

File name:	POST-DOCTORATE: SPACE MISSION CONCEPT AND DEVELOPMENT ENGINEER
Version:	1.1
Date:	01/09/2018
Author:	Nicolas ROCHE



# POST-DOCTORATE: SPACE MISSION CONCEPT AND DEVELOPMENT ENGINEER

## 1 CONTEXT

The University Space Center is the French leader in the development and operation of nanosatellites developed by students. It has acquired in-depth competences in the field of design, manufacturing, testing and operation of nanosatellites and their subsystems, as well as in the area of space project management and product assurance in the framework of university space projects. The CSU has an AIT (Assembly Integration and Test) Facility, a CDF (Concurrent Design Facility) and both UHF and S-band Ground Stations. The CSU develops its own 1U and 3U CubeSat nanosatellite platforms with the support of the Van Allen Foundation and both the French and the European space agencies.

## 2 DESCRIPTION

The Space Mission Concept and Development Engineer has to bring together knowledge and analysis from physics, electronics, flight dynamics, space missions design, space environment, space mechanics, propulsion and attitude and orbit control systems used in spacecraft, cost and risks management... to design and evaluate new mission concepts for nanosatellite developed at the CSU. The CSU has recently acquired a concurrent design facility CDF using VTS and IDM-CIC software (the same than in NASA, CNES and ESA) to perform mission and system analysis considering all project constraints and objectives. The Engineer shall be in charge of evaluating many mission analysis and optimize the system to be developed. He/she also has to evaluate the resources needed to perform the mission from Phase 0 to Phase F.

## 3 ROLES AND RESPONSIBILITIES

Operate and maintain the Concurrent Design Facility to perform mission and system analysis

Prepare and manage Concurrent Design Facility monthly sessions with industrial and research partners - Report CDF session outputs

Identify faisable mission concepts and evaluate the opportunity regarding market trends

Work closely with the research and development directorate to identify Technological breakthroughs needed to accomplish future missions

Define 5 faisable mission and system concepts and Prepare the documentation associated with the Phase 0/A reviews (Development plan, Gantt planning, resource organisation plan and preliminary validation plan, risk assessment and mitigation plan)

File name: POST-DOCTORATE: SPACE MISSION CONCEPT AND DEVELOPMENT  
ENGINEER  
Version: 1.1  
Date: 01/09/2018  
Author: Nicolas ROCHE



Science mission concept, nanosat space application market trends and innovative space solution surveys including future launch opportunities

Team Work (prepare and attend meetings, contribute to CSU operation, deliver requested data package, report to CSU Directorate, contribute to CSU activities, be a CSU representative in external workshops and conferences)

## 4 QUALIFICATIONS

PhD. Graduate

English (fluent), Space project management, space standard, space laws, basics of product assurance

Fundamental laws of mechanics and orbital mechanics, Orbital maneuvers

Mission analysis and System definition - Engineering, Product Assurance and Management resource

Space missions and Space environment - Assembly, Integration and Tests -

General concepts of space vehicle architecture and navigation - Ground segment and Ground support Equipment Facility

Propulsion - Attitude determination and control

Onboard systems and associated test benches

Software: Concurrent Engineering Software, STELA, DAS, DRAMA,

Key design elements for successful missions, in particular related to human spaceflight

## 5 JOB CONSTRAINTS

Work on a computer, require work out-of-business hours during satellite commissioning and long-term testing

## 6 JOB LOCATION

Montpellier, FRANCE

## 7 POINT OF CONTACT

Dr. Nicolas J-H. Roche

Chief Technology Officer

University space Center Montpellier - Nîmes

-----

Université de Montpellier - Campus St Priest

File name: POST-DOCTORATE: SPACE MISSION CONCEPT AND DEVELOPMENT  
ENGINEER  
Version: 1.1  
Date: 01/09/2018  
Author: Nicolas ROCHE



CC 06-001 - 34 095 Montpellier cedex 5

Tel: +33 4 67144050

Mob: +33 6 10100476

email: nicolas.roche@umontpellier.fr