BRIGHT

BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period

Co-funded by the Erasmus+ Programme of the European Union

BRIGHT International Summer School on:

3D printing for medical applications

The main aim is to bring together professors, students, industrial and medical organizations and institutes in order to share knowledge and good practice experience and expertise in developing, producing and testing of medical parts that represent one stringent need in supporting hospitals that are trying to save lives of patients in the context of the CoVID.

19 - 30 July 2021

WHO CAN APPLY

More informations: **www.bright-project.eu**

Bachelor students (BSc)
Master students (MSc)
PhD students

SPECIALIZATIONS:

Manufacturing Engineering
Mechatronics & Robotics
Mechanical & Bio-Mechanical Engineering
Science of Materials
Physics & Chemistry
Medicine & Pharmacy

Organized by

in cooperation with

BRIGHT consortium

TECHNICAL UNIVERSITY OF CLUJ-NAPOCA ROMANIA

University of Niš

Politechnika Poznańska

Jurja Dobrila University of Pula

STU Slovak University of Technology in Bratislava

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Register here

www.bright-project.eu

Registation until 1st of July 2021

INTERNATIONAL SUMMER SCHOOL

Preliminary program

MONDAY 19.07

9:00 - 9:30	Opening and Welcome ceremony:
9:30 - 10:00	**Virtual tour (presentation of TU Cluj-Napoca)**
10:00 -10:30	BRIGHT project presentation
10:30 -11:00	Partners presentation
11:00 -12:00	Presentation made by Medical institution: How engineers can support hospitals in the context of pandemic
12:00 -13:00	Lunch break
13:00 -13:30	Presentation related to the BRIGHT aims and objective of the International Summer school
13:30 -13:45	Presentation of the medical parts to be developed and realized by 3D printing + launching of teams competition
13:45 -14:00	Dividing in teams
14:00 -15:00	**CAD – Computer Aided Design (lecture)**
15:00 -16:00	**CAD laboratory part 1 (working on medical parts prototypes design)**

TUESDAY 20.07

9:00 - 10:00	**CAD laboratory part 2 (working on medical parts prototypes design)**
10:00 - 11:00	**Validation of the proposed solutions by CAD experts – feedback (workshop / seminar)**
11:00 - 12:00	**CAE - Computer Aided Engineering (lecture)**
12:00 - 13:00	Lunch break
13:00 - 14:00	**CAE laboratory part 1 (working on medical parts prototypes design)**
14:00 - 15:00	**CAE company presentation**
15:00 - 16:00	**CAE laboratory part 2 (working on medical parts prototypes design)**

WEDNESDAY 22.07

9:00 - 10:00	**Validation of the proposed solutions by CAE experts – feedback (workshop / seminar)**
10:00 - 11:00	**3D printing and Rapid Tooling (lecture)**
11:00 - 12:00	**3D printing company presentation**
12:00 -13:00	Lunch break
13:00 - 14:00	**Selecting of the adequate methods for printing the parts in cooperation with 3D printing experts (workshop / seminar)**
14:00 - 15:00	**Virtual Reality laboratory / Augmented reality experience**
15:00 - 16:00	**3D printing laboratory 1 (preparing the medical parts to be printed)**

THURSDAY 23.07

9:00 - 10:00	**3D printing experience – feedback of the experts (workshop / seminar)**
10:00 -11:00	Discussion of issues occurred during the 3D printing process / improvements / corrections made in cooperation with 3D printing experts
11:00 -12:00	**3D printing laboratory 2 (preparing the medical parts (improved variants) to be printed)**
12:00 -13:00	Lunch break
13:00 - 14:00	**Process optimization and software control (lecture)**
14:00 - 15:00	**3D scanning and CMM control laboratory**
15:00 - 16:00	**3D printing experience – final feedback on behalf of the 3D printing experts (workshop / seminar)**

FRIDAY 24.07

9:00 - 10:00	**Laboratory on Topological optimization of CAD models / Optimization of 3D printing processes**
10:00 - 11:00	**Medical imaging and project based learning laboratory**
11:00 -12:00	Conclusions and round table discussion with all participants at the end of the 1st week
12:00 -13:00	Lunch break
13:00 - 15:00	**Virtual city tour of Cluj-Napoca**

INTERNATIONAL SUMMER SCHOOL

Preliminary program

MONDAY 26.07

9:00 - 9:30 Welcome introduction speech about the aims and objective of week no. 2
9:30 - 10:30 Materials Science and Strength of Materials in medicine (lecture)
10:30 -11:00 Defining the specific types of samples to be realized by 3D printing and to be tested (workshop / seminar)
11:00 - 12:00 CAD designing of samples (laboratory)
12:00 -13:00 Lunch break
13:00 - 14:00 Topological / structural optimization of samples (laboratory)
14:00 - 15:00 CAE of realized samples (laboratory)
15:00 - 16:00 Game on competition

TUESDAY 27.07

9:00 - 10:00 Preparing the samples to be 3D printed / setting of parameters (laboratory)
10:00 - 11:00 3D printing of the samples (laboratory)
11:00 - 12:00 Testing of mechanical methods (laboratory)
12:00 -13:00 Lunch break
13:00 - 14:00 Testing of mechanical parts realized by 3D printing processes (laboratory)
14:00 - 15:00 Validation and interpretation of the results by mechanical testing experts – feedback (workshop / seminar)
15:00 - 16:00 Company visit / presentation

WEDNESDAY 28.07

9:00 - 10:00 Biomedical applications and challenges (laboratory)
10:00 - 11:00 Medical engineering standards and tests (lecture)
11:00 - 12:00 SEM / medical analysis experience (laboratory)
12:00 -13:00 Lunch break
13:00 - 14:00 Interpretation of the SEM results with the support of the experts – feedback (workshop / seminar)
14:00 - 15:00 BRIGHT hospital / Medical institute visit
15:00 - 16:00 BRIGHT challenge Debate

THURSDAY 29.07

9:00 - 10:00 Flexible manufacturing systems in medical applications (lecture)
10:00 - 11:00 Using and integrating CAD / CAM solutions and Robotic systems in creating of new 3D printing equipment (laboratory)
11:00 - 12:00 Robotic factory / Hybrid manufacturing company visit
12:00 - 13:00 Lunch break
13:00 - 14:30 BRIGHT evaluation of students
14:30 - 16:00 BRIGHT test corrections

FRIDAY 30.07

9:00 - 10:00 Presenting of the 3D printed parts and reports related to the research performed by the teams (workshop / seminar)
10:00 - 11:00 Round table with medical and industrial partners of BRIGHT
11:00 - 12:00 BRIGHT closing ceremony