



## **MASTER IN PHOTONICS – “PHOTONICS BCN” ERASMUS+ “EUROPHOTONICS-POESII”**

### **MASTER THESIS PROPOSAL**

**Dates: April - September 2018**

**Laboratory : ASE Optics Europe  
Institution: ASE Optics Europe  
City, Country : Barcelona Spain**

**Title of the master thesis: Construction and calibration of a spectrometer for industrial optical coherence tomography**

**Name of the master thesis supervisor: Thomas Siegel (ASE)**

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**Keywords : Optics, spectrometry, calibration**

**Summary of the subject (maximum 1 page) :**

This Masters project is concerned with the construction, calibration and characterisation of a custom spectrometer for optical coherence tomography. The spectrometer has been designed by ASE and now needs implementation in the laboratory.

The project consists of the tasks below:

Assembly and optical alignment of the spectrometer (lab-based)

Spectral calibration of the spectrometer using a mercury-argon lamp (lab + programming)

Investigation of the effect of the inclusion of higher-order polynomial in the calibration procedures on the OCT resolution (programming)

Investigation of the effects of spectrometer customisation on OCT range and resolution (lab-based)

Reporting on the investigation results

The successful candidate will be integrated in the engineering team at ASE to carry out the development but is also expected to show appropriate levels of independence and initiative in the laboratory.

**Additional information :**

\* Required skills :

Solid knowledge of optic and optical systems

Comfortable with handling of optics in the laboratory

Skilled in optical alignment technique

Reasonable knowledge of programming languages, e.g. python, C, matlab

Knowledge of CAD software, e.g. Solidworks, would be a plus

\* Miscellaneous :

Proficient in either Spanish or English