Precision Engineering Laboratory – Modal Analysis

CO-ORDINATOR: Paul Morantz
STAFF : Paul Morantz, Andy Eve
PRE-REQUISITES : Basic Modal Theory (Assessment of Machine Tool Dynamics lecture)

RATIONALE:

To provide the student with an insight into the assessment of machine tool passive and actively controlled dynamic performance through the application of modal impact testing. In a laboratory-based session with a strong emphasis on practical aspects and understanding of associated instrumentation, with technical assistance, students will conduct a basic modal assessment of un ultra-precision machine tool and gain an appreciation of the implications to performance.

OBJECTIVES/LEARNING OUTCOMES/COMPETENCES:

1. Introduction to modal testing equipment and principles.
2. Rapid assessment of machine tool dynamic performance.
3. Structuring dynamic data presentation.

SYLLABUS/RANGE:

- Modal Impact Testing
  - Instrumentation
  - Strategy
- Machine Tool Dynamic Performance
  - Recognising dynamic behaviour
  - Identifying
  - Surface generation
- Metrology
  - Introduction to measurement instrumentation
  - Assessment of surfaces

REFERENCE MATERIAL:

(1) Precision Engineering Module, UPT MSc Cranfield University 2012
(2) Modal Testing: theory, practice and application, D.J. Ewins, RSP 2000, ISBN 0 86380 218 4

STUDENT WORKLOAD:

		Hours
Staff/Student Contact Time:	Laboratory	3
Independent Learning Time:	Private Study	1