Joint Degree Master Program (120 ECTS, full-time course)
Periodontology (M.Sc.)

List of individual Specialization Modules

Specialization Module 1

Diagnosis, periodontological findings, debridement, digital photography

The healthy periodontium

- Gingiva
- Periodontal ligament
- Root cement
- Alveolar bone
- Blood supply
- Lymphatic system of the periodontium
- Nerve supply to the periodontium

Definition and classification of periodontal diseases

- Gingival diseases
- Plaque-induced gingival diseases
- Non plaque-induced gingival diseases
- Chronic periodontitis
- Aggressive periodontitis
- Periodontitis as a manifestation of a systemic disease
- Necrotizing periodontal diseases
- Periodontal abscess
- Periodontitis associated with endodontic lesions
- Congenital or acquired deformities
Epidemiology of periodontal diseases

- Basic terminology
  - Incidence and prevalence
  - Age and gender
  - Patterns of progression

- Epidemiological risk factors of periodontitis
- Epidemiology of plaque-induced periodontal diseases
- Epidemiology of gingival recession
- Epidemiology of peri-implant diseases

Etiology and pathogenesis of periodontal diseases

- Development of pathogenic bacteria
- Periodontal pathogens (microorganisms)
  - Immunology
  - Non-specific immune response
  - Specific immune response
  - Direct microbe-induced tissue destruction

- Genetic polymorphisms
- Environmental factors associated with host susceptibility
- Biomechanical aspects

Histopathology of periodontitis

- Gingival inflammation (gingivitis)
- The initial lesion
- The early lesion
- The established lesion
- The advanced lesion

Microbiology of periodontitis

- Dental plaque as a biofilm
  - Definition, presence and composition of microbial biofilms
  - Stages of microbial biofilm development
  - Microbial communication in biofilms
  - Presence of microbial biofilms
  - Composition and structure of oral biofilms
  - Initial plaque
  - Medium-old plaque
  - Old plaque and a shift in microenvironment
  - Influence on bacterial adhesion

- Periodontal pathogens
  - Actinobacillus actinomycetemcomitans
  - Porphyromonas gingivalis
- Prevotella intermedia
- Tannerella forsythensis
- Treponema denticola

**Diagnostic microbiology**

- Relevance of microbial etiology of periodontitis for the dental practice
  - Validity, sensitivity, specificity, cross reactions, predictive value
  - Microscopy
  - Bacteria cultivation

- Bacteriological DNA analysis
- Immunological assays
- Enzyme assays

- Biological susceptibility
  - Polymorphonuclear (PMN) leucocytes
  - Antibody titer
  - Monocyte reaction to lipopolysaccharides

- Components of sulcus fluid
  - Arachidonic acid metabolites
  - Cytokines
  - Collagenases

**Diagnostic procedure for periodontitis patients**

- Symptoms of periodontitis
- Clinical findings
- Extraoral findings
- Intraoral findings
- Functional findings
- Periodontal findings
  - Clinical periimplant diagnosis
  - Mucogingival findings
  - Oral hygiene
  - Pocket depth measurement
  - Measurement of the level of attachment

- Possible errors in periodontal probing
- Assessment of furcation involvement
- Assessment of tooth mobility

- Sounding
- Conventional periodontal diagnosis and its limitations
- Progress in traditional diagnostic procedures
  - Pressure-calibrated, standardized probes
  - Digital radiography
Radiological findings
  o Panoramic X-ray
  o Dental film
  o Computerized tomography

Treatment planning

Treatment schedule

- Pre-phase – assessment of systemic health, oral hygiene
- Phase 1 – causal, antimicrobial, anti-infective treatment
- Phase 2 – surgical, corrective treatment
- Phase 3 – life-long prophylactic and anti-infective treatment

Plaque control at home

- Mechanical procedures
  o Toothbrushes
  o Brushing techniques
  o Hygiene of interdental spaces
  o Toothpastes

- Chemical procedures
  o Chlorhexidine
  o Volatile oils
  o Cetylpyridinium chloride (CPC)
  o Triclosan
  o Metal ions

Periodontal debridement

- Initial treatment
  o Hand instruments
  o Mechanical instruments and their use
  o Sonic scalers
  o Ultrasonic scalers
  o Technique using ultrasound-activated particles
  o Air abrasion polishing technique
  o Laser

