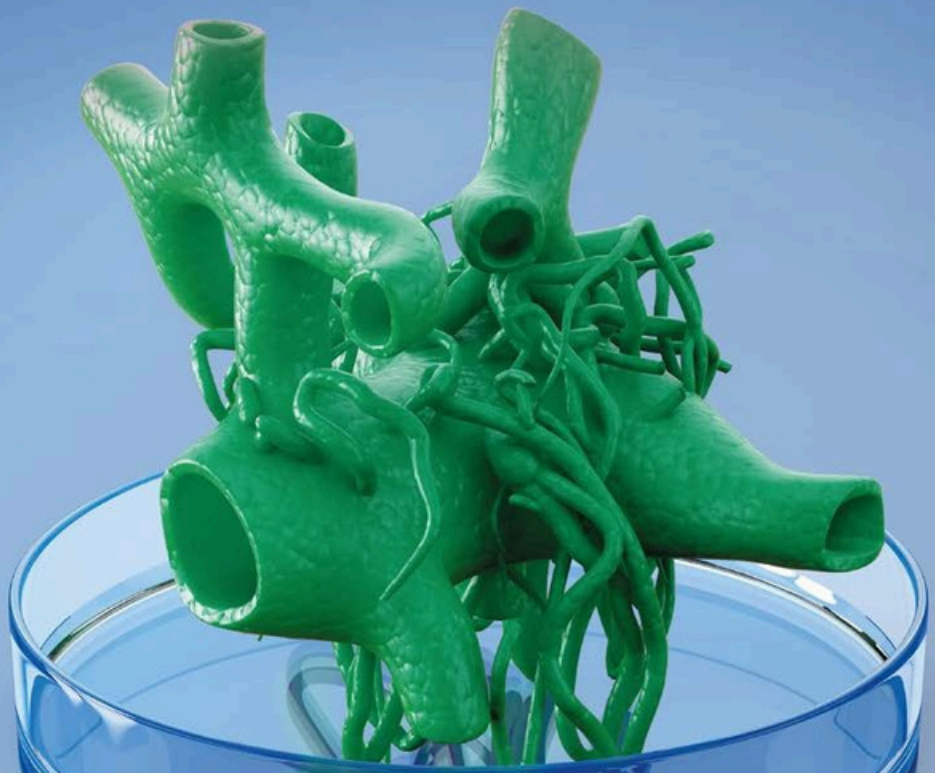
Expert3D2027

COMPREHENSIVE TRANSVERSAL PROGRAMME IN MEDICAL IMAGE POST PROCESSING: 3D PRINTING AND ARTIFICIAL INTELLIGENCE

Professional 3D | Professional AI



January - April 2027

Expert3D



Course description

Comprehensive transversal programme in medical image post processing: 3D printing and artificial intelligence

Activity accredited by el Consell Català de Formació Continuada del Sistema Nacional de la Salud.

An innovative training programme in image processing, 3D printing and AI to provide health-related professionals the theoretical and practical knowledge they need to use new imaging technologies for diagnosis.

The EXPERT3D course will enable professionals to perform post-processing of the radiological image for healthcare and research employing advances like 3D image prints, virtual technologies and artificial intelligence. These disruptive technologies have fostered the merger of engineering and medicine, creating a demand for professionals with new skills that unite the two disciplines.

EXPERT3D will provide the students with the training needed, gathering multidisciplinary instructors with years of practical experience in post-processing of the medical image, planned surgery, 3D printing and use of the image for research in a hands-on, clinical needs-driven methodology.

This is the first programme on medical imaging for diagnosis that targets not only physicians, but also bioengineers, computer scientists, senior technicians in diagnostics imaging and other medical specialists. Given the range of specialties involved, learners will not be required to have prior computer programming knowledge, though those with that knowledge will be guided to understand the basics of 3D imaging and to develop AI algorithms for image processing.

This project is an international collaboration between public and private institutions and financed by EIT Health.

