



Lancaster  
University



ULBS  
Universitatea "Lucian Blaga" din Sibiu



2018-1RO01-KA203-049511

TechNology and EntrepreneUrship Education - Bridging the Gap for Smart Product Development

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## 1<sup>ST</sup> INTENSIVE SUMMER SCHOOL PROCEDURE

### Introduction

This learning activity will include the 1<sup>st</sup> Intensive Summer School in Romania under the premises of coordinator University POLITEHNICA of Bucharest will take place between 8<sup>th</sup> to 14<sup>th</sup> of July 2019 in Bucharest Romania.

The total number of participants is 100, from each partner except Lancaster University, divided as follows:

- University "Lucian Blaga" of Sibiu: 16 participants;
- Politechnika Czestochowska: 10 participants;
- University POLITEHNICA of Bucharest: 74 participants.

The target group can include Bachelor, Masters and PhD students.

### Training methodology

#### SUMMARY

Task are constructed around the intellectual outputs and will be delivered as: workshop, round table, brainstorming, sessions, team tutoring, best practice examples, case studies and targeted laboratories. Also, all participants will use the skills and knowledge gained during Intensive Summer School to develop better quality project outputs.

All educational material produced for and during the 1<sup>st</sup> Intensive Summer School will be made freely available through the on-line open platform (OIP), so that all participating students can download and enjoy fully their educational value either to structure their own AM and technology entrepreneurship course or just to get introduced to entrepreneurship principles and AM technologies.

Students will be divided in mixed teams and will participate to all learning tasks in that formation.

#### AIMS



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- Increase the number of non-business students who benefit from innovative training approaches and increasing level of digital competences;
- Increase the AM technologies literacy, development of relevant and high-quality competences, and entrepreneurial ability to develop start-ups starting from an idea of innovative Customized Smart Product - using AM technologies - by students enrolled at technical universities, in the context of the internationalization of activities and work within interdisciplinary and multinational teams, in a project-based learning system, emphasizing technology entrepreneurial techniques, commercialization and selling of technology based ideas, and patenting and protecting technology based ideas;
- Increase the number of students who study AM and get involved in entrepreneurship and personal development.

#### AVAILABLE RESOURCES

- Four workshop rooms (CO 03a, CO 03b, CO 011, CO 001) with Internet access, computers and 3D printing equipment and IMST Learn & Lounge project Space.
- PowerPoint presentations which will be prepared by coordinator UPB
- Working Materials from the project outputs.
- 100 computers
- 3D Printer Kreator Motion – 10 machines
- 3D Printer Zortrax M300 Plus – 5 machines
- 3D Printer Zortrax M300 – 2 machines
- 3D Printer BCN3D SigmaX – 2 machines
- 3D Printer ZPRINT 310 Plus – 1 machine
- Printer Project 1500 – 1 machine





## CONTENTS AND PROGRAM

According to the discussions during the 1<sup>st</sup> transnational project meeting in Bucharest on the 14<sup>th</sup> of December 2018, the 1<sup>st</sup> Intensive summer school will contain some of the following topics:

1. Product Development
2. Additive Manufacturing
3. Computer Aided Design
4. Assisted Manufacturing
5. Entrepreneurship

A preliminary programme is presented below.

**Day 1:** Registration and receipt of all 100 participants (1h); Introduction and presentation of project aim, outputs and summer school agenda (2h); Campus visits to UPB AM research Centres (1h); Workshop on AM technologies - interactive presentation of technologies, case study development, 3D printing of a product using FDM technology (2h); Seminar on Product Design and Development (2h).





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**Day 2:** Invited lecture and workshop on Smart system integration and marketing solutions (3 h); Case study on Digital manufacturing and Industry 4.0 (2h); Project development on Entrepreneurial Best Practices (3h).

**Day 3:** Laboratory on Computer Aided Design and best software option for 3D printing applications (4h); Workshop on Financial Modelling and Management in an AM SME - cost opportunities and added value (4h).

**Day 4:** Workshop on 3D printing for Business applications (4h); Seminar on Opportunity recognition and IP & Legal Issues in a new AM focused venture (2h); Project development on Market research, marketing and sales (2h).

**Day 5:** Project based learning workshop on Product Design and Development using three AM technologies (Fused Deposition Modelling, Binder Jetting and Direct Light Processing): Assessment on technology differences, advantages and disadvantages; Selecting the most appropriate AM technology for a given product function; Designing and modelling of a Product Concept; Generating the STL and G-Code for prototyping; Manufacturing a prototype using one of the identified additive technologies (8h).

**Day 6:** Case study on how to write a business plan for a technical focused SME (2h); Development of Personal Business plans of student teams based on best practice examples on technology transfer options for AM products and services (6h);

**Day 7:** Invited lecture on smart sensors and IoT in industry environments (2h); Presentations of students developed projects and awarding ceremony: projects will be presented orally by each team using a PowerPoint presentation (or Prezi), two handouts of the printed version of the project and the 3D printed prototype of the product (5h); Conclusions, future development and participants feedback (1h). Students will be allowed to take home all 3D printed products and the printed versions of their projects.

The intellectual outputs covered by this activity are O2, O3, O4 and O7.

Adjustments to this schedule will be made in accordance with the format of the Output materials and the availability of the people involved. The final Agenda of the summer school will be finalised and made available to the participants at least 5 days before the start of the event.



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## SELECTION PROCEDURE

The students will be selected according to the 1st Intensive Summer School procedure which will include as elimination criteria and the steps you need to follow to sign up.

**The selection** of the students will be done in five steps:

1. Register at [www.smart-techub.eu](http://www.smart-techub.eu) or [http://oip.drl.ro/scoli\\_de\\_vara/prima\\_scoala.php](http://oip.drl.ro/scoli_de_vara/prima_scoala.php). A registration Form will be provided on the project website, with at least the following required fields: Name and Surname, Gender, E-mail, Telephone number, The University of origin, Country of residence, Study cycle, Year of study, Study domain, Upload of Transcript of Records.
2. After the registration period is finished, the full list of registered students will be posted on [www.smart-techub.eu](http://www.smart-techub.eu) and Facebook TechHUB 4.0; Each of the three involved partners will receive a list of their registered students and will conduct the selection process hereafter described.
3. An interview day will be set for the registered students; The interview will take place with a representative of the partner university.
4. Evaluation and selection of participants is based on the elimination criteria described below.
5. Post of final participants list.

**The selection criteria** will be:

1. Minimum number of ECTS from compulsory subjects has to be **30 x N** (where, N is the number of completed semesters at the moment of interview) – Elimination criterion

For Bachelor students:

- year I: N = 1
- year II: N = 3
- year III: N = 5

Master students:

- year I: N = 1

PhD students

- year I: N = 1
- year II: N = 3



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- year III: N = 5

2. Previous academic results: average grade in current academic year (2018 – 2019);
3. Interview evaluation grade.

**Each student will come at the interview with a folder containing the following documents:**

1. A certificate signed by the faculty's secretary or an official document which states the number of ECTS and the Transcript of Record with the average grade from all completed semesters.

#### SELECTION CALENDAR

| Period                  | Scheduled activity                                    |
|-------------------------|---|
| 1 April – 30 April 2019 | On-line registration                                  |
| 1 May – 6 May 2019      | On-line published list of registered candidates       |
| 7 May – 17 May 2019     | Scheduled interviews                                  |
| 20 May – 24 May 2019    | On-line published list of final accepted participants |

Date,

12.03.2019

Project Manager,

Mihaela Ulmeanu



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