Trondheim	Equivariant Systems Theory and Observer Design for Autonomous Systems				
	Robert Mahony, Jochen Trumpf and Tarek Hamel				
M16	17/06/2022	18/06/2023	19/06/2022	20/06/2022	21/06/2023
Time	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
9:00-9:30		**THEORY - RM**	**CASE STUDY - JT**	**THEORY - JT**	**THEORY - RM**
9:30-10:00	Registration	Foundations	Homography on SL(3)	Lie Theory and Symmetry	Kinematic Systems
10:00-10:30	Coffee	Symmetry and state			
10:30-11:00	**INTRO - RM**	break	break	break	break
11:00-11:30	**THEORY - JT**	**CASE STUDY - TH**	**PRACTICAL - TH**	**CASE STUDY - TH**	**THEORY - JT**
11:30-12:00	Matrix Calculus	Attitude on SO(3)	observer design	Velocity aided attitude	Observer design
12:00-12:30	Matrix ODE		for homography		Equivariant Filter
12:30-13:00					
13:00-13:30					
13:30-14:00	Registration				
14:00-14:30	**PRACTICAL - TH**	**THEORY - JT**		**PRACTICAL - TH**	**CASE STUDY - RM**
14:30-15:00	Matrix Calculus	Numerical implementation,		Velocity aided attitude	INS, VIO.
15:00-15:30		bias, time delays			
15:30-16:00	break	break		break	
16:00-16:30	**PRACTICAL - TH**	**PRACTICAL - TH**		**THEORY - RM**	
16:30-17:00	Motivated examples	Observer design SO(3)		Tangent symmetries and bias,	
17:00-17:30				Outer symmetries and group	
17:30-18:00				affine system	