

## Research Topics:

One Topic from each of the following groups:

- 1 Development of a novel cooling system for ground-coupled solar photovoltaic applications for high-temperature climates.
- 2 Experimental and CFD investigation of the heat transfer characteristics of AL<sub>2</sub>O<sub>3</sub>-water nanofluids in spirally corrugated helically coiled tubes using the multiphase method.
- 3 De-coating of metallic components using laser cleaning and its modelling
  - Modelling of Direct laser deposition of metallic powders for industrial/medical applications
- 4 Gyroscopically stabilised, scalable, low-cost cable driven additive manufacturing robot.
  - Additive manufacturing and co-sintering of multi-material metal/ceramic parts.
  - Development of an open source continuous fibre reinforced composite additive manufacturing system with the customisable feedstock.
  - Multiscale additive manufacturing using melt-electro-writing.
- 5 Intelligent Belt using IN4.0
- 6 Intelligent Prediction of Machine Life using IoT
- 7 Development of a tribotronic tilting pad bearing
  - Development of a tribotronic face seal system
  - Development of a lubrication control system for internal combustion engines
- 8 Intelligent Bearing using IN4.0
  - Intelligent Gearbox using IN4.0
- 9 Driverless Pod
- 10 Use of soft actuation for exoskeleton applications
  - Soft actuator systems for prosthetic applications



Erasmus+

Key Action 1, Student Mobility Project



University of Central Lancashire (UCLan) - UK

&



Arab Academy for Science, Technology Maritime Transport (AASTMT) - Egypt

**Postgraduate Students' Mobility; UCLAN / AASTMT PhD JOINT SUPERVISION PROGRAMME**

**Target Departments**

- Mechanical Engineering (Mechatronics)
- Industrial Engineering
- Marine Engineering
- Electronic Engineering
- Electrical Engineering
- Computer Engineering

| Requirement   | Information to Applicant  |
|---|---|
| <ol style="list-style-type: none"> <li>1. Copy of Passport</li> <li>2. Curriculum Vitae (European CV)</li> <li>3. English IELTS test with minimum score of 6.5 (or equivalent).</li> <li>4. Motivation Letter (maximum one page)</li> <li>5. Bachelor Transcript of Records with minimum equivalent to a first or second class Honours Degree in Engineering subject (Mechanical Engineering (Mechatronics), Electrical Engineering, Electronic Engineering or Computer Engineering, with GPA: 3.5 or higher.</li> <li>6. Two recommendation letters from lecturers (one from head of the department at AASTMT)</li> </ol> <p><b><u>Selection Criteria of Participants:</u></b></p> <ol style="list-style-type: none"> <li>1- Level of the participant academic performance during the BSc and MSc programmes.</li> <li>2- Level of activity in student's life and contribution to engineering community: e.g. participation in different committees, education and sport competitions, volunteering etc.</li> <li>3- Quality of the Research Proposal (maximum two pages)</li> </ol> | <ul style="list-style-type: none"> <li>• <b>Duration of the programme: 3-Years</b><br/> <b>Year 1:</b> 12 Months at UCLan - UK<br/> <b>Year 2:</b> 9 Months at AASTMT - Egypt<br/> 3 Months at UCLan - UK<br/> <b>Year 3:</b> 9 Months at AASTMT - Egypt<br/> 3 Months at UCLan - UK</li> <li>• <b>Available Scholarships:10</b></li> <li>• <b>Start Date:</b><br/> April 2019 and July 2109</li> <li>• <b>The project Offers: Year 1 (12 Months) mobility at UCLan - UK</b><br/> - €850 monthly allowance.<br/> - €530 contribution to travel costs</li> </ul> |