Funded by the European Union

eit Health

REGISTRATION OPEN!

www.expert3D.eu

EXPERT 3D COURSES

Professional 3D

Professional AI

MODULE 1
HEALTHCARE INNOVATION

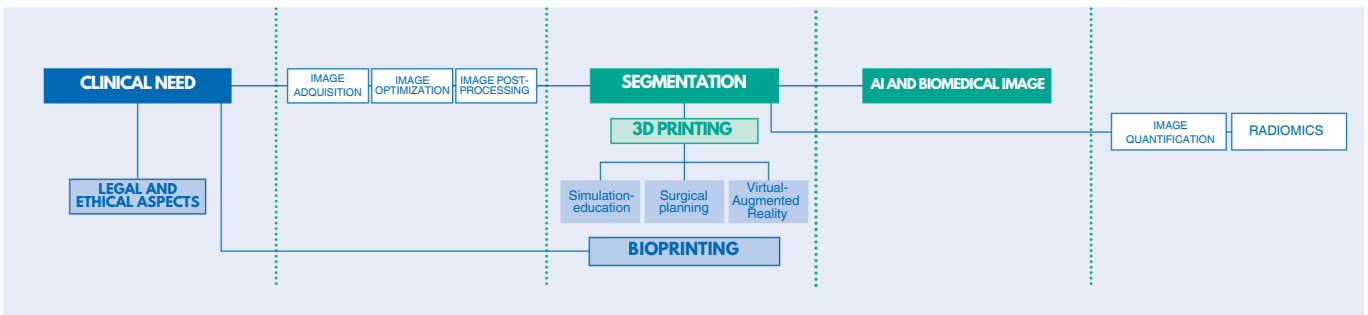
MODULE 2
ANATOMY / RADIOLOGY TECHNIQUES

MODULE 3
3D PRINTING / BIO-PRINTING

MODULE 4
ARTIFICIAL INTELLIGENCE

MODULE 5
QUANTITATIVE IMAGING / RADIOMICS

Comprehensive flowchart of new advanced Biomedical Imaging skills



8 weeks transversal blended training programme:

- 6 weeks online.
- 1 week practical classes
- 1 week to complete the final project.

Target learners:

- Clinicians
- Surgeons
- Radiologists
- Image technicians
- Healthcare researchers
- Bio-engineers
- Bio-informaticians
- Innovation managers

Learning methodology:

- Theory in short videos with final Quiz
- Articulate interactive content
- Self-evaluation system
- Gamification: Badges, Quiz,…
- Participatory Activities: Glossary, Forum
- Flip-class sessions and Workshops

Course sites and dates 2027:

Professional 3D: (Online - Onsite)

18/01/2027 - 21/03/2027

Presencial week: 15/02/2027 - 18/02/2027

Profesional IA: (Online)

05/04/2027 - 25/04/2027

Course content 2027

Modular plan of Programme in Medical Image
Postprocessing, Training Professionals: 3D Printing to Research

Professional 3D

MODULE 1
HEALTHCARE INNOVATION

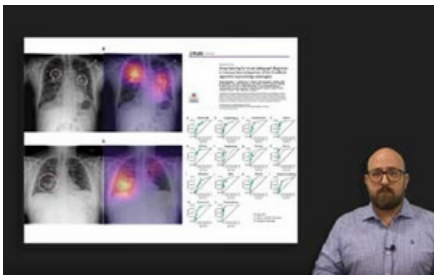
- **Welcome and Get Started**
- **Introduction MODULE 1**
- Innovation in Medicine: Present and Future
- Future of image diagnosis
- 3D printing (in Health)
- Exiting regulations and ethics in healthcare
- Real examples: 3D printing in oncologic surgery Real examples: 3D printing in maxillofacial surgery
- Practical examples: Image applications in research
- Real examples: Image and simulation (Beyond 3DP)
- **End of module**

