

COURSE DESCRIPTION.

Course Name	Partial Differential Equations
Course Type	Research seminar (sd)
Supervisor	W.Zajęzkowski, T. Cieślak
ECTS credit allocation	1 – SD IM PAN program; 3 credits for master’s programs per semester
Duration	One semester
Number of hours	30
Language	English or Polish if every participant speaks Polish
Prerequisites	A basic course in PDEs, a course in ODEs and a course of Functional Analysis
Course content	Regularity issues of partial differential equations of elliptic and parabolic type. In particular, exact studies in a two-dimensional case containing the critical cases of right-hand side in L^1 and L^∞ . Applications to hydrodynamics and chemotaxis.
Recommended reading	H.Brezis, F.Merle, “Uniform estimates and blow-up behavior for solutions of $-\Delta u = V(x)\exp(u)$ in two dimensions”, Commun. Partial Differential Equations 16 1223-1253, 1991. D. Gilbarg, N. Trudinger, “Elliptic partial differential equations of second order”
Learning outcomes	Students will have an experience in going through research papers and realizing what is an important new part, for instance new estimates. Next, they will gain an experience in giving seminar talks.
Assessment methods and criteria	A lecture given and an oral exam
Remarks	