- Antimicrobial photodynamic therapy (aPDT)

- Establishment of patient capability of oral hygiene
- Correction of iatrogenic stimuli

- Hand instruments for scaling and root planing
- Care of instruments
- Sickle scalers
- Universal curettes
- Area-specific curettes
- Manual sharpening of hand instruments
- Machine sharpening of hand instruments
- Options and limits of closed treatment

**Concomitant anti-infective therapy – use of antibiotics in the treatment of periodontitis**

Antibiotics – susceptibility and resistance of bacteria

Systemic versus local antimicrobial treatment

**On-site seminar 1 - Workshop**

- Oral microbiology and pathogenesis
- Decision as to whether treatment is required
- Use of devices supporting diagnosis, and their interpretation
- Clinical exercises associated with diagnosis and the documentation of findings
- Supragingival and subgingival tooth cleaning in a phantom including presentation/explanation of instruments and sharpening course
- Classification of periodontal diseases
- Development of a treatment concept depending on the individual diagnosis
- Case presentation – decision-making

**On-site seminar 2 - Workshop**

- Basic principles of digital photography
- Practical exercises for intraoral photography
- Camera equipment
- Sources of light and lighting systems
- Cheek retractor systems and photographic mirrors
- Photo status
- Extraoral photography
- Documentation of dental treatment process
- Photography of soft tissues/documentation of mucosal changes
- Intraoral camera
- Digital systems
- Quality analysis
Dental surgery, endodontics, resective periodontology

Endodontics and periodontology
- Pulp influence on the periodontium
- Manifestation of endodontic lesions in the periodontium
- Effects of endodontic treatment on the periodontium
- External root resorption
- Influence of periodontal disease and periodontal treatment on pulp
- Endoperiodontal lesions

Periodontal wound healing
- Periodontal regeneration
- Periodontal repair
- Periodontal reattachment
- Complex factors influencing periodontal wound healing
  - Mitogenic factors
  - Signal transduction
  - Extracellular matrix
- Conditioning of the root surface
- Regeneration of gingival connective tissue
- New formation of cementum
- Osseous remodeling
- Restoration of the periodontium with fibers inserting into the root surface

Systemic illness and its effect on the periodontium
- Metabolic and endocrine disorders
- Hematological disorders
- Congenital and hereditary general disorders
- Virus infection
- Fungal infection
- Mucocutaneous disorders
- Gastrointestinal disorders
- Drug-induced periodontal manifestations

External/internal gingivectomy
- Indications
- Contraindications
- Instruments
- Approach
- Follow-up treatment
- Prognosis

Gingivoplasty

- Indications
- Contraindications
- Instruments
- Approach
- Electrotome gingivoplasty
- Follow-up treatment
- Prognosis

Flap surgery

- Indications
- Contraindications
- Instruments
- Approach – various techniques
- Approach - modified Widman flap
- Follow-up treatment
- Prognosis

Apical advancement flap

- Biologic width
- Surgical crown lengthening
- Indications
- Contraindications
- Instruments
- Approach, osteoplasty
- Follow-up treatment
- Prognosis

Distal wedge

- Indications
- Contraindications
- Instruments
- Approach
- Follow-up treatment
- Prognosis
Treatment of furcation defects
- Formation of multi-rooted teeth (furcation)
- Classifications
- Morphological basic terminology
- Structures in the area of furcation
- Treatment of furcations – aids to decision-making
- Resective treatment of furcations
- Root amputation and hemisection
- Premolarization
- Tunneling
- Regenerative treatment of furcations using guided tissue regeneration (GTR)

On-site seminar 1
- Surgical techniques in dental surgery - sutures
- Practical endodontic treatment – lecture and practical training
- Options and limits for dental restoration from an endodontic point of view

On-site seminar 2

Periodontological and surgical suture course on a phantom model
- Incisions, flap designs and various suture techniques

Exercises in surgical resective periodontitis therapy techniques on a pig’s jaw
- Mucosal flaps
- Mucoperiosteal flaps
- Gingivectomy techniques
- Osteoplasty
- Ostectomy
- Distal excisions

Options and limits for dental restoration from a periodontological point of view
Specialization Module 3

Management of soft tissue and aesthetic aspects in periodontology and implantology

