AO CMF Masters Course—Facial Trauma, Challenges and Controversies

December 8–11, 2019
Davos, Switzerland

Lecture room: Pischa/Parsenn

Excellence in facial surgery across the specialties

EVENT PROGRAM
The AO’s flagship educational event, the AO Davos Courses offer surgeons at all stages of their career outstanding educational and networking opportunities. Experience this pioneering spirit of peer-to-peer collaboration and learn skills that will help advance your career.

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**Mission**

The AO’s mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

**Purpose statement**

Our goal is to promote excellence in facial surgery across the specialties through teaching and learning, combined with research and development.

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**The AO principles of fracture management**

1. Fracture reduction and fixation to restore anatomical relationships.
2. Fracture fixation providing absolute or relative stability, as required by the “personality” of the fracture, the patient, and the injury.
3. Preservation of the blood supply to soft-tissues and bone by gentle reduction techniques and careful handling.
4. Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.
Welcome
Dear AO CMF course participant,

AO CMF provides a wide range of relevant courses designed to meet your specific professional needs—and we are confident that you will find your course and the networking experiences professionally rewarding.

With a global reputation for innovation, leadership, and excellence in continuing medical education (CME), AO CMF and the AO Education Institute are transforming education by expanding the educational activities available to you. CME is not just about face-to-face courses. Our educational opportunities address the specific clinical problems that you encounter daily. Visit our website (www.aocmf.org) to discover the latest educational activities.

At the AO Davos Courses 2019, AO CMF offers you a chance to actively engage in your course as well as opportunities to:
• Interact with over 30 international faculty.
• Expand your professional network by establishing contacts and new relationships with colleagues, including faculty and participants from over 80 countries.
• Meet with staff and surgeons from the AO’s clinical divisions, institutes, and initiatives.
• Visit the AO experience or take a tour of our headquarters, the AO center, to gain insight into the AO’s ongoing activities and resources available to support you in your clinical work.
• Experience the AO spirit of collegiality and camaraderie that is felt by participants and faculty alike.

Your current level of knowledge, attitudes, and skills will be challenged throughout the week. At the same time, our best-in-class curriculum and faculty will provide you with a memorable learning experience that will remain with you for a lifetime.

Your experiences with us over the next few days will result in the realization of new and meaningful knowledge, skills, and understanding that we hope will translate into improved patient care.

We wish you an outstanding learning experience and if you are not already an AO CMF member, we invite you during this week to join the community and stay in touch.

Yours sincerely,

[Signature]
Gregorio Sánchez-Aniceto
AO CMF International Chair

[Signature]
Lynne Fryer
Chair, AO CMF Masters Courses 2019

[Signature]
Ignacio Ismael García Recuero
Chair, AO CMF Masters Courses 2019
Course description

This three and a half day course focuses on state-of-the-art techniques and best practices at a master’s level in facial trauma. Emerging technologies in planning and navigation and clinical controversies are addressed. Using human anatomical specimens, surgical access techniques and approaches to the upper facial skeleton and condyle are developed. Patient cases and outcomes are discussed with expert faculty in small group discussions.

This course is delivered using a combination of small group discussions, plenary cases, exercises with human anatomical specimens, other simulation materials, and summary presentations. All activities are moderated by expert faculty in a highly interactive learning environment. Participants are encouraged to discuss the cases and content in an open manner and to share their own experiences.

Goal of the course

This AO CMF Masters Course focuses on state-of-the-art techniques and best practices at a master’s level. Emerging technologies will be practiced and clinical controversies will be addressed.

Target participants

This course is for certified surgeons with 5–10 years experience and doctors nearing the end of their training in surgery across the craniomaxillofacial specialties (including oral and maxillofacial surgery, ENT, head and neck, plastic, oculoplastics, ophthalmology, and neurosurgery). It is targeted at participants who want to improve their knowledge or specialization in the management of complex patient problems in the field of CMF.

