Department of Mathematics and Computer Science

Title: **Elements of Variational Calculus**

Speaker: **Prof. Gabriele Bonanno, University of Messina**

Abstract: In this course, the main arguments of the variational methods will be developed. Precisely, the theorem of direct methods with consequences and applications will be exposed. The local minimum theorem with concrete examples will be developed and, finally, the mountain pass theorem in the original version as given by Ambrosetti-Rabinowitz, with some additional notes and appropriate remarks, will be examined. Further, existence and multiplicity results will be obtained for some nonlinear differential problems as direct application of the critical point theory outlined above. In particular, the existence of two, three, infinitely many solutions for elliptic Dirichlet nonlinear problems will be investigated.

Short Biography: Gabriele Bonanno is full professor in Mathematical Analysis at the University of Messina. His scientific interest are related with variational methods and nonlinear differential problems. He has written over one hundred scientific articles published on major journals such as Journal of Differential Equations, Nonlinear Analysis, Journal of Mathematical Analysis,.... He is in the editorial board of several journals such as Nonlinear Analysis Real World and Applications, Open Mathematics, Electronic Journal of Qualitative theory of Differential Equations, ... and he has been invited as plenary speaker at several congress as ICNODEA 2015 CLUJ-NAPOCA, Diff&Appl 2017 BRNO,....

Course organization :
Tuesday, June 27, 2017: 3.30-6.30 pm, MT 10
Wednesday , June 28, 2017: 9.00-12.00 am; 2.00-5.00 pm, MT 10