

SPECIFIC SELECTION CRITERIA FOR SECOND AND FIRST YEAR UNDERGRADUATE PRACTICALS

Term	Second year practicals	Term	First year practicals
HT 24	2P5 Mechanical Properties of Polymers (HB, AARW)	HT 24	1P5 Bubble Raft (J.Sykes, SCB)
HT 24	2P6 Dislocations & Deformation (MRC, JTC)	HT 24	1P6 Thermal Analysis (EL, KAQOR)
HT 24	2P7 Corrosion (SLP, MP)	HT 24	1P7 Polymers (NG, JMS)
HT 24	2P8 Diffusion (TJM, CRMG)	HT 24	1P8 Electrode Potentials (Y.Sun, MP)
TT 24	2P9 XRD Detective (AIK, RSW)	TT 24	1P9 Energy Levels & Band Gaps (AARW, HB)
TT 24	2P10 SEM & Fracture (RIT, DEJA)	TT 24	1P10 Fabrication & Testing (JTC, RSW)
TT 24	2P11 TEM (NY, TJM)	MT 24	1P1b Intro to Optical Microscopy, (KAQOR, SLP)
TT 24	2P12 Semiconductor Devices (RSB, AARW)	MT 24	1P2 Intro to LabVIEW (AARW, RSB)
MT 24	2P1 Materials Selection (DEJA, SCS)	MT 24	1P3 Young's Modulus (TJM, AJW)
MT 24	2P2 Steels (TJM, MPM)	MT 24	1P4 Metallography (AJW, MPM)
MT 24	2P3 Extrusion (M.Danaie, MLG)		
MT 24	2P4 Casting (KAQOR, MLG)		

SELECTION CRITERIA

HT	YEAR 2 (Mon, Tue, Wed)	YEAR 1 (Thur, Fri)
	<p>2P5: Mechanical Properties of Polymers (HB, AARW)</p> <ul style="list-style-type: none"> • Knowledge of polymer behaviour • Knowledge of polymer testing 	<p>1P5: Bubble Raft (J.Sykes, SCB)</p> <ul style="list-style-type: none"> • Materials Science/Physics • Dislocation theory • (Digital) photography
	<p>2P6: Dislocations & Plasticity (MRC, JTC)</p> <ul style="list-style-type: none"> • Knowledge of mechanical properties of metals • Experience of working with liquid nitrogen • Experience of polishing metal samples and etching • Experience of etching • Experience of optical microscopy 	<p>1P6: Thermal Analysis (EL, KAQOR)</p> <ul style="list-style-type: none"> • Experience of working with furnaces and molten metal • Experience with computer data logging • Knowledge of phase diagrams and solidification theory
	<p>2P7: Corrosion (SLP, MP)</p> <ul style="list-style-type: none"> • Knowledge of electrochemistry & corrosion • Experience using potentiostat • Experience with computer controlled equipment and data logging 	<p>1P7: Polymers (NG, JMS)</p> <ul style="list-style-type: none"> • Knowledge of polymer behaviour • Experience of working with liquid nitrogen
	<p>2P8: Diffusion (TJM, CRMG)</p> <ul style="list-style-type: none"> • Experience or knowledge of heat treatment of steels • Experience of polishing metal samples • Experience of etching • Experience of optical microscopy and image analysis 	<p>1P8: Electrode Potentials (Y.Sun, MP)</p> <ul style="list-style-type: none"> • Knowledge of electrochemistry and thermodynamics • Experience of titration experiments

SELECTION CRITERIA

TT	YEAR 2 (Mon, Tue, Wed)	YEAR 1 (Thur, Fri)
	<p>2P9: XRD Detective (AIK, RSW)</p> <ul style="list-style-type: none"> • Experience with XRD 	<p>1P9: Energy Levels & Band Gaps (AARW, HB)</p> <ul style="list-style-type: none"> • Physics background with understanding of atomic spectra • Experience of basic optics • Knowledge of LED
	<p>2P10: SEM & Fracture (RIT, DEJA)</p> <ul style="list-style-type: none"> • Experience of SEM imaging • Knowledge of fracture mechanics and mechanisms • Experience of working with liquid nitrogen 	<p>1P10: Fabrication & Tensile Testing (JTC, TJM)</p> <ul style="list-style-type: none"> • Experience of workshop practice • Knowledge of the mechanical properties of materials • Experience of mechanical testing
	<p>2P11: TEM (NY, TJM)</p> <ul style="list-style-type: none"> • Experience with TEM 	
	<p>2P12: Semiconductor Devices (RSB, AARW)</p> <ul style="list-style-type: none"> • Physics background with understanding of basic semiconductor devices • Experience with basic electronic circuits • Experience with data acquisition and LabVIEW 	

SELECTION CRITERIA

MT	YEAR 2 (Mon, Tue, Wed)	YEAR 1 (Thur, Fri)
	<p>2P1: Materials Selection (DEJA, SCS)</p> <ul style="list-style-type: none"> • Polishing metals • Etching • Optical microscopy • SEM 	<p>1P1b: Intro to Optical Microscopy (KAQOR, SLP)</p> <ul style="list-style-type: none"> • Experience of Microscopy • Experience of preparing samples
	<p>2P2: Steels (TJM, MPM)</p> <ul style="list-style-type: none"> • Experience of tensile testing • Experience of polishing metal samples • Experience of etching • Experience of optical microscopy 	<p>1P2: Intro to LabVIEW (AARW, RSB)</p> <ul style="list-style-type: none"> • A working knowledge of a programming language, ideally LabVIEW • Experience with computer data logging
	<p>2P3: Extrusion (M.Danaie, MLG)</p> <ul style="list-style-type: none"> • Experience of mechanical testing • Experience of casting molten metal 	<p>1P3: Young's Modulus (TJM, AJW)</p> <ul style="list-style-type: none"> • Experience with strain gauges • Knowledge of stress/strain analysis including Mohr's circle •
	<p>2P4: Casting (KAQOR, MLG)</p> <ul style="list-style-type: none"> • Experience of casting molten metal • Experience of polishing metal samples • Experience of etching • Experience of optical microscopy • Experience with LabVIEW 	<p>1P4: Metallography (AJW, MPM)</p> <ul style="list-style-type: none"> • Experience of polishing metal samples • Experience of etching • Experience of optical microscopy