Learning objectives

Upon completion of the course, the participant will be able to:

- Refine surgical approaches to the upper facial skeleton and condyle
- Define the advantages and limitations of surgical planning, 3D printing and patient specific implants, and intraoperative imaging with new technologies
- Identify strategies to minimize and manage complications in the orbit, midface, mandible and condyle
- Identify the controversies
- Apply appropriate treatment and rehabilitation strategies
Chairpersons

Marcelo Figari  
Hospital Italiano de Buenos Aires, Buenos Aires, Argentina

Ian Sharp  
University Hospital Birmingham, Birmingham, United Kingdom

Sabine Girod  
Stanford University Medical Center, USA

Florian Thieringer  
University Hospital Basel, Basel, Switzerland

International faculty

Isabelle Barthelemy  
CHU Estaing, Clermont-Ferrand Cedex 1, Clermont-Ferrand, France

Daniel Buchbinder  
Icahn School of Medicine at Mount Sinai, New York, USA

Alicia Dean  
University Hospital “Reina Sofia”, Córdoba, Spain

Amir Elbarbary  
Ain Shams University, Cairo, Egypt

Rui Fernandes  
University of Florida College of Medicine, Jacksonville, USA

Stefano Fusetti  
University of Padova, Padova, Italy

Susana Heredero  
University Hospital "Reina Sofia", Córdoba, Spain

Nicolas Homsi  
Universidade Federal Fluminense, Niterói, Brazil

Gorman Louie  
University of Alberta, Edmonton, Canada

Iain McVicar  
Queens Medical Centre Nottingham, Nottingham, United Kingdom

Marta Redondo Alamillos  
Hospital Universitario 12 de Octubre, Madrid, Spain

Irfan Shah  
Armed Forces Institute of Dentistry, National University of Medical Sciences (NUMS), Islamabad, Pakistan

Special guests

Benito Benitez  
University Hospital Basel, Basel, Switzerland

Sharma Neha  
University Hospital Basel, Basel, Switzerland

Matthias Ureel  
University Hospital Basel, Basel, Switzerland

Martijn Orye  
Materialise, Leuven, Belgium

Antonia Wiedemann  
Materialise, Leuven, Belgium

Maarten Zandbergen  
Materialise, Leuven, Belgium
### Location: Pischa/Parsenn

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:00–07:45</td>
<td>Course registration</td>
<td></td>
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<tr>
<td>07:45–08:00</td>
<td>Opening of the AO CMF Masters Courses (joint session for all two courses)</td>
<td>Lynne Fryer, Ignacio Ismael García Recuero</td>
</tr>
<tr>
<td>08:00–08:10</td>
<td>AO CMF membership and activities</td>
<td>Gregorio Sánchez Aniceto</td>
</tr>
<tr>
<td>08:10–08:20</td>
<td>Welcome to day 1, introduction of the faculty, course objectives</td>
<td>Florian Thieringer, Sabine Girod</td>
</tr>
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### Module 1
**Moderator: Sabine Girod**

**3D planning and 3D printing in craniomaxillofacial surgery**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
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</thead>
<tbody>
<tr>
<td>08:20–08:45</td>
<td>Software solutions for virtual surgical planning and other applications</td>
<td>Sabine Girod</td>
</tr>
<tr>
<td>08:45–09:15</td>
<td>Technical basics, imaging and segmentation printing technologies, preparation of virtual data for the production of 3D models</td>
<td>Florian Thieringer</td>
</tr>
<tr>
<td>09:15–09:30</td>
<td>Coffee break and break out into separate groups</td>
<td></td>
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</tbody>
</table>

### Location: Sertig

### Module 2
**Moderator: Florian Thieringer**

**Hands-on practical 3D computer planning in facial trauma**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:30–11:45</td>
<td>Practical exercise, 3D computer planning for facial trauma</td>
<td>Florian Thieringer, Susana Heredero, Alicia Dean, Isabelle Barthelemy, Martijn Orye</td>
</tr>
<tr>
<td>11:45–12:45</td>
<td>Lunch break (AO TC Meet Experts)</td>
<td></td>
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### AO TC Meet the Experts Webcast

