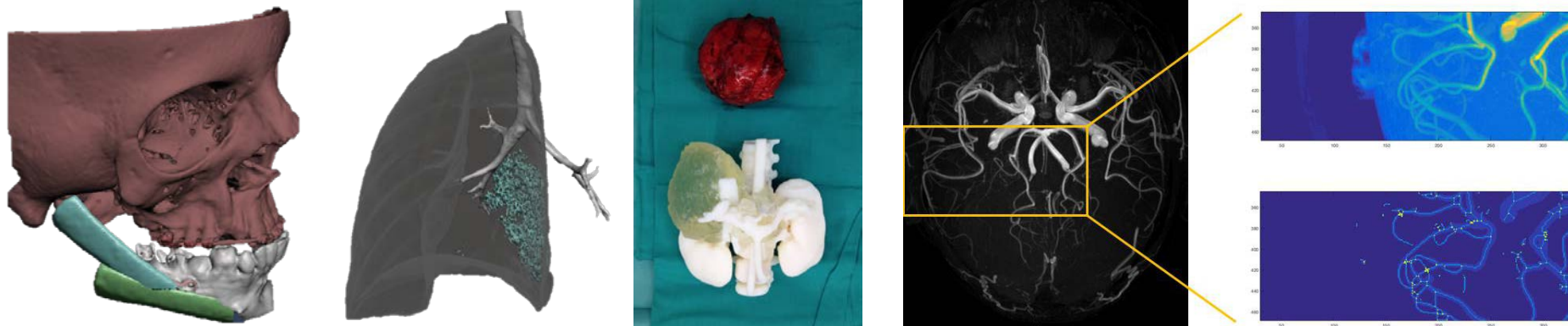


EXPERT3D

Transversal Programme in Medical Image Postprocess, Training Professionals: 3D Printing to Research



EIT Health is supported by the EIT,
a body of the European Union

Organized by:  **SJD**
Sant Joan de Déu
Barcelona - Hospital



8 ECTS credits:  **interAc** Salut
Fundació Institut Interuniversitari



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ULC
barcelona

Universitat
de Girona

BLOC 1

INTRODUCTION: PRESENT AND FUTURE OF MEDICAL IMAGE APPLICATIONS

W1: Oct 28-3

BLOC 2

ANATOMY AND IMAGE TECHNIQUES

W2: Nov 4-10

BLOC 3

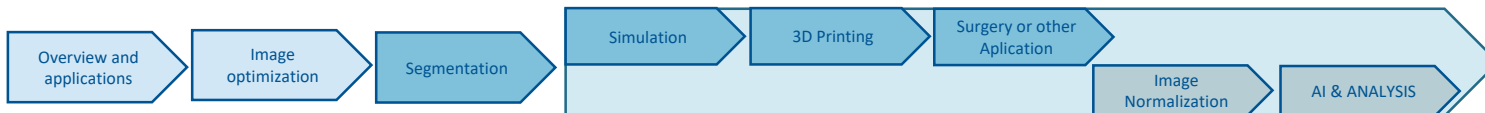
IMAGE POST-PROCESSING AND 3D PRINTING TO HEALTHCARE APPLICATIONS

W3: Nov 11-17

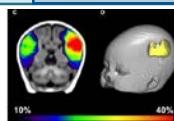
BLOC 4

FROM IMATGE TO AI AND RESEARCH

W4: Nov 18-22



65% Grade
80% Assistance
CERTIFICATE



- Welcome and Get Started (V)
- Introduction to Bloc 1 (V)
- Innovation in Medicine: Present and Future (V)
- Future of image diagnosis (V)
- 3D Printing (in Health) (V)
- AI (in health) (V)
- Existing regulations and ethics in healthcare (V)
- Real examples: 3D printing in oncologic surgery (V)
- Real examples: 3D printing in maxillofacial surgery (V)
- Practical examples: Image applications in research (V)
- Real examples: Image and simulation (beyond 3DP) (V)
- End of bloc (V)

- Introduction to Bloc 2: acquisition of the medical image, techniques and optimization (V)
- [Anatomy] Anatomy of the soft tissues (thorax and abdomen)
- [Anatomy] Musculoskeletal anatomy
- [Anatomy] Cardiovascular anatomy
- [Anatomy] Anatomy of the central nervous system
- [Anatomy] Maxillary-face anatomy
- [Anatomy] Maternal-fetal anatomy
- [Technic] Update on medical imaging techniques I (TC)
- [Technic] Update in medical imaging techniques II (RM)
- [Technic] Update on medical imaging techniques III (Ecography)
- [Technic] Technical optimization of CT Scan
- [Technic] Basic techniques of reconstruction (subtraction, multiplanar, MIP, MinP, volume rendering and surface)
- End of bloc (V)

- Introduction to Bloc 3 (V)
- Basic post processing tools (V)
- [Portal] Segmentation with PORTAL (V)
- [Portal] Practical basic reconstructions (V) 😊
- [Portal] Flip-class session for doubts
- [3D Tools] Basic concepts of 3D printing software, Formats and Matrices (V)
- [3D Tools] How to use a 3D software and STL file (V)
- [3D Tools] Creation of biomodels, surgery tools, cutting guides, implants and other modifications on the image (V)
- [3D Tools] Flip-class session for doubts for segmentation 😊
- [3D Printing] Additive manufacturing processes and types of 3D printers for medical application (V)
- [3D Printing] Printing materials in biomedicine
- [3D Printing] Visit CIM-UPC print Fab-farm
- [Simulation] Simulation techniques workshop
- End of Bloc (V) 😊
- Introduction to Final Work (V) 😊

- Introduction to Bloc 4 (V)
- Visualization of 3D models (V)
- Normalization of the image for research (V)
- Tips in acquiring the image and specific software for segmentation (V)
- Individual segmentation, Lesion-symptom mapping, Interpretation and report of group cases (V)
- Introduction to machine learning in image analysis (V)
- Mathematical representation of digital images (V)
- Advanced image filtering techniques (2 classes) (V)
- Extraction of attributes and texture analysis (2 classes)
- Automatic classification and segmentation of Images with AI techniques (4 tutorials) (V)
- Introduction to deep learning techniques (Convolutional Neural Networks, Deep Learning) (1 class) (V)
- [AI] Flip-class session for doubts 😊
- End of Bloc
- Tutoring Final Work
- End of course: Remarks from Course Co-Directors



Dedicated time: 9 h



Dedicated time: 11 h



Dedicated time: 21h



Deadline: 2 weeks (Nov 29)



Dedicated time:
27h



GRADED ACTIVITIES: Final Bloc Questionnaires



GRADED ACTIVITIES: Glossary ★



GRADED ACTIVITIES: Final Work



ENTRANCE AND EXIT SURVEY



Presencial



Video (V)



Lecture