

# SHEBA GLOBAL ACADEMY

## 3D TECHNOLOGY IN SURGICAL PLANNING AND PREPARATION



### TARGET AUDIENCE:

Orthopaedic, oral and maxillofacial surgeons, as well as surgeons interested in 3D Technologies



**LEVEL OF TRAINING ACTIVITY:** Basic - Advanced



### OBJECTIVES:

- Gain a comprehensive understanding of the benefits of 3D technology in surgical planning and preparation.
- Understand the workflow and regulations involved in running an in-house 3D center for surgical planning and preparation.
- Develop practical knowledge in preoperative planning for orthopedic, oral, and maxillofacial surgery.
- Gain hands-on experience planning complex surgeries.
- Gain hands-on experience designing tailored tools for complex surgeries.
- Explore the use of 3D technologies in the design of complex anatomical implants produced by 3D printing of titanium.
- Discuss future challenges and opportunities of collaborations with 3D laboratories.



### MAIN TOPICS: (up to 10)

- Introduction to surgical planning and preparation 3D technologies.
- An overview of a 3D laboratory's workflow and regulations
- Preparation of anatomical models for presurgical planning and education
- Design of complex anatomical models
- Application of 3D technology in orthopedic, oral, and maxillofacial surgery
- 3D printing technologies for medical applications
- Imaging modalities used in 3D printing
- Overview of surgical planning and simulation using 3D models
- Materials used in 3D printing for medical applications
- Designing custom-made implants using 3D printing
- Quality control in 3D printing for medical applications
- Ethics and regulations in 3D printing for medical applications
- Advances in 3D printing for medical applications
- Case studies showcasing the use of 3D printing in surgery and patient care
- Integration of 3D printing into medical education and training.

- Clinical design of customized tools
- Comparison of 3D vs. 2D pathology modalities



**TYPE OF ACTIVITY:** Offsite training



**TRAINING METHODOLOGY:** (dependent on the chosen activity)

- Hands-on training in the 3D laboratory
- Workshops and lectures
- Case discussions
- Observation of surgery using 3D laboratory products.
- Work on personal projects to demonstrate planning, designing, and printing skills of complex implant cases



**NUMBER OF PARTICIPANTS:** Up to 5



**DURATION:** 10 days

### TRAINING PROGRAM- WEEK 1

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>08:30-10:00</b>	PROGRAM OVERVIEW AND LAB STAFF INTRODUCTION	SEGMENTATION METHODS: MIMICS VS. D2P AND 3D MODEL EXTRACTION	CASE PRESENTATION AND CLINICAL DISCUSSION	SURGICAL GUIDES, METHODOLOGIES, AND APPROACHES	QA, MODEL VALIDATION, GUIDES VALIDATION
<b>10:00-12:00</b>	O.R DIVISION INTRODUCTION AND TOUR		SURGICAL PLANNING METHODOLOGIES WITH VR, AR, AND 3D-PRINTED MODELS	SURGICAL GUIDES DESIGN SESSION. CLINICAL CASE REVIEW#1: TUMOR RESECTION (CUTTING JIGS)	FULL CASE TRIAL
<b>12:00-12:30</b>	<b>LUNCH</b>				
<b>12:30-15:00</b>	RETROSPECT LAB CASE REVIEWS	FDM/SLA ANATOMICAL MODEL PRINT PREPARATION	INTRODUCTION TO SURGICAL GUIDES, 3D PRINTING MATERIALS AND TECHNICAL ASPECT DISCUSSION	SURGICAL GUIDES DESIGN SESSION: DOING A TRIAL PRINT	IMPROVEMENTS AND RE-PRINTING. VERSION MANAGEMENT AND DOCUMENTATION

**WEEK 2**

 **TRAINING PROGRAM- WEEK 2**

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
<b>08:30-10:00</b>	CLINICAL CASE REVIEW #2	IMPLANT DESIGN METHODOLOGIES AND WORKFLOW.	CLINICAL CASE REVIEW #3: COMPLEX CASE INVOLVING ANATOMICAL MODEL, SET OF JIGS, AND IMPLANT. (MULTI-FUNCTIONAL JIGS)	DESIGN SESSION: IMPLANT DESIGN	
<b>10:00-12:00</b>	CASE SURGICAL PLANNING: COMPLEX DEFORMATION, FIXED SET OF JIGS (FIXATION JIGS)	METAL PRINTING PREPARATIONS			THE FINAL TRIAL OF ALL SURGICAL PROCEDURES
<b>12:00-12:30</b>	<b>LUNCH</b>	VISITING LOCAL MANUFACTURER	<b>LUNCH</b>		
<b>12:30-15:00</b>	RETROSPECT LAB CASE REVIEWS		SURGICAL PLANNING	DESIGN SESSION: SURGICAL GUIDES DESIGN	DEBRIEF