This course is a weekly seminar series that will serve students as a venue of active discussion on current research topics in complex systems science and interdisciplinary networking with the community of people who are interested in complex systems at BU and beyond. The objectives of the course are to help the students broaden their intellectual horizons and practice their presentation and scientific communication skills.

One half of the class meetings will be the bi-weekly Collective Dynamics of Complex Systems seminar series (http://coco.binghamton.edu/), while the other half will be on discussions and presentations on selected book chapters and/or journal articles. Students will be required to present either literature review or their own research at least once a semester and be graded based on class attendance, participation in discussions, weekly reflection essays, a presentation, and a final paper that is either (a) a research paper based on his/her own presentation, (b) a literature review that identifies some research questions worth further investigation, or (c) a research proposal. It will be offered in both Fall and Spring semesters.

**Prerequisites:**
Graduate standing or consent of the instructor.

**Faculty:**
Dr. Hiroki Sayama  
Director, Collective Dynamics of Complex Systems Research Group  
Assistant Professor, Departments of Bioengineering & Systems Science and Industrial Engineering  
Affiliate, New England Complex Systems Institute  
Biotechnology Building, Room BI-2627  
Innovative Technologies Complex  
Office Hours: Wednesdays 11:30am-12:30pm  
Tel: 7-4439  Email: sayama@binghamton.edu

**Reading Materials:**

In the first several class meetings we will discuss the chapters of this book “Complexity” by Melanie Mitchell, a leading scientist in complex systems science. **Each student must read the assigned chapters (about 100 pages of easy reading for general audience), write a one- or two-pages long reflection essay and email it to the instructor by one hour before the class starts (i.e. by 8am of Wednesday).** This will be printed and shared with the rest of the class and used in class discussion.

**Other Recommended Readings:**


**Course Schedule (seminar speakers are subject to change):**

- **8/31** Course introduction
- **9/7** CoCo Seminar: Chris Ruebeck (Lafayette College)
- **9/14** Mitchell “Complexity” Part I: Background and History
- **9/21** CoCo Seminar: Pam Mischen (Public Administration)
- **9/28** Mitchell “Complexity” Parts II & III: Life and Evolution in Computers, Computation Writ Large
- **10/5** CoCo Seminar: Jeff Schmidt (Systems Science)
- **10/12** Mitchell “Complexity” Parts IV & V: Network Thinking, Conclusion
- **10/19** CoCo Seminar: Scott Henkel (English, General Literature and Rhetoric)
- **10/26** Student presentation (1)
- **11/2** CoCo Seminar: Todd Guifoos (Economics)
- **11/9** Student presentation (2)
- **11/16** CoCo Seminar: Chanyu Hao and Andra Serban (Management)
After each class meeting, students should write a brief reflection of their own (a few paragraphs) on the topics and issues discussed in class, and post it to the Blackboard’s discussion forum. This will be part of the reflection essays in the grading as well.

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<th>Grading System:</th>
<th>Grade Categories (Percentage):</th>
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<tbody>
<tr>
<td>Class attendance</td>
<td>A &gt;= 90</td>
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<tr>
<td>Participation in discussion</td>
<td>A- &gt;= 85</td>
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<tr>
<td>Weekly reflection essays</td>
<td>B+ &gt;= 80</td>
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<tr>
<td>Presentation</td>
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<td>Final paper</td>
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Other Important Points:
- Incidents of academic dishonesty will be fully investigated and processed in accordance with university regulations.
- Accommodations: If you are a student with a disability and wish to request accommodations, please notify me by the second week of class. You are also encouraged to contact the Office of Services for Students with Disabilities (SSD) at 777-2686. The SSD office makes formal recommendations regarding necessary and appropriate accommodations based on your specifically diagnosed disability. Information regarding your disability will be treated in a confidential manner.