



## ***Imprimarea tridimensională în aplicații medicale la Bright International Summer School organizată de UTCN***

Universitatea Tehnică din Cluj-Napoca (UTCN) organizează în perioada 19-30 iulie 2021 o Școală Internațională de Vară, în domeniul **“imprimării 3D cu aplicabilitate în domeniul medical”**, tematică inclusă în cadrul proiectului internațional ERASMUS KA2 - BRIGHT.

Evenimentul anunțat va avea un caracter practic, pe lângă instituțiile de învățământ superior, fiind implicate și o serie de companii private specializate în domeniul imprimării tridimensionale 3D, ce utilizează metode de Realitate Virtuală / Augmentată. De asemenea, în acest demers sunt implicate și instituții publice și organizații direct interesate de soluțiile propuse în cadrul respectivului proiect pentru sprijinirea medicilor implicați direct în luptă cu pandemia.

Sunt așteptați să aplice la cursurile Școlii Internaționale de Vară BRIGHT studenți, masteranzi și doctoranzi specializați în domeniile Ingineriei Industriale, Mecatronică, Robotică și Inginerie bio-mecanică, Științele Materialelor, Fizică, Chimie, Medicină și Farmacie.

Înregistrarea și participarea la acest eveniment este gratuită, termenul limită pentru înscriere fiind data de 1 iulie 2021.

Mai multe detalii legate de Școala Internațională de Vară BRIGHT și modul de înregistrare la acest eveniment sunt disponibile pe pagina web a proiectului ERASMUS KA2 - BRIGHT la adresa: [🌐 https://bright-project.eu/](https://bright-project.eu/)



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



# BRIGTH International Summer School on: **3D printing** for medical applications



**19 - 30  
JULY  
2021**

**WHO  
can apply**

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

**SPECIALIZATIONS:**

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

More details

[www.bright-project.eu](http://www.bright-project.eu)



Registration until 1<sup>st</sup> of July 2021

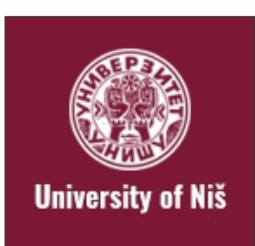
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**Technical University of Cluj-Napoca**

in cooperation with



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of the European Union



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BRIGTH 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.

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Register here

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Registration until 1<sup>st</sup> of July 2021

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 1<sup>st</sup> week
- 12:00 -13:00 Lunch break
- 13:00 - 15:00 Virtual city tour of Cluj-Napoca**



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 parts (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