

<b>Area:</b> Hydraulic, Water Resources and Environmental Engineering
<b>Level:</b> Undergraduate (BSc)
<b>Course title:</b> Hydraulics II (Unsteady Open-Channel Flow)
<b>Lecturer:</b> M. Spasojevic
<p><b>Course objective:</b> Learn about 1-D unsteady open-channel flows, including governing equations, derivation and application assumptions, basics of equations' numerical solutions. Gain practical experience in applying existing software to engineering problems, presenting and analysing results, etc.</p>
<p><b>Course outline:</b></p> <p><i>Course topics</i> Introduction to unsteady open-channel flow – governing equations Integral form of de St. Venant equations Differential form of de St. Venant equations Equations' applicability and validity limits Simplified form of equations – steady open-channel flow Numerical solution for steady open-channel flow equation General principles of numerical solutions – brief review of numerical methods Finite-difference method for de St. Venant's equations Preissmann' scheme Application of Preissmann's scheme to a single channel Application to branched and looped channels</p> <p><i>Assignments and term projects</i> Course topics are accompanied by assignments and term projects, requiring individual work under teacher's guidance and supervision.</p>
<p><b>Recommended literature:</b></p> <ol style="list-style-type: none"> <li>1. M. Spasojevic: <i>Computational Hydraulics – Open-Channel Flows</i>, Civil Engineering Faculty Subotica, 1996, in Serbian.</li> <li>2. M. Jovanovic: <i>River Hydraulics and Morphology</i>, Civil Engineering Faculty Belgrade, 2002, in Serbian.</li> <li>3. J. A. Cunge, F. M. Holly and A. Verwey: <i>Practical Aspects of Computational River Hydraulics</i>, Pitman Publishing Co., 1980.</li> <li>4. M. B. Abbott: <i>Computational Hydraulics</i>, Pitman Publishing Co. 1979.</li> <li>5. K. Mahmood and V. Yevjevich: <i>Unsteady Flow in Open Channels</i>, Water Resources Publications, Forth Collins, Colorado, U.S.A., 1975.</li> <li>6. F. M. Henderson: <i>Open Channel Flow</i>, Macmillan Publishing Co., Inc. 1966.</li> <li>7. S. C. Jain: <i>Open-Channel Flow</i>, John Wiley &amp; Sons, Inc. 2001.</li> </ol>