid fuels, combustion chambers, problems of starting combustion, combustion stability, outlet nozzle and its design principles. Heat transfer and friction effects in nozzle design, the effect of fuel type on nozzle structure, heat transfer and Cooling of the nozzle and the combustion chamber, controlling the amount and direction of the generated force. 3- Rockets with nuclear fuels and electric rockets 4- An Introduction to stability of Rocket motion, control surfaces and Rotational stability, Aerodynamic of Rockets
Duration	**1 Semester (16 weeks)**
Course Hours	**3 hours/week**
Course Type	**Optional**