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00–12:45</td>
<td>Patient Specific Procedures in CMF—State-of-the-art</td>
<td>Daniel Buchbinder, Damir Matic</td>
</tr>
</tbody>
</table>
Module 3
Moderator: Florian Thieringer
Hands-on practical 3D printing exercises and small group discussions on clinical applications

<table>
<thead>
<tr>
<th>Time</th>
<th>Group 1 (Strela/Rinerhorn)</th>
<th>Group 2 (Landwasser)</th>
<th>Group 3 (Landwasser)</th>
<th>Group 4 (Landwasser)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:45-15:15</td>
<td>Facial trauma 3D printing practical</td>
<td>Small group discussion clinical application</td>
<td>Small group discussion clinical application</td>
<td>Small group discussion clinical application</td>
</tr>
<tr>
<td></td>
<td>Susana Heredero, Iain McVicar</td>
<td>Alicia Dean, Stefano Fusetti</td>
<td>Isabelle Barthelemy, Amir Elbarbary</td>
<td>Benedicta Beck-Broichsitter, Irfan Shah</td>
</tr>
</tbody>
</table>

15:15-15:30 Coffee break

Module 4
Moderators: Sabine Girod, Florian Thieringer
3D planning and printing—indications and limitations

<table>
<thead>
<tr>
<th>Time</th>
<th>Group discussion</th>
<th>AO CMF ON AIR—3D planning and printing—indications and limitations</th>
<th>Sabine Girod, Florian Thieringer, Maarten Koudstaal, Patricia Stoor, Susana Heredero, Daniel Buchbinder</th>
</tr>
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<tbody>
<tr>
<td>15:30-16:50</td>
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</table>

17:00-19:00 Opening Ceremony and Founders’ Reception
**Monday**

**December 9, 2019**

**Location: Pischa**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:05</td>
<td>Welcome objectives of the day and faculty introduction</td>
<td>Marcelo Figari, Ian Sharp</td>
</tr>
<tr>
<td>08:05–08:15</td>
<td>Introduction to plenary group discussion (small groups on separate tables) on treatment planning</td>
<td></td>
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</tbody>
</table>

**Module 5**

**Moderators: Isabelle Barthelemy, Stefano Fusetti**

**Orbit and NOE (nasoorbitoethmoidal)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Case</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15–09:45</td>
<td>Case 1: Acute complex ZMC fracture</td>
<td>Marta Redondo Alamillos</td>
</tr>
<tr>
<td>09:45–11:00</td>
<td>Case 2: Secondary treatment of ZMC fracture (with orbital floor component) with enophthalmos</td>
<td>Rui Fernandes</td>
</tr>
<tr>
<td>11:00–11:30</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>11:30–13:00</td>
<td>Case 3: Acute NOE III</td>
<td>Irfan Shah</td>
</tr>
<tr>
<td>13:00–14:15</td>
<td>Lunch break (AO TC Meet the Experts)</td>
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</tbody>
</table>

**AO TC Meet the Experts Webcast**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:15–14:15</td>
<td>How to Plan and Perform CMF Distraction</td>
<td>Alberto Rocha Pereira,</td>
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</tbody>
</table>

**Location: Pischa**

<table>
<thead>
<tr>
<th>Time</th>
<th>Case</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:15–15:30</td>
<td>Case 4: Treatment planning: secondary NOE deformity correction, lower lid complications</td>
<td>Gorman Louie</td>
</tr>
<tr>
<td>15:30–15:45</td>
<td>Coffee break</td>
<td></td>
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</tbody>
</table>

**Module 6**

**Moderator: Amir Elbarbary**

**Panel discussion condylar fractures**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker(s)</th>
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</thead>
<tbody>
<tr>
<td>15:45–16:30</td>
<td>Panel discussion</td>
<td>Panelists: Iain McVicar, Nicolas Homsi, Gorman Louie</td>
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</tbody>
</table>

