Subject Description Form

Subject Code	LSGI3805
Subject Title	**Urban Sensing for Smart City**
Credit Value	3
Level	3
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	• To provide students a comprehensive foundation and the state of art in the field of remote sensing, including principles, modeling, technologies and data processing. • To foster students' in-depth understanding of remote sensing, particularly the factors that influence measurements of the urban environment. • To provide students with a foundation for applying the skills and techniques they have already acquired to practical issues in the urban environment. • To motivate students to explore how they can utilize their knowledge and skills to address real-world urban problems and situations.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: 1. Be familiar with the 'state of the art' in earth observation from remote sensing platforms (L1) 2. Have sensing knowledge on identifying the urban problems and providing practical solutions (L2) 3. Understand the current 'state of the art' in the application of sensing technologies of urban environment in modern cities (L3) 4. Solve practical problems (L4)
Subject Synopsis/ Indicative Syllabus	A. General introduction to physical principles of remote sensing B. Sensors: camera, spectrometer, thermography, lidar, and others C. Platforms: aircraft, satellites, terrestrial and mobile D. Applications of remote sensing in the urban and natural environment
Teaching/Learning Methodology	Teaching and learning materials will be delivered on-line for students to download easily. Contact hours will be used for formal lectures, hybrid problem-solving and practical work.

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<td>Assessment Methods in Alignment with Intended Learning Outcomes</td>
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<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="4">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>1.Examination</td><td>50</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td>2. Lab assignments</td><td>50</td><td></td><td></td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="4"></td></tr>
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Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Continuous assessment mainly consists the Lab work. Lab will be used to reinforce, and assess students' understanding of the various sensing technology and their influencing factors. A examination will test students' independent skills of expression, knowledge of the discipline, and the ability to apply procedures and concepts to a defined urban sensing problem. .
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<td>Student Study Effort Expected</td>
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<tr><td>Class contact:</td><td></td></tr>
<tr><td>▪ Lecture</td><td>26 Hrs.</td></tr>
<tr><td>▪ Practical</td><td>26 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ Reading of textbook and journal papers</td><td>23 Hrs.</td></tr>
<tr><td>▪ Assignment completion and writing</td><td>40 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>115 Hrs.</td></tr>
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<td>Reading List and References</td>
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1. Liang, S., 2005. Quantitative remote sensing of land surfaces. John Wiley & Sons.
2. Lillesand, T. and Keifer 2008, Remote Sensing and Image Interpretation, 6th ed.Wiley.
3. Shi, W., 2021. Introduction to urban sensing. Urban Informatics Urban informatics. Singapore: Springer, 2021.
4. DART User Manual and Handbook (For lab sessions) https://dart.omp.eu/index.php#/doc

Supplementary:

5. Mather, P. 1999, Computer processing of remotely sensed images, 2nd Edition, Wiley.
6. Campbell, J.B. (1996). Introduction to remote sensing. Guilford Press, New York. 1996.

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	7. Robinson A. H. et al., (1996) Elements of Cartography. 6th Edition, Wiley & Sons, New York. 8. Longley, P., M. Goodchild, D. Maguire and D. Rhind, 1999, Geographic Information Systems (2nd Edition), John Wiley & Sons, INC., USA