### Fluid mechanics

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<thead>
<tr>
<th>Code</th>
<th>8203374293</th>
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<td>ECTS credits</td>
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<td>Attendance time</td>
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<tr>
<td>Language of instruction</td>
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<tr>
<td>Duration</td>
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<tr>
<td>Cycle</td>
<td>each academic Year</td>
</tr>
<tr>
<td>Coordinator</td>
<td>Dean of Studies - Chemistry</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Professors of Chemical Engineering</td>
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**Allocation of study programmes**

Bachelor Chemical Engineering, compulsory module, Semester 4

**Recommended prerequisites**

Basics of Chemistry I and II; Basics of Physics for Chemical Engineers and Fundamentals of Mathematics for Chemical Engineers

**Learning objectives**

Students who have successfully completed the module,

- know the differences between Euler's and Langrange's approach and know the meaning of railway lines, streamlines and strike lines,
- have basic knowledge of viscosity-free potential flows (sources and sinks), are able to describe one-dimensional stationary and unsteady flow processes (laminar),
- can develop analytical solutions for flow problems with rotation and circulation and have basic knowledge in experimental fluid mechanics and for the description of turbulence.

**Syllabus**

- Derivative of the Viscosity Term for Ideal Gases (Impulse Equation)
- Representation of Langrange and Euler
- Derivation of the energy equation
- Coordinate transformation (cartesian, cylinder, sphere)
- Couette, film and pipe flow (stationary, transient)
- Measurement of pressure, velocity and turbulence

**Literature**
- H. Herwig, Strömungsmechanik: Einführung in die Physik von technischen Strömungen, Vieweg- Teubner
- H. Oertel, M. Böhle, U. Dohrmann, Strömungsmechanik: Grundlagen - Grundgleichungen – Lösungsmethoden

**Teaching and learning methods**
Fluid Mechanics (Lecture 2 SWS, Exercise 2 SWS, 5 LP)

**Workload**
- Presence study: 60 h
- Self study: 90 h

**Assessment**
The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). Alternative examination forms are possible. The type of examination will be announced in time - at least 4 weeks prior to the date of the exam. No prerequisites are necessary for exam registration.

**Grading procedure**
The grade of the module will be the grade of the exam.

**Basis for**
Bachelor Chemical Engineering