Thesis Title	**Advanced Integration of Building Information Modeling (BIM) and Virtual Reality (VR) for Enhanced Interactive Visualization and Editing of Mechanical Plans**
Programme of Studies	BSc in Mechanical Engineering, Frederick University
Course	ME 400 Senior Project
Area of Study	Computational Building Physics – Smart Buildings
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Semester	Spring Semester 2025
Short Description	This thesis explores the advanced integration of Building Information Modeling (BIM) and Virtual Reality (VR) to improve the visualization, coordination, and installation accuracy of mechanical systems in residential buildings. Using a real-world case study of a detached house in Larnaca, Cyprus, a detailed BIM model was developed in Autodesk Revit and transferred to an immersive VR environment using Twinmotion. The approach enabled early clash detection, improved spatial understanding, and enhanced stakeholder engagement. Results demonstrate measurable reductions in design conflicts, on-site rework, and installation time, highlighting BIM–VR integration as a practical, scalable solution for modern mechanical engineering workflows.