# Training course on Parametric Design for Infrastructure Optimization

Professional Development Training Course Outline

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| **Category** | Civil Engineering and Infrastructure Management | **Duration** | 5 Days |
| **Base Fee** | $1,500 USD | **Delivery Mode** | Online / On-site Hybrid |

## Course Introduction

Modern infrastructure projects, encompassing everything from complex bridges and towering high-rise buildings to intricate transportation networks, are increasingly subject to stringent demands for enhanced efficiency, adaptability, and cost-effectiveness in their design and construction phases. Traditional linear design processes often prove restrictive, limiting the comprehensive exploration of innovative design alternatives and hindering critical optimization opportunities, which frequently results in suboptimal and less resilient solutions. In contrast, Parametric Design, a revolutionary methodology that leverages algorithms and definable parameters to establish intelligent design relationships, offers a transformative approach. This methodology empowers designers to rapidly generate, rigorously evaluate, and precisely optimize countless design variations, thereby facilitating robust data-driven decision-making and significantly enhancing the overall performance of infrastructure assets throughout their entire lifecycle. Training Course on Parametric Design for Infrastructure Optimization is meticulously designed to provide participants with the practical application of core parametric design principles and cutting-edge tools, specifically tailored for the optimization of diverse infrastructure assets. The curriculum will cover foundational parametric modeling concepts, mastery of visual programming languages (e.g., Grasshopper, Dynamo) for generating complex geometries and exploring myriad design options, and an in-depth exploration of various optimization algorithms focused on crucial performance criteria (e.g., structural efficiency, material reduction, environmental impact). Furthermore, the course will emphasize the critical skill of integrating parametric models seamlessly with advanced analysis software. Through a balanced blend of essential theoretical foundations, extensive hands-on exercises, and project-based learning, this course will comprehensively prepare participants to leverage parametric design for creating more innovative, resilient, and profoundly optimized infrastructure solutions for the future.

## Programme Curriculum