**Module level**  
Master

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<tr>
<th>Credit points</th>
<th>Language</th>
<th>Return</th>
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<tr>
<td>6</td>
<td>English</td>
<td>annual</td>
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**Module designation**

**Fluid Mechanics**

**Course(s)**
1. Advanced Fluid Dynamics  
2. Experimental Methods in Fluid Mechanics

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<tr>
<th>Code</th>
<th>Subtitle</th>
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<table>
<thead>
<tr>
<th>Person responsible for the module</th>
<th>Prof. Dr.-Ing. Martin Lawerenz, Prof. Dr.-Ing. Olaf Wünsch</th>
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<tr>
<th>Lecturer</th>
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<tr>
<td></td>
<td>Prof. Dr.-Ing. Olaf Wünsch</td>
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<td></td>
<td>Prof. Dr.-Ing. Martin Lawerenz</td>
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<tr>
<th>Workload</th>
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<td>1. Workload: 120 h (20 h online presentation, 60 h private study, 40 h exercise)</td>
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<tr>
<td></td>
<td>2. Workload: 60h (7h online session, 14 h lecture, 14 h exercise, 25 h examination preparation)</td>
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**Relation to curriculum**  
Basic studies, compulsory optional subject

**Type of teaching, contact hours**  
Skype, virtual classrooms, Online-unit, digital communications

**Requirements according to examination regulations**  
None

**Recommended prerequisites**  
None

**Module objective / intended learning outcomes**

Students know how to model the fluid flow in wind energy systems and apply basic calculation methods in order to predict pressure, velocities, forces and momentums in technical systems.

Upon completion of the course, students will have abilities in terms of:
- **Knowledge**: Methods and devices to analyse the flow-field experimentally.
- **Skills**: Performing measurements and flow-field analysis and visualization using probes and optical sensors.
- **Competences**: Establishing appropriate experimental setups, assessment of the measured data.

**Content**

**Advanced Fluid dynamics**
- Fluid- and aerostatic
- Dynamic of incompressible and compressible fluid flow
- Balance of mass and momentum
- Friction flow
- Dimensional analysis and similarity

**Experimental Methods in Fluid mechanics**
- Flow–Field Parameters.
- Pressure Measurement.
- Velocity Measurement
- Flow Visualization.
- Post–Processing & Data Reduction, Error Estimation.

**Study and examination requirements and forms of examination**  
Written Test (120 min) or online oral examination (30 min)

**Media employed**  
online script

**Reading list**

Tavoularis, S.: Measurements in Fluid Mechanics, Cambridge University Press, 2005