Precision Engineering Industrial Short Course
19-23 September 2016

Venue: Cranfield University, Precision Engineering Institute, Building 90, Read Room

Monday 19 Sept 2016	Tuesday 20 Sept 2016	Wednesday 21 Sept 2016	Thursday 22 Sept 2016	Friday 23 Sept 2016
09.00 Welcome and Introduction Keynote: Setting the scene **Paul Shore (NPL)**	**09.00** Spindle designs for high precision **Paul Shore (NPL)**	**09.00** Geometric and texture measurement **Xavier Tonnellier & Renaud Jourdain**	**09.00-10.00** Error budgeting for precision machine design **Richard May-Miller (Cranfield Precision)** **10.00** Machine metrology and calibration **Richard May-Miller (Cranfield Precision)**	**09.00** Assessment of machine tool dynamic performance **Paul Morantz**
10.45 BREAK	**10.45 BREAK**	**10.45 BREAK**	**10.45 BREAK**	**10.45 BREAK**
11.15 The deterministic performance of machines **Paul Shore (NPL)**	**11.15-13.00** Precision abrasive processes **Xavier Tonnellier**	**11.15-12.15** Energy beam material processing **Renaud Jourdain**	**11.15-12.15** Machine metrology and calibration **Richard May-Miller (Cranfield Precision)**	**11.15** Case study design reviews **Paul Morantz**
12.15 Design of high precision machines: analysis, principles and techniques **Paul Shore (NPL)**		**12.15** Precision motion sensing, actuation and control **Paul Morantz**	**12.15** Slideways for high precision **Paul Morantz**	
13.00 LUNCH	**13.00 (working) LUNCH**	**13.00 LUNCH**	**13.00 LUNCH**	**13.00** **Open Forum over Lunch**
14.00-15.45 Design of high performance mechatronic systems **Hans Vermeulen (ASML)**	**13.45** Kinematics and constraints in machines **Martin Culpepper (MIT)**	**14.00** Precision motion sensing, actuation and control **Paul Morantz**	**14.00** Precision temperature measurement **Paul Morantz**	**14.30** Course ends
15.45 BREAK	**15.30 BREAK**	**15.45 BREAK**	**15.45 BREAK**	
16.15-17.15 Design of high performance mechatronic systems **Hans Vermeulen (ASML)**	**15.45-17.30** Flexures and structures **Martin Culpepper (MIT)**	**16.15-16.45** Precision motion sensing, actuation and control **Paul Morantz**	**16.15-17.15** Thermal effects **Paul Morantz** **19.00 COURSE DINNER** **Mitchell Hall**	
Goodfellow Lab Demo from 10.45 am in main lab		**Micro-Epsilon Lab Demo from 10.45 am in main lab**	**Aerotech Lab Demo from 10.45 am in main lab**	