**Location: Sertig**

**Module 7**

**Moderators: Alicia Dean, Iain McVicar**

**Practical exercises on 3D bone models with patient specific implants**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:30–17:30</td>
<td>Practical exercises on 3D bone models with patient specific implants</td>
<td>All faculty</td>
</tr>
<tr>
<td>17:30–17:45</td>
<td>Summary and end of day</td>
<td>Marcelo Figari, Ian Sharp</td>
</tr>
<tr>
<td>17:45–20:30</td>
<td>AO Davos Courses night</td>
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</tbody>
</table>
### Module 8
**Moderator:** Iain McVicar  
**Hands-on practical exercises with human anatomical specimens:**  
**Surgical accesses 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00-08:20</td>
<td>Introduction and summary of the practical exercises in the laboratory</td>
<td>Roger Zobrist</td>
</tr>
</tbody>
</table>
| 08:20-10:20 | **Surgical accesses 1:**  
Lower eyelid approach  
- Describe the approaches to provide surgical access to the lower eyelid  
- Perform the steps in these approaches  
- Recognize the advantages, disadvantages, and possible complications with these approaches  
- Transconjunctival with extensions  
- Mid-ciliary  
- Orbital floor repair – fix plate | Isabelle Barthelemy, Irfan Shah |
| 10:20-10:50 | Coffee break                                                             |                    |
| 10:50-13:00 | **Surgical accesses 1 continued:**  
Upper eyelid and coronal access  
- Describe the approaches to provide surgical access to the upper eyelid, including the coronal approach  
- Perform the steps in these approaches  
- Recognize the advantages, disadvantages, and possible complications with these approaches  
- C-Arm intraoperative control of the orbital floor reconstruction | Susana Heredero, Stefano Fusetti |
| 13:00-14:15 | Lunch break                                                               |                    |

### Module 9
**Moderator:** Iain McVicar  
**Hands-on practical exercises with human anatomical specimens:**  
**Surgical accesses 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
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</table>
| 14:15-15:15 | **Transnasal canthopexy**  
- Describe the approaches and techniques (e.g. screw, plate) to perform transnasal canthopexy  
- Perform the steps in these approaches and techniques  
- Recognize the advantages, disadvantages, and possible complications with these approaches and techniques | Amir Elbarbary, Alicia Dean |
| 15:15-15:30 | Summary and questions and answers                                          |                    |
| 15:30-17:30 | **Approaches to the condyle—open accesses**  
- Describe the approaches to provide surgical access to the condyle  
- Extended coronal  
- Retromandibular (transparotid and retroparotid)  
- Perform the steps in these approaches  
- Recognize the advantages, disadvantages, and possible complications with these approaches | Nicolas Homsi, Gorman Louie |
| 17:30-17:45 | Summary and end of day 1                                                  |                    |
### Location: Pischa/Parsenn

<table>
<thead>
<tr>
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<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:30</td>
<td>Keynote: Management of gunshot wounds to the head and neck</td>
<td>Rui Fernandes</td>
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</table>

### Location: Landwasser

**Module 10**
Moderator: Irfan Shah

**Complex Mandible**

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<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>08:30–10:00</td>
<td>Small group discussion</td>
<td>All faculty</td>
</tr>
<tr>
<td>10:00–10:30</td>
<td>Coffee break</td>
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**Module 11**
Moderator: Susana Heredero

**Panfacial**

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<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>10:30–12:00</td>
<td>Small group discussion</td>
<td>All faculty</td>
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</table>

