

EE6503 MODERN ELECTRICAL DRIVES

Academic Unit: 3.0
Prerequisite: Nil
Effective: Acad Year 2006/07
Last update: January 2006

OBJECTIVE

The objective of this course is to familiarize the participating students with modern industrial electric drives. In order to provide a detailed understanding of industrial drive systems, the theory of operation, modeling and control of various types of commonly used industrial drives will be introduced. It also aims to broaden a student's knowledge with the application of power electronic converters and inverters in controlling modern drive systems.

DESIRED OUTCOME

Graduates of this course are expected to gain a good understanding of the principle of operation, dynamic and steady-state modeling and controlling methods of modern electric drives. Furthermore, they will be at ease in dealing with almost all commonly used power electronic converters in drive systems. The course will prepare them to embark on a career in the area of electric drives or in power electronics. It will also prepare the students for high level R&D in these areas.

OTHER RELEVANT INFORMATION

This course is aimed at graduate students or engineers already working in related fields. Prior knowledge of power, motors, power electronics and control theory at the undergraduate level is expected.

CONTENT

Introduction. DC Motor Drives. Induction Motor Drives. Synchronous Motor Drives. Servo-Motor Drives.

ASSESSMENT SCHEME

Continuous Assessment	20%
Final Examination	80%

TEXTBOOK

1. Krishnan R, Electric Motor Drives: Modelling, Analysis and Control, Prentice Hall International, Inc., 2001.

REFERENCES

1. Vas P, Sensorless Vector and Direct Torque Control, Oxford University Press, Inc., 1998.
2. Bose B K, Modern Power Electronics and AC Drives, Prentice Hall International, Inc., 2002.
3. Leonhard W, Control of Electric Drives, Springer-Verlag Berlin Heidelberg, 1996.
4. Krause P C, Wasynczuk O, and Sudhoff S D, Analysis of Electric Machinery and Drive Systems, Second Edition, New York, Wiley-IEEE, 2002.