**INTERNSHIP POSITION**

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| **Topic**  | **Surface treatment of materials to improve performance properties** |
| **Specification/****Programme**(min. 100 words) | The course aims to educate students on different approaches to material characterization and techniques utilized in surface treatments. The primary focus will be on plasma surface treatment technologies, such as PVD deposition of thin layers through physical vaporization and magnetron sputtering, as well as other surface treatment methods. Thin layers have been used for many years to finish various materials. Technologies were gradually developed for their deposition, which can be divided into two groups, namely PVD (physical vapour deposition) and CVD (chemical vapour deposition) methods.To fundamentally change the properties of materials, it is sometimes enough to apply only tens of nanometers of a thin layer of the selected substance. The resulting product can thus completely change its original properties. It can be protected against corrosion, reduce friction, improve electrical conductivity or perhaps increase strength. However, it is necessary to find not only the right substance for a thin layer but also a suitable method of preparation.Students will learn how to assess modified surfaces through various evaluation methodologies, including surface roughness, thickness of applied layers, chemical composition, hardness, tribological properties, and microscopic analysis using confocal and digital microscopy. |
| **Time period** |  |
| **Length of the traineeship - number of months** | 2 x 1 month |
| **Supervisor´s name and contact**  | Ing. Totka Bakalova, Ph.D.(Doctoral students: Ing. Michal Krafka, Ing. Anna Krobotová)Technical University of LiberecFaculty of Mechanical EngineeringDepartment of Material ScienceStudentská 1402/246117 Liberectotka.bakalova@tul.czlucie.svobodova@tul.cz |
| **Administrative Contact** | Marcela Valkova, marcela.valkova@tul.cz  |
| **Documents required** | CV, Letter of motivation, Transcript of Records |