CIVIL-523  
Advanced methods in computational solid mechanics

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<thead>
<tr>
<th>Cursus</th>
<th>Sem.</th>
<th>Type</th>
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<td>Génie civil</td>
<td>MA1, MA3</td>
<td>Opt.</td>
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<td>Science et ing. computationelles</td>
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<tr>
<th>Language</th>
<th>Credits</th>
<th>Session</th>
<th>Semester</th>
<th>Exam</th>
<th>Workload</th>
<th>Weeks</th>
<th>Hours</th>
<th>Lecture</th>
<th>Exercises</th>
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<td>Fall</td>
<td>Oral</td>
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<td>14</td>
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Remarque
pas donné en 2018-19 - cours biennal, donné une année sur deux

Summary
This is an advanced MS level class. It is of interest to engineering students who wish to develop know-how in computational science and engineering.

Content
• Basic programming/algorithmic concepts in Python
• Selected topics in finite element modeling
• Introduction to time accelerated methods

Learning Prerequisites

Recommended courses
As this class approaches current research challenges, it is also appropriate for Ph.D. level students. Prior knowledge in continuum mechanics and finite-element methods (e.g. GC class : Modélisation numérique des solides et structures) is mandatory. Students without prior knowledge in programming will be given resources and mentoring to catch up on basics of Python programming.

Learning Outcomes
By the end of the course, the student must be able to:
• Use Python
• Develop Finite element codes
• Use Solid mechanics
• Elaborate Numerical results

Transversal skills
• Write a scientific or technical report.
• Make an oral presentation.
• Summarize an article or a technical report.

Assessment methods
An oral exam will take place at the end of the semester, and homework are also graded and account for 40% of the evaluation.