	Tuesday 18 Sept.	Wednesday 19 Sept.	Thursday 20 Sept.	Friday 21 Sept.	Saturday 22 Sept.	Sunday 23 Sept.	Monday 24 Sept.	Tuesday 25 Sept.	Wednesday 26 Sept.	Thursday 27 Sept.	Friday 28 Sept.
9:00-10:30	**OPENING** and TUTORIAL PRESENTATION	R. EVANS (GT-1)	S. BLUEGEL (MM-3)	A. KALASHNIKOVA (MM-4)	EXCURSION TO MOUNTAINS	J.-V. KIM (MP-1)	A. KALASHNIKOVA (FT-6)	D. GARCIA (INDUSTRY)	M. SIKORA (FT-1)	E. GOERING (FT-4)	A. BELLEC (FT-9)
10:30-11:00	COFFEE	COFFEE	COFFEE	COFFEE		COFFEE	COFFEE and POSTERS	COFFEE and POSTERS	COFFEE and POSTERS	COFFEE	COFFEE
11:00-11:30	R. EVANS (BC-1)	S. BLUEGEL (MM-2)	QUESTIONS	P. OPPENEER (MM-6)		P. VAVASSORI (GT-2)				QUESTIONS EVALUATIONS	T. KAMPFRATH (FT-10)
11:30-12:30							P. VAVASSORI (FT-3)	QUESTIONS	A. KALASHNIKOVA (FT-7)		
12:30-13:00	POSTER CLIPS	POSTER CLIPS	POSTER CLIPS	POSTER CLIPS							**CLOSING**
13:00-14:30	LUNCH	LUNCH	LUNCH	LUNCH			LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14:30-15:00	J. SPAŁEK (BC-2)	P. OPPENEER (MM-5)	R. EVANS (FT-8)	QUESTIONS			J.-V. KIM (MP-2)	SPORT	J.-V. KIM (MP-3)	E. GOERING (FT-5)	
15:00-16:00						LUNCH					
16:00-16:30	COFFEE	COFFEE	COFFEE	FROM KRAKÓW TO KRYNICA	COFFEE	FROM KRYNICA TO KRAKÓW	COFFEE		COFFEE	COFFEE	
16:30-18:00	S. BLUEGEL (MM-1)	PRACTICALS	PRACTICALS		P. VAVASSORI (FT-2)		PRACTICALS		PRACTICALS	PRACTICALS	
18:00-18:30	WELCOME PARTY										
18:30-19:00											
19:00-20:00				DINNER	BANQUET						
20:00-21:30				P. LACZKOWSKI (INDUSTRY)							

Topics of lectures ESM-2018

I. Basic concepts (BC) 3h

Fields, moments, units, magnetostatics (R. EVANS, BC-1)

The lecture starts from the very basics, raising very fundamental questions: what is a magnetic field, moment, magnetization, B induction, why do we need units, SI units, magnetostatic basics (single dipoles, continuous model, magnetic poles, demagnetization coefficients).

Magnetism of atoms, Hund's rules, spin-orbit in atoms (J. SPALEK, BC-2)

The lecture is dedicated to basic quantum mechanics: wave functions and quantum numbers for electrons, filling the shells, concepts of energy levels, transitions, spin-orbit coupling.

II. Magnetism and matter (MM) 9h

Electronic and magnetic properties incl. transport (S. BLŰGEL, MM-1 and S. BLŰGEL, MM-2)

In these lectures we move from the atom to solids: concepts of bonds and band structure, excitations (especially important for the school topics), transport, effective mass and mobility. Also aspects pertaining to magnetic anisotropy: SO, quenching of orbits, CEF.

Magnetic interactions: exchange, RKKY (S. BLŰGEL, MM-3)

The lecture covers localized and itinerant magnetism, highlights the microscopic mechanisms for exchange (direct, super exchange, double exchange) and also DMI and RKKY. Vision in band structure as well, Stoner criterion. Orders cover ferromagnetism, antiferromagnetism and possibly other cases.

Ordering, mean field (F/AF) etc. (A. KALASHNIKOVA, MM-4)

The lecture covers magnetic ordering, especially against temperature. Includes mean field, critical exponents, the various ordering temperature, phenomenology of susceptibility, dependence of anisotropy on temperature, magnons.

Light-matter interaction (P. OPPENEER, MM-5 and P. OPPENEER, MM-6)

The lectures are dedicated to basics of light physics (wave-particle, uncertainty principle, steady-state vs pulses, dispersion relations), microscopic mechanisms and rules for interaction with matter, spectroscopy, dichroism, time scales.

III. Magnetization processes (MP) 4,5h

Quasistatic magnetization processes (J.-V. KIM, MP-1)

The lecture covers classical pictures: domains, walls, M(H), coercivity, hard and soft, quasistatic dynamics, temperature effects, static micromagnetism.

Magnetization dynamics (J.-V. KIM, MP2 and J.-V. KIM, MP-3)

The lectures are dedicated to elementary excitations (Stoner …), precessional dynamics, LLG, spin waves, damping, magnonics.

IV. General techniques (GT) 3h

Micromagnetic simulations (R. EVANS, GT-1)

The lecture covers statics, LLG,iImplementation, finite differences and finite elements, example of existing codes, tricks (care and artefacts), examples in statics and dynamics.

Magnetometry (P. VAVASSORI, GT-2)

The lecture introduces Squid, VSM, MOKE, etc., also measurements of hard and soft materials, FC/ZFC, FORC, blocking temperatures, artefacts.

V. Focused topics (FT) 13,5h

Synchrotron radiation (M. SIKORA, FT-1)

The lecture includes introduction to synchrotron: physics of synchrotron radiation, history (generations), machine, bending magnets and undulators, FEL, optics, strategies for short pulses as well as an overview of the National Centre for Synchrotron Radiation SOLARIS in Krakow/Poland.

Magneto-optics and magneto-plasmonics (P. VAVASSORI, FT-2 and P. VAVASSORI, FT-3)

The lectures cover physics of magneto-optics and magneto-plasmonics, modeling, technics and instruments, examples (including non-ferromagnetic materials), applications.

X-ray magnetic dichroism (E. GŐRING, FT-4 and E. GŐRING, FT-5)

The lectures cover spectroscopy, magnetometry, microscopy, tomography, scattering, temporal resolution (principles and examples; frontiers).

Light-induced (de)magnetization processes and all-optical switching (A. KALASHNIKOVA, FT-6 and A. KALASHNIKOVA, FT-7)

The lectures cover ultra-fast (all-optical) processes, 3 bath model, spin superdiffusion, spin-phonon coupling: theory on an understandable level and experiments (implementation, physics and understanding). Frontiers.

Atomistic/LLG-B modeling (R. EVANS, FT-8)

In particular, the lecture is dedicated to ultrafast processes, however can be more general (principles, implementation, examples).

Photo-magnetic transitions (A. BELLEC, FT-9)

This lecture is dedicated to photo-magnetic transitions in solid-state and cross-over molecules.

THz radiation techniques both for pump and probe (T. KAMPRATH, FT-10)

The lecture concentrates on single cycle broadband THz pulses for excitation and detection of THz radiation produced in dynamically excited samples.