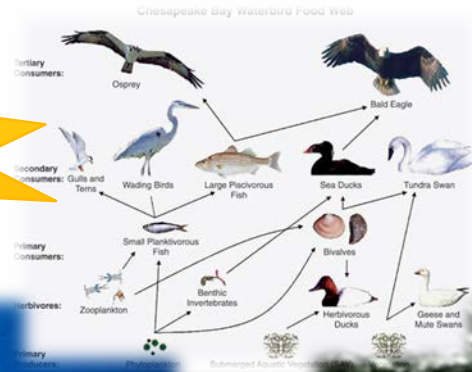


Computer Science



Biology



- **Ecological relationships** between species (predator/prey, competition, mutualism, parasitism) and their impact on **population dynamics** and **evolution**.
- Biological communities are **dynamical systems**, predictable by **computer models**.
- **Building computer models** of biological systems to predict and to compare
- Intrinsic and extrinsic **limits of growth** for biological populations.
- Effects of infectious **diseases**, human **intervention** and environmental **pollution**.

This class is offered once only for 2012 Fall by Basler chair of Excellence
 BIOL 4910-004/5300-002 or CSCI 4957/5957-003 (cross listed
 interdisciplinary course) Topics in Ecology and Evolution: Dynamic systems
 in Biology

2012 Fall Monday 2:45-5:45 (3 cr hr) Brown Hall 214

Contact karsai@etsu.edu

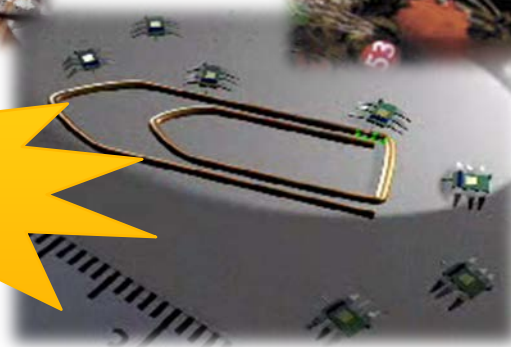


This class is offered once only for 2012 Fall by Basler chair of Excellence
Biol 4910-002/5910-002 or CSCI 4957/5947-004 Selected topics: Artificial Life and
Swarm Intelligence
Co teacher: Istvan Karsai



2012 Fall Tuesday 12:45-4:45 (4 cr hr) Brown Hall Room 214 Contact: karsai@etsu.edu

- Colonies of ants, honeybees or termites have **cognitive capabilities like a brain**.
- **As a collective**, they manage to control the climate in the colony as well as the flows of nutrients, energy and information.
- **Computer simulations** can unveil these forms of **distributed intelligence**.
- These mechanisms can then be used in **bio-inspired robot swarms** and other appliances.
- **Artificial creature** can be observed while they evolve in their **virtual (computer-)worlds**.



SWARM
INTELLIGENCE

ARTIFICIAL
LIFE