Joint Degree Master Program:
Implantology and Dental Surgery (M.Sc.)

List of individual Specialization Modules

Specialization Module 1

Basic principles of implantology

Dental implants
- Modes of implantation and loading
- Implant types

Diagnosis and planning
- First consultation and pre-implantological diagnosis
- Number of implants required
- General pre-implantological diagnosis
- Special pre-implantological planning – single missing tooth
- Temporary prosthodontic restoration of the single tooth space
- Partially edentulous jaw
- Edentulous jaw

Implant prosthodontics
- Biomechanical considerations
- Anchor and connective elements

General operation principles
- Preparation and incision
- Individual implantation steps
- Healing period
- Introduction to augmentation

**Materials for bone substitution and augmentation**
- Introduction and terminology
- Alloplastic bone implants and bone-substitution materials
- Platelet-rich plasma

**Bone harvesting and processing**
- Basics
- Donor site: head-neck area
- Donor sites outside head-neck region
- Microvascularly anastomosed bone transplants

**Augmentation and onlay grafting**
- Secondary implantation following bone augmentation
- Total alveolar ridge augmentation

**Principles of displacement and condensation**
- Sinus lift
- Condensation techniques
- Nerve lateralization

**Distractions osteogenesis**
- Distraction osteogenesis of the alveolar process

**GBR**
- Guided bone regeneration
- Implantation with simultaneous local bone augmentation

**Soft-tissue management**
- Introduction
- Soft-tissue augmentation
- Pre-prosthodontic surgery
- Surgical exposure
Prophylaxis and recall

- Individual oral hygiene, performed by the patient
- Check-up parameters
- Professional cleaning of titanium implants

Documentation and forensic aspects

On-site events

Special seminars and practical training with renowned speakers presenting the most important implant systems and their special surgical and prosthodontic features as well as special surgical drilling machines inclusive of computer-controlled ones.

The prosthodontic workshop includes the following topics:

- crowns
- bridges, bar-retained dentures, hybrid dentures
- maxilofacial prosthetic treatment with implants
- evidence-based principles in implant prosthodontic planning
- integration of implant prosthodontics in daily practice
- impact of implant position on the scaffold design in the crown-bridge technique
- principles of prosthodontic-technical planning of implant-retained restorations: from diagnosis to drilling template
- hybrid prosthodontics
- hybrid prosthodontics from technical/prosthetic view with special consideration of connective elements
- crown-bridge prosthodontics: possibilities and limitations
- anatomical limitations: the problem of intermaxillary relationship
- implant-retained single crowns in the esthetically relevant region

Specialization Module 2

Special topics in Implantology

Implantation in cases of extreme atrophy of the alveolar ridge

Augmentations in the mandible

- Extreme atrophy of mandible and maxilla
Augmentations in the maxilla

Implantation in class III relationships
- Correction of sagittal discrepancy by maxillary ridge augmentation using iliac crest graft and secondary implantation
- Le Fort I osteotomy with simultaneous implantation
- Le Fort I osteotomy with simultaneous sinus lift
- Correction of sagittal discrepancy by implantation and denture with subsequent mandibular setback operation using Obwegeser/Dalpont osteotomy
- Mandibular setback operation using using Obwegeser/Dalpont osteotomy and simultaneous implantation in the maxilla and mandible
- Mandibular setback operation and simultaneous implantation in the mandible
- Mandibular setback operation and simultaneous implantation in the maxilla

Implantation following trauma
- Grade 3: condition after Le Fort I fracture of the maxilla
- Grade 4: condition after comminuted mandibular fracture
- Grade 4: condition after comminuted maxillary fracture

