1030-92-74 **Roger Guimera*** (rguimera@northwestern.edu), 2145 Sheridan Road, Chem + Bio Eng (Room E-136), Evanston, IL 60208. *Modules and roles: towards a cartography of complex biological networks.*

In complex systems, individual components interact with each other giving rise to complex networks, which are neither totally regular or totally random. Because of the interplay between network topology and dynamics, it is crucial to characterize the structure of complex networks.

Most real world networks display a marked modular structure, which means that, rather than being homogeneous in their connectivity, nodes tend to establish many more connections with a subset of the nodes in the network than with the remaining nodes.

In my talk, I will discuss recent theoretical and computational developments that enable one to uncover the modular structure of complex networks. I will also discuss how, after identifying network modules, one can classify nodes into roles according to their pattern of intra- and inter-module connections. Finally, I will show that understanding the modular structure of biochemical networks sheds light onto their evolution, and has potential applications for the identification of drug targets. (Received July 17, 2007)