

Mastership Status (Diploma Course) Laser Therapy in Dentistry

By RWTH Aachen University, Germany.

**Organised and executed by Aachen Dental Laser Center (AALZ) and the
World Academy of Laser Education in Dentistry (WALED)**

in co-operation with

Institute of Laser Supported Dentistry, Sweden (ILSD)



**Admission Requirements:
Dental Degree**

Study Credit Hours:

This course will have a total amount of 600 credit hours, subdivided into:

Module 1: 16 hours of presence and 50 hours of study workload

Module 2: 32 hours of presence and 100 hours of study workload

Module 3: 32 hours of presence and 100 hours of study workload

Module 4: 16 hours of presence and 50 hours of study workload and 300 hours of study and clinical workload for the making of 5 clinical case presentations.

The hours of study workload will be controlled by e-learning exercises.

**Course director and head lecturer:
Prof. Dr. Norbert Gutknecht**



**Module 1: (2 presence days*) at ILSD, Sweden.
Laser Physics and Laser Safety Officer Course**

Content:

Laser Safety Officer seminar

Physics of lasers

History of lasers

Laser Wavelengths

Photons

Laser-Tissue-Interactions, Absorption and Emission of Photons

Biophysics

Absorption and Absorptions spectra

Laws and Regulations

Transformation of laws and regulations in the dental office

Multiple-choice test to obtain the official LASER SAFETY OFFICER certificate

**Laser Construction and Handling of Diode and Erbium lasers (including
Er:YAG and Er,Cr:YSGG)**

*Days means presence days. The participants will be connected between the modules to the RWTH Aachen University e-learning homework Program and integrated into hands-on training programs

Content:

Laser construction

- Laser function
- Operation manual and guidelines

Hands-On training of biophysical interactions on hard and soft tissues on all selected laser types

**Module 2: (4 presence days*) at ILSD, Sweden.****Diode Lasers (810 nm, 940 nm, 980 nm, Photo Dynamic Therapy):****Content:**

Biophysical background: ablation mechanisms, transmission, absorption in the tissues, temperature and tissue reactions --> EBD literature

Clinical indications:

Endodontics:

- Root canal treatment

Periodontology:

- Closed curettage

Sulcus enlargement

Soft Tissue Therapy:

- Frenectomy
- Gingivectomy, Gingivoplastics
- Gingiva hyperplasia
- Incisions (Abscess)
- Exposure of retained teeth

Hard tissue therapy:

- Toothneck hypersensitivity

Oral mucosa diseases:

- Hemangioma
- Herpes
- Aphthous ulcer

Photo Dynamic Therapy

**Module 3: (4 presence days*) at ILSD, Sweden.****Er:YAG (2.940 nm) / Er,Cr:YSGG (2.790 nm) in the Soft Tissue**

Biophysical background: Absorption and transmission in the soft tissue --> EBD literature

Clinical indications:

Periodontology

- Closed and open curettage

Soft tissue surgery

- Gingivectomy, Gingivoplastics
- Frenectomy
- Pericoronitis
- Incision/ Excision

Implantology

- Implant exposure
- Peri-implantitis treatment

Er:YAG (2.940 nm) / Er,Cr:YSGG (2.790 nm) in the Hard Tissue

Biophysical background: Ablation mechanism, temperature and pulp reaction,

*Days means presence days. The participants will be connected between the modules to the RWTH Aachen University e-learning homework Program and integrated into hands-on training programs

preparation speed, cavity sterilisation, sense of pain during cavity preparation -->
EBD literature

Clinical indications

Cavity preparation

- Minimal invasive caries removal
- Fissure sealing
- Cavity preparation methods for composite fillings and ceramic inlays
- Veneer preparation
- Creation of micro retentive sealing
- Removal of old fillings (what is possible, what not)

Endodontics

- Cleaning and disinfection of the root canal

Hard tissue surgery

- Epicectomy
- Sinus lift
- Depigmentation of the gingiva
- Bone surgery: bone exostosis, crown enlargement, osteotomy

Module 4: (2 presence days*) at AALZ, Aachen, Germany.

Presentation of the 5 clinical cases (1 presence day*)

The 5 clinical cases have to be done according the guidelines described in the ILIAS e-learning system. The cases have to be presented to the examiner, which is assisted by a co-examiner, and have to be delivered in a written form and on a CD. The student is alone with the examiners. The participant has to present and explain the cases on a screen. The examiner decides the selection of the to be presented cases. The length of the oral exam is 20 minutes per participant.

Oral and written exam (1 presence day*)

The written exam is a multiple-choice exam. The exam contents all topics of the course, except the laser safety officer module (independent examination), but including the physical parts. The length of the written exam is 120 minutes.

Certification Ceremony

Official delivery of the RWTH Aachen University certificates!