Subject Code: BRE2031

ENVIRONMENTAL SCIENCE

Level: 2

Contact Hours: Lect: 21 Tut: 14 Lab: 8

Student Effort Hours: 120

Assessment Method:
Coursework 40%
Examination 60%

Credit Value: 3

Pre-requisites: Nil
Co-requisites: Nil
Exclusions: Nil

Subject Leader/Lecturer/Dept.: S.T. Chan (BRE)

Subject Aim:

This subject is intended to:

Equip students with a holistic understanding of the factors that contribute to the quality and performance of the built environment with respect to the technical knowledge learned in construction technology.

Learning Outcomes:

Students will demonstrate their ability to:

1. Identify the fundamentals of environmental science - heat light, sound and their performance requirement, and the fabric of a building as a passive environmental controller of climate.
2. Appraise the ordinance of environmental science criteria upon design and construction of the built environment.
3. Demonstrate the basic principles and concepts for the major building services engineering systems found in buildings.
4. Combine/demonstrate the knowledge of passive and active controls in building design.

Brief Syllabus Content:

Climate and shelter, classification, global mechanisms, climatic data, micro-climatic building design.

Heat transfer mechanisms, conduction, convection, radiation, thermal comfort.

Design variables for energy efficient design and thermal performance of a building.

Principle of light, visions, luminance, glare, natural lighting and artificial lighting.

Principles of sound, noise transfer & control and building acoustics.

Power generation, electricity supply and distribution.

Water supply and distribution.

Soil and waste water disposal.

Passive and active thermal controls, heating, ventilation and air conditioning.

Teaching activities: Lecture (LT)/Tutorial (TU)/Seminar (SM)/Drawing (DW)/Laboratory or Practical (LB)/Studio (ST)/Workshop (WS)/Project (PJ)/Field Study (FS)/Guided Study (GS)/Visit (VS)
**Learning and Teaching Approach** *(tasks and activities designed to achieve learning outcomes):*

Teaching periods will adopt a range of methods which could include:

- interactive lectures by staff;
- small group discussions;
- student presentations;
- project-based tasks; and
- laboratory works.

The intention is to create an environment that encourages active learning. Students will be encouraged to reflect on their learning activities to review what they have learned and to plan further action and activity.

**Assessment strategy** *(assessment of student performance resulting from learning tasks):*

The assessment will be based on:

- laboratory report; )
- projects; )
- presentations; )
- peer-group critiques; and ) - coursework
- examination.

Assessment methods are intended to ensure the students to achieve the learning outcomes and assist learning through construction feedback.

Coursework and examination will constitute 40% and 60% of the overall work of the subject respectively.

**Reading List:**

**Recommended:**


**Supplementary:**