Regenerative periodontal surgery

- Defect anatomy
- Regenerative materials and techniques, overview and indication
- Withdrawal and processing of autogenic bone
- Root conditioning and bone replacement materials
- Autografts, allografts, xenografts
- Coronally displaced mucosal and mucoperiosteal flap surgery
- Guided Tissue Regeneration (GTR)
- Guided Bone Regeneration (GBR)
- Selection of normally used membranes
- Membrane placement
- Regeneration with growth and differentiation factors and proteins
- Regeneration using Emdogain

- Regenerative treatment of furcations using guided tissue regeneration (GTR)
- Adjuvant antibiotic therapy

Plastic and esthetic periodontal surgery

- Definition, discourse and differentiation of plastic periodontal surgery procedures
- Free mucosal graft
  - Epithelialized and deep epithelialized grafts
  - Graft harvesting instruments
  - Thickness and shaping of grafts
  - Advantages and disadvantages of free mucosal grafts
- Connective tissue grafts
  - Methods for connective tissue graft harvesting
  - Nelson’s technique
- Rotation flaps
- Advancement flaps
Periodontal recession defects
- Etiology of recession defects
- Surgical techniques for coverage of recession defects
- Free soft tissue graft
- Free mucosal graft
- Free connective tissue graft
- Pedicled advancement flap
- Lateral advancement flap
- Coronal advancement flap
- Semilunar flap
- Acellular dental matrix
- Enamel matrix proteins

Papillary defects
- Loss of papillary height – classification
- Possible solutions - conservative, prosthodontic, or surgical approach

Widening keratinized tissue
- Indications
- Contraindications
- Instruments
- Approach
- Follow-up treatment
- Prognosis

Follow-up
- Recall
- Medication/dietary supplements
- Probiotic agents
- Anti-inflammatory agents

Socket/ridge preservation
- Wound healing following tooth extraction
- Factors influencing healing of alveolar bone
- Bone atrophy following extraction
- Minimal invasive extraction methods
- Loss of soft tissue following extraction
- Immediate implantation
- Delayed immediate implantation
- Alveolar augmentation using autologous bone and bone replacement materials
Implants for successfully treated periodontitis patients

- Criteria for diagnosis and decision-making
- Treatment concepts and results
- Recall – management of implant problems

Periimplantitis

- Etiopathogenesis
- Diagnosis
- Prevalence
- Early periimplantitis
- Risk factors
- Therapy
- Decontamination
- Implantoplasty
- Soft tissue situation
- Preservative treatment
- Probiotic agents

Periodontology and specialized orthodontics

- Specialized orthodontic tooth movement in adults following periodontitis
- Periodontal aspects in specialized orthodontic treatment of adults
- Orthodontic surgery
  o Fibrotomy
  o Frenotomy
  o Elimination of gingival invaginations (clefts)
  o Gingivectomy

On-site seminars 1 and 2 - Workshops

Regenerative procedures and periodontal plastic surgery

- Microsurgery techniques, augmentations
- Single and multiple recession defects

Exercises in regenerative and plastic periodontal surgery on a pig's jaw

- Coronally advanced flaps
- Laterally advanced flaps
- Tunneling techniques
- Connective tissue grafts
- Biomaterials

Periodontological principles in implantology
- Socket preservation
- Biologic width
- Papilla preservation

Complication management
- Treatment of periimplant mucositis, periimplantitis

Surgical periimplantitis treatment

Specialization Module 4

Clinical training

Practical periodontology training in Switzerland (Bern) and in Hungary (Budapest)

- Current Protocols in Periodontology – the "Bernese Concept"
- Resective and Regenerative Periodontal Surgery
- Resective and Regenerative Periodontal Surgery (flaps, suturing, etc.)
- Mucogingival surgery
- White and pink esthetics
- Periodontal Plastic Surgery. Recession. Upto-date Protocols and Materials
- Periimplant soft tissues
- Implant placement at periodontal patients-Cornerstones of the treatment
- Periimplant Plastic Surgery. Up-to-date Protocols and Materials
- Alveolar ridge preservation I.
- Maintenance therapy
- Alveolar Ridge Preservation II - State of art and looking into the future
- Bone Regeneration
- Hygiene phase
- Re-evaluation after hygiene phase
- Case presentation

- Resective and regenerative surgeries
- Recession coverage
- Vestibuloplasty, enlargement of keratinised tissues
- Alveolar ridge preservation
- Guided bone regeneration

Specialization Module 5

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