Options and problems of implantation treatment for tumor patients
- Mandibular resection with simultaneous implantation in the maxilla and the mandible
- Partial mandibular resection and secondary implantation
- Maxillary resection and secondary implantation
- Mandibular resection and secondary implantation in the local bone
- Mandibular resection and secondary implantation in the free transplanted bone
- Mandibular resection and secondary implantation in a micro-vascular pedicled graft
- Maxillary resection with simultaneous implantation
- Mandibular resection and secondary implantation in the transplanted bone
- Maxillary resection, bone and soft-tissue reconstruction, and secondary implantation into a free transplanted bone
- Mandibular resection, soft-tissue reconstruction and secondary implantation (1)
- Mandibular resection, soft-tissue reconstruction and secondary implantation (2)
- Mandibular alveolar crest resection and secondary implantation

Implantation in the case of congenital deformities
- The significance of musculature in jaw and nose development
- Complete revision of an incompletely operated cleft lip, alveolus and palate
- Combination of alveolar bone grafting and implantation
- Implantation with condition after insufficient primary operation
- Primary operation according to the Muenster concept and implantation
- Elderly cleft patient with several operations
- Elderly cleft patient with several operations and pronounced maxillary atrophy and maxillary retrusion
- Re-operation of lip, nose, alveolus, and palate closure
- Bilateral sinus lift and simultaneous implantation (1)
- Bilateral sinus lift and simultaneous implantation (2)
- Bilateral sinus lift and simultaneous implantation (3)
- Implantation following extension plasty in patients with ectodermal dysplasia
- Implantation and sinus lift in patients with ectodermal dysplasia
- Hanhart’s syndrome
- Implantat-fixed ear epithesis with Goldenhar’s syndrome

**Osseointegration – situation analysis**

- Anchoring processes of a cell (ILI cell culture)

**Tissue engineering I**

- Biological and biophysical principles of bone regeneration

**Tissue engineering II**

- The significance of angiogenesis for jaw bone regeneration

**On-site events**

Surgical training using human cadavers:

- Incision and nerve visualization
- Implantation, step-by-step and alternative planning options and splint fabrication
- Soft-tissue management
- Augmentation techniques
- Dissecting training
- Dissecting training, surgical techniques
- Demonstrations with practical training
- Demonstration of different implant systems
- Navigation systems

Training includes:

- Basic surgical principles
- Anatomy, soft tissues, bone, nerves, blood vessels, etc.
- Incisions
- Bone dissection
- Harvesting od bone
- Sinus lift
- Nerve visualization and displacement
- Soft-tissue management
Specialization Module 3

Clinical training

Clinical training 1: Observation of implantation
- Live surgery
- Planning of implant treatment with regard to function and esthetics
- Principles of soft tissue management: incisions, blood supply, flap design, flap formation, sutures
- Soft tissue surgery in implantology: vestibuloplasty, exposure techniques
- Bone grafts – principles and pathophysiology
- Basics of augmentative procedures
- Bony-lid approach in implant surgery
- Intraoral bone harvesting: instruments, bone grafts from the retromolar area, chin grafts
- Augmentation techniques with limitations: bone spreading, bone splitting, bone expanding, bone condensing, extension plasty
- Bone-substitute materials
- Hands-on training on animal bones: vestibuloplasty, suture techniques, bone harvesting using microsaw, implantation with the XIVE system

Clinical training 2 and 3: Dentoalveolar surgery and Implant surgery, with surgical procedures performed by the student
- Basic principles of surgery
- Assistance and performance of uncomplicated surgery in the OR
- Working in the ward, IV injection, infusions, intensive care
- Participation in surgical treatment or risk patients, management of risk patients
- Emergence measures
- Participation in special consulting session for patients seeking dental implant treatment
- Planning of dental implant treatment
- Cost estimation
- Patient consent and legal problems
- Implant template manufacturing
- Implant placement and soft tissue surgery
- Implant placement after trauma, tumor, malformation, atrophy
- Bone harvesting
- Orthodontic indications and possibilities
- Oral rehabilitation after tumor, trauma, malformation, atrophy
- Cases (planning)

Specialization Module 4

Master thesis
The master thesis is a scientific paper taking into consideration the relevant literature.