### Location: Parsenn

**Module 12**
Moderator: Isabelle Barthelemy

**Special topics**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter</th>
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</thead>
<tbody>
<tr>
<td>12:00–12:20</td>
<td>Paediatric fractures</td>
<td>Marta Redondo Alamillos</td>
</tr>
<tr>
<td>12:20–12:30</td>
<td>Summary and evaluation</td>
<td></td>
</tr>
<tr>
<td>12:30–13:00</td>
<td>Keynote: Secondary correction in craniofacial deformities</td>
<td>Gorman Louie</td>
</tr>
<tr>
<td>13:15</td>
<td>Closing and end of course</td>
<td>Marcelo Figari, Ian Sharp</td>
</tr>
<tr>
<td>13:15–14:15</td>
<td>Lunch break</td>
<td></td>
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</table>
Event organization

**AO CMF**
Sarah Groves
Clavadelerstrasse 8
7270 Davos Platz
Switzerland
Phone  +41 81 414 2552
Fax   +41 81 414 22 84
E-mail sarah.groves@aocmf.org

**AO funding sources**
Unrestricted educational grants from different sources are collected and pooled together centrally by the AO. All events are planned and scheduled by local and regional AO surgeon groups based on local needs assessments. We rely on industrial commercial partners for in-kind support to run simulations and/or skills training if educationally necessary.

Event venue and opening times

**Congress Centre Davos**
Talstrasse 49A
7270 Davos, Switzerland
Phone  +41 81 414 62 00
Fax   +41 81 414 62 29

**General information**
- Sunday: 09:00–17:00
- Monday through Tuesday: 09:00–18:30 (Monday -20:30)
- Wednesday: 08:00–17:00

**The AO experience**
- Sunday: 09:00–17:00
- Monday: 09:00–20:30
- Tuesday: 09:00–18:30
- Wednesday: 09:00–17:00

**Industry exhibition**
- Sunday: 09:00–17:00
- Monday through Thursday: 09:00–18:30
- Friday: 09:00–17:00
Exhibitions

The AO experience
The AO experience offers you the chance to view the latest publications in the AO library, see what benefits you are eligible for in the community and membership area and take a selfie with your new colleagues. Explore AO teaching and learning resources and find out about our new digital gateway myAO at the digital zone’s interactive stations. Visit the innovation in research and development zone, to take part in hands on demos featuring some of our newest innovations, and join the AO Technical Commission’s popular Meet the Experts sessions. Don’t forget to purchase any mementos at our store in the main entrance. Experience the AO spirit, walk the timeline of AO history, and mingle with other participants. AO staff will be on-hand to help you get the most out of this experience.

Exhibition partners
Visit the exhibitions of our trusted partner DePuy Synthes, Siemens, and other exhibitors: SYNBOINE, Invibio, Augmedics, Precision OS, Medability.

Media exhibitors
Lehmanns Media is in the welcome area.

Sponsors

We thank our trusted partner DePuy Synthes, and Siemens, for contributing in-kind support (materials and logistics) without which this event would not be possible. A special thanks to DePuy Synthes and Siemens for providing an unrestricted educational grant for this event.

We also extend our thanks to the following co-sponsors (educational grants, in-kind support):

We thank our guest, Materialise for the instructions and technical support (in-kind support) of the computer planning workshop.
Business center

The business center facilities in the Congress Centre Davos are accessible to everyone.

Services
- Internet and e-mail access
- Printer access
- www.aodavoscourses.org
  AO Davos Courses website offering course-related information

Opening hours
The business center is open 30 minutes before the first course of the day starts until 30 minutes after the end of the last course of the day.

Disclaimer
The use of your own computer in the business center network is inherently not secure. We strongly recommend that you take appropriate actions to protect your computer against unauthorized use or theft (e.g., firewall, virtual private network [VPN] connection, virus scanner). AO cannot be held responsible for any data loss or theft.

For further information or support, please contact:
Phone +41 81 414 28 70
E-mail it.helpdesk@aofoundation.org

Wireless network

How to connect to the AO wireless local area network (LAN)

1. Open the Wireless Network Connection window
2. Choose the AO Business network as shown in the image below and click on the Connect button
3. Our AO Business wireless network requires a wireless protected access (WPA) network key:
   Network key: aowireless
4. Then click on the OK button
Event information

Event fee
AO CMF Masters Course—Facial Trauma, Challenges and Controversies: CHF 3,650
The event fee covers the conference bag, documentation, coffee breaks, lunches, participation in AO Davos Courses night, and the course certificate.

