This course teaches topics in designing hardware for human machine interface. Principles and applications of sensors like pressure, light, sound, motion and electromagnetic transducers are introduced. Computer interfacing techniques for signal sampling, amplification, filtering, classification and interpretation are also discussed. Design examples may include Electroencephalography (EEG) signal analysis, human motion capturing, music signal interpretation and production. Functioning and control of actuators will also be studied.  
Advisory: Students are expected to have taken CENG2400 or ESTR2100 or equivalent.

### Grade Descriptor:

**A**

EXCELLENT - exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

有关等級說明的資料，請參閱英文版本。

**B**

GOOD - good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.

有關等級說明的資料，請參閱英文版本。

**C**

FAIR - adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the
ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

有關等級說明的資料，請參閱英文版本。

Equivalent Offering:
Units: 3 (Min) / 3 (Max) / 3 (Acad Progress)
Grading Basis: Graded
Repeat for Credit: N
Multiple Enroll: N
Course Attributes: MSc Computer Science, MPhil-PhD Computer Sci & Erg

Topics:

COURSE OUTCOMES
Learning Outcomes:

At the end of the course of studies, students will have acquired the ability to
1. select suitable sensors for a human machine interface system,
2. build a reliable signal capturing system,
3. understand the basic capture and signal processing algorithms for human machine interface signals.

Course Syllabus:

This course teaches topics in designing hardware for human machine interface. Principles and applications of sensors like pressure, light, sound, motion and electromagnetic transducers are introduced. Computer interfacing techniques for signal sampling, amplification, filtering, classification and interpretation are also discussed. Design examples may include Electroencephalography (EEG) signal analysis, human motion capturing, music signal interpretation and production. Functioning and control of actuators will also be studied.

Assessment Type:

- Lab reports: 50%
- Selected response test or exam: 50%

Feedback for Evaluation:

1. Mid-term course and teaching evaluation
2. Final course and teaching evaluation

Required Readings:

To be provided by course teacher.

Recommended Readings:

For students in MSc Computer Science; or
For students in MPhil-PhD Computer Science & Engineering; or
For students in UG Computer Science; or
For students in UG Computer Engineering

CAF

<END OF REPORT>