

Day 1		
Introduction	Hydrology Analysis	Advanced Storm Water Hydrology
<ul style="list-style-type: none"> • Good model setup using xpswmm or xpstorm Interface • xpswmm/xpstorm Graphical User Interface (GUI) • File management • Model control and object creation tools • xpswmm/xpstorm layer control • Pull-down menus • Icons • Model output review tools • Users will build a simple network with the tools to gain familiarity with the XP interface 	<ul style="list-style-type: none"> • Rainfall-runoff modelling • Time Area Hydrology Method • Digital terrain modelling • CAD and aerial images • GIS integration to create network entities • Import nodes, links and catchments from shape files • Use xpswmm/xpstorm tools to calculate subcatchment areas • Connect subcatchments to runoff nodes • Creating Malaysian design storms (JPS MSMA2 rainfall calculator) • Loss processes and models • Analysis and review results 	<ul style="list-style-type: none"> • Rainfall statistics • Simulation using continuous rainfall data • Rainfall import options • Setting up global storms

Day 2	
Advanced Stormwater Modelling Tools	1D River Modelling
<ul style="list-style-type: none"> • Rational hydrology for sizing system • Automated design of stormwater pipes • Tools for determining missing data • Culvert and road-overflow flow modelling • Hydraulic structures • Outfall boundary conditions (free, backwater, natural channel, etc.) • Inlet modelling • Dual drainage analysis • Ponding options • Pond storage and optimization • NEW Assessing performance of detention basin infiltration • NEW Comparing pre and post development results • NEW Assessment of flow control devices 	<ul style="list-style-type: none"> • Creating River Links • NEW Import HEC-RAS model • Generate cross-sections from a Digital Terrain Model • Modelling Bridges (Multi-Links vs. NEW Bridge Link)

Day 3	
Integrated 1D/2D River and Culvert Modelling in xp2D	Advanced 1D/2D Integrated Modelling in Urban Areas with xp2D
<ul style="list-style-type: none"> • 2D model theory • 2D modelling with culverts • Linking 1D (Channel) and 2D model • Creating 1D and 2D domains • Flow boundaries and 1D/2D integration • Land use patterns • 1D river floods and 2D overland floods • 2D model troubleshooting • Flood inundation mapping and hazard classification • Solving and 2D map and vector results tools • Exporting inundation maps to GIS 	<ul style="list-style-type: none"> • Linking stormwater drainage to 2D modelling • Integrated 1D/2D urban flooding example • Modelling buildings • Distributed hydrologic modelling using rainfall on 2D grids • Scenario manager and 2D modelling of flood mitigation • Flood levee modelling • NEW Multiple domain example in an urban area • NEW Emergency response tools