European CME Accreditation
For this course the UEMS-EACCME® in Brussels have granted 25 European CME credits (ECMEC).

Swiss CME Accreditation
Additionally, an application has been made to the following Swiss society: Schweizerische Gesellschaft für Chirurgie (SGC/SSC)

Conflicts of Interest (COI)
All disclosure information can be viewed at the event webpage, and declared during presentations.

Course certificate
Course certificates will be available at the end of the event at the general information desk.

Evaluation guidelines
All AO CMF events apply the same evaluation process, which includes pre- and post-event online evaluation and on-site written questionnaires. These evaluation tools help ensure that AO CMF continues to meet your training needs.

Use of social media
During the AO Davos Courses 2019, you can post about your experience using the #AODavosCourses2019 hashtag. While we encourage you to share your AO Davos Courses 2019 experience with your online network, It is expressly forbidden to share any images or recordings from inside the course.

Intellectual property
Event materials, presentations, and case studies are the intellectual property of the event faculty. All rights are reserved. For more information, please see: www.aofoundation.org/legal.

Recording, photographing, or copying lectures, practical exercises, case discussions, or any event materials is strictly forbidden. Participants violating intellectual property will be dismissed.

Security
Security checks will be conducted at the building entrance. Wearing a name tag is compulsory at all times in the congress center and hospital.

Insurance
The event organization does not take out insurance to cover any individual against accident, theft, or other risks.

Use of mobile phones
Use of mobile phones is not permitted in the lecture halls or in other rooms during educational activities. Please be considerate of others by turning off your mobile phone.

Picture Gallery
Check out aodavoscourses.org for a daily selection of pictures from the AO Davos Courses 2019, the best from last year’s courses, and a selection of photographs from the first-ever AO Davos Courses.

Dress code
Warm clothes and suitable shoes are recommended.
1. **Academic independence**

Development of all curricula, design of scientific event programs, and selection of faculty are the sole responsibilities of volunteer AO network surgeons. All education is planned based on needs assessment data, designed and evaluated using concepts and evidence from the most current medical education research, and reflects the expertise of the AO Education Institute (www.aofoundation.org).

Industry participation is not allowed during the entire curriculum development and planning process to ensure academic independence and to keep content free from bias.

2. **Compliance to accreditation and industry codes**

All planning, organization, and execution of educational activities follow existing codes for accreditation of high-quality education:

- Accreditation Criteria of the Accreditation Council for Continuing Medical Education, US (www.accme.org)
- ACCME Standards for Commercial Support: Standards to Ensure Independence in CME Activities (www.accme.org)
- Criteria for Accreditation of Live Educational Events of the European Accreditation Council for Continuing Medical Education (www.uems.eu)

Events that receive direct or indirect unrestricted educational grants or in-kind support from industry also follow the ethical codes of the medical industry, such as:

- Eucomed Guidelines on Interactions with Healthcare Professionals (www.medtecheurope.org)
- AdvaMed Code of Ethics on Interactions with Health Care Professionals (advamed.org)
- Mecomed Guidelines on Interactions with Healthcare Professionals (www.mecomed.org)

3. **Branding and advertising**

No industry logos or advertising (apart from the AO Foundation and its clinical divisions) are permitted in the area where educational activities take place.

Sponsors providing financial or in-kind support are allowed to have a promotional booth or run activities outside the educational area with approval from the event chairperson.

4. **Use of technologies and products in simulations**

In case simulations are chosen as an educational method to educate skills, we only use technology approved by the AO Technical Commission—a large independent group of volunteer surgeons developing and peer reviewing new technology.

More information about the AO Technical Commission and its development and approval processes can be found on the AO’s website: www.aofoundation.org.

