Subject Description Form

Subject Code	LSGI3220
Subject Title	**Building Information Modelling & 3D GIS**
Credit Value	3
Level	3
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	The aims of this subject are: 1. To understand the industry needs and trend of BIM development; 2. To teach functions of BIM software; 3. To describe the theories and concepts of BIM; 4. To introduce the technologies of Building Information Modelling (BIM) and 3D Geographic Information Systems (GIS) and their integration;
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. Grasp knowledge on BIM concepts, technologies and standards (L2); b. Utilize BIM and GIS software to build 3D models (L2); c. Operate BIM software for project process management, including engineering and construction components (L3); d. Demonstrate knowledge on 3D data interoperability between BIM, City GML and GIS (L3);
Subject Synopsis/ Indicative Syllabus	1. Basic concepts of BIM: standard, stages (design, tendering, construction, and maintenance), level of detail, multi-dimension, and the development and emergence; 2. Benefits of Building Information Modelling (BIM) technologies: 3D model project setup, creation, editing and modifying of building components in details, 3D visualization and analysis, clash detection; 3. Integration 3D GIS with BIM: models and data (GIS data, Lidar data, IFC, CityGML), and other exchange standard and platform); 4. Practical skills on BIM: Autodesk Revit with representative cases.
Teaching/Learning Methodology	Teaching and learning materials will be provided on-line for students to download easily. Contact hours will be used for formal lectures, in-class discussions and presentations, and practical work.

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
			a	b	c	d
	1. Individual essay	20	√			√
	2. Test	30	√	√	√	√
	3. Project	50		√	√	√
	Total	100				

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Practical work / project will be used to assess students' ability to process and manage BIM data in a spatial context. The essay will assess students' independent understanding of basic concepts and students' ability of independent thinking, English writing skills.

Generative AI can only serve as a tool for assisting initial idea development and proofreading for project presentation and report, and any involvement of generative AI tools must be clearly acknowledged and referenced. Students are required to make close link between the subject contents and the proposed case-specific scenario to encourage critical thinking.

Student Study Effort Expected	Class contact:	
	Lecture	26 Hrs.
	Practical	26 Hrs.
	Other student study effort:	
	Project preparation work	25 Hrs.
	Self study	28 Hrs.
	Total student study effort	105 Hrs.

Reading List and References	Hardin, B., & McCool, D. (2015). *BIM and construction management: proven tools, methods, and workflows*. John Wiley & Sons.
	Arroyo Ohori, K., Diakité, A., Krijnen, T., Ledoux, H., & Stoter, J. (2018). Processing BIM and GIS models in practice: experiences and recommendations from a GeoBIM project in the Netherlands. *ISPRS International journal of geo-information*, 7(8), 311.