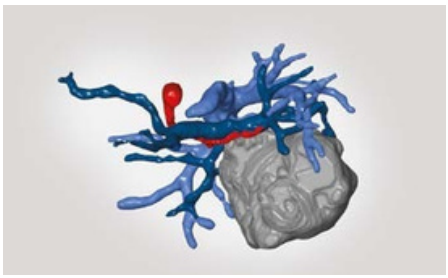
MODULE 2
ANATOMY/ RADIOLOGY TECHNIQUES

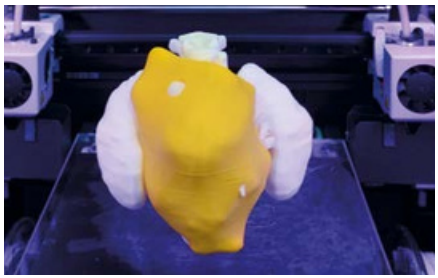
- **Introduction MODULE 2: acquisition of the medical image, techniques and optimization**
- (Anatomy) Anatomy of the soft tissues (thorax and abdomen)
- (Anatomy) Musculoskeletal anatomy
- (Anatomy) Cardiovascular anatomy
- (Anatomy) Anatomy of the central nervous system
- (Anatomy) Maxillary-face anatomy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

MODULE 3
3D PRINTING / BIO-PRINTING

- **Introduction to Bloc 3**
- **Basic post processing tools**
- [Portal] Segmentation with PORTAL
- [Portal] Practical basic reconstructions
- [Portal] Flip-class session for doubts
- [3D Tools] Basic concepts of 3D printing software, Formats and Matrices
- [3D Tools] How to use a 3D software and STL file
- [3D Tools] Creation of biomodels, surgery tools, cutting guides, implants and other modifications on the image
- [3D Tools] Flip-class session for doubts for segmentation
- [3D Printing] Additive manufacturing processes and types of 3D printers for medical applications
- [3D Printing] Printing materials in biomedicine
- [Simulation] Simulation techniques workshop
- [Bioprinting] Applications of Bioprinting in Medicine and Health
- [Bioprinting] Biomaterials design and bioprinting
- [Bioprinting] The significance of 3D bioprinting in regenerative medicine
- [Bioprinting] Regulatory and biocompatibility in healthcare bioprinting
- [Bioprinting] Bioprinting case studies
- **End of bloc**







Professional 3D

Professional AI

FINAL PROJECT

MULTIDISCIPLINARY GROUP PROJECTOFAREAL CASE









MODULE 4

ARTIFICIAL INTELLIGENCE

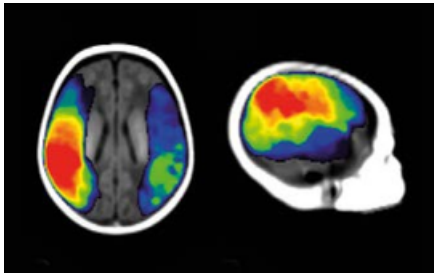
- **Introduction MODULE 4**
- Visualization of 3D models
- Normalization of the image for research
- Tips in acquiring the image and specific software for segmentation
- Individual segmentation, Lesion-symptom mapping, interpretation and report of group cases
- Introduction to machine learning in image analysis
- Mathematical representation of digital images
- Advanced image filtering techniques (2 classes)
- Extraction of attributes and texture analysis (2 classes)
- Automatic classification and segmentation of images with AI techniques (4 tutorials)
- Introduction to deep learning techniques (Convolutional Neural Networks, Deep Learning) (1 class)
- (AI) Flip-class session for doubts
- **End of module**
- **Tutoring Final Work**



MODULE 5

QUANTITATIVE IMAGING / RADIOMICS

- **Introduction to Bloc 5**
- Impact of radiomics and quantitative biomarkers on medicine
- Image features, AI and radiomics
- Biomarkers in oncology
- Biomarkers in pulmonary imaging
- Biomarkers in cardiovascular imaging Examples of practical use of biomarkers in clinical and trial contexts
- [Radiomics] Flip-class session for doubts
- **End of Bloc**
- **Tutoring Final Work**
- **End of course: Remarks from Course Co-Directors**





Expert3D

SJD 3D4H 3D for Health

SJD Sant Joan de Déu Barcelona · Hospital

Institut de Formació Contínua -IL3 UNIVERSITAT DE BARCELONA

IBEC Institute for Bioengineering of Catalonia

IQS PERSONA CIÈNCIA EMPRESA UNIVERSITAT RAMON LLULL

CIM UPC

Parc Taulí Hospital Universitari

PHILIPS

seram Sociedad Española de Radiología Médica

eit Health