5. **Personnel**

Industry staff members are not permitted to interfere with the educational content or engage in educational activities during the event.
AO Research Institute Davos (ARI)

Mission
The AO mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

AO Research Institute Davos (ARI)
In its work to further the AO mission, ARI's purpose is to advance patient care through innovative orthopedic research and development.

Orthopedics concerns musculoskeletal, spine and craniomaxillofacial trauma, degenerative musculoskeletal diseases, infections, and congenital disorders.

Goals
• Contribute high-quality, applied preclinical research and development focused toward clinical applications/solutions.
• Investigate and improve the performance of surgical procedures, devices and substances.
• Foster a close relationship with the AO medical community, academic societies, and universities.
• Provide research environment/support/training for AO clinicians.

Meet with our team including our ARI Medical Research Fellows, establish contacts, freely discuss your clinical problems and ideas, and learn about the latest results from ARI.

Collaborative research programs
• Annulus fibrosus rupture
• Acute cartilage injury
• Osteochondral defect

Craniomaxillofacial
• Imaging and planning of surgery, computer aided preoperative planning
• Medication-related osteonecrosis of the jaw
• Bone regeneration and 3D printing

Spine
• Degeneration and regeneration of the intervertebral disc
• Biomarkers and patient outcomes

Trauma
• Bone infection, including the development and testing of active anti-infective interventions
• Sensing implants for objective monitoring of fracture healing
• Development of smart surgical tools
• New implant concepts for optimized bone healing
• Prediction of subject-specific risk of proximal humeral fixation failure via computational tools
• Development of generic Asian pelvic bone model
• Patient outcomes and biomarkers

Veterinary medicine
• Improving osteosynthesis for small and large animals

Multidisciplinary
• 3R principles: refinement of preclinical studies
• Bioreactor culture systems and mechanobiology
• Development, standardization, optimization, and improvement of preclinical models and methods
• Ex vivo testing using advanced biomechanical models
• Gene transfer: non-viral and viral
• Implant design using the finite element methods
• Implant positioning assistance, C-arm guided implant placement
• In-vivo and in-vitro quantification of bone turnover and scaffold degradation
• Medical additive manufacturing and biofabrication
• Medical computed tomography (CT) image processing and analysis
• Polymers to deliver cells and biological factors, create potential space for tissue development, and guide the process of tissue regeneration
• Prototype development and production
• Stem cell therapies for the treatment of bone, intervertebral disc, and cartilage defects

For the AO Research Institute Davos Activity Report 2018 and recent publications, go to www.aofoundation.org/ari/publications.
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Upcoming AO Davos Courses 2020

AO Davos Courses—November 29–December 4, 2020

- AO Trauma Course—Basic Principles of Fracture Management
- AO Trauma Course—Advances Principles of Fracture Management
- AO Trauma Course—Advanced Principles of Fracture Management for Swiss residents
- AO Trauma Masters Course—Current Concepts
- AO Trauma Course—Pelvic and Acetabular Fracture Management
- AO Trauma Masters Kurs (German speaking)
- AO Trauma Course—Managing Pediatric Musculoskeletal Injuries
- AO Trauma and AO Recon Course—Comprehensive Periprosthetic Fracture Management of the Hip and Knee

AO Davos Courses—December 6–9, 2020

- AO Trauma Course—Basic Principles of Fracture Management for Swiss Surgeons
- AO Spine Courses
- AO CMF Courses
- AO VET Masters Course—Small Animal
- AO VET Masters Course—Large Animal
- AO Recon Course—Principles in Shoulder Athroplasty
- AO Recon Course—Complex Total Hip and Knee Arthroplasty
- AO PEER Course—Level 1 Principles of Clinical Research
- AO PEER Course—Level 2 Grant writing
- AO PEER Course—Level 2 GCP and study management
- AO PEER Course—Level 2 Publication writing course

This course list is subject to further change.
The final list of AO Davos Courses and worldwide courses will be available in January 2020 on:
www.aofoundation.org/our-courses-and-events
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