

5.00 credits

30.0 h + 15.0 h

Q2

Teacher(s)	Meurice Robin (compensates Soares Frazao Sandra) ;Soares Frazao Sandra ;
Language :	English > French-friendly
Place of the course	

	<ul style="list-style-type: none"> • Threshold for erosion of sediment bed <ul style="list-style-type: none"> • Velocity criterion and river equilibrium profile • Shear stress criterion : Shields and van Rijn diagrams • Bed roughness in natural rivers, stage-discharge relation : Einstein's analysis • Bed-load sediment transport <ul style="list-style-type: none"> • Transport principles of du Boys • Analysis of Meyer-Peter and Müller • Other current approaches (Einstein, Bagnold, etc.) • Suspended load sediment transport <ul style="list-style-type: none"> • Transport equations • Equilibrium concentration profile (theory of Vanoni–Rouse) • Suspended load (Einstein's integration) <p>3. Morphological evolution of rivers</p> <ul style="list-style-type: none"> • Sedimentologic equilibrium <ul style="list-style-type: none"> • Practical formulae : regime theories • Bank stability, stable cross-section shape • Morphological response to river training works • Helical flow in meanders <p>4. River training works</p> <ul style="list-style-type: none"> • Principles : Fargue's laws and rules, Girardon • Local works (surface panels, bandalling, bottom panels, bottom sills, bank protection) and river works (banks, longitudinal dikes, groynes, sills) • Nature-based solutions (NBS) <p>5. Examples</p>
<p>Inline resources</p>	<p>Available on Moodle: powerpoint slides, partial lecture notes and other useful documents. MOOC course on the edX platform: "Hydraulique fluviale 2: sediments et morphologie fluviale".</p>
<p>Bibliography</p>	<p>Notes de cours Jansen et al., "Principles of river engineering" Chang, "Fluvial processes in river engineering"</p>

