DEPARTMENT in which the new course is being offered:  
NYU Child Study Center (Child and Adolescent Mental Health Studies, CAMS)  

DIRECTOR OF UNDERGRADUATE STUDIES  
(name): Jess P. Shatkin, MD, MPH  
(e-mail): jess.shatkin@nyumc.org  

A. Basic Information  
1. Number and title of the course:  
The Nature of Success  

2. Name and rank of the instructor:  
Glenn N. Saxe, MD, Arnold Simon Professor and Chair, Department of Child and Adolescent Psychiatry, New York University School of Medicine; Director, NYU Child Study Center.  

Instructor’s experience as it relates to the course:  
Dr. Saxe is a physician-scientist with a focus on the psychiatric consequences of traumatic events in children and on factors that contribute to children’s risk and resilience in the face of adversity. He is responsible for publishing some of the first studies of Acute Stress Disorder in children, and on the bio-behavioral risk and resiliency factors in children exposed to traumatic events. He is the principal developer of Trauma Systems Therapy (TST), a treatment model for traumatized children that is currently used to guide clinical care in 14 states. He is lead author of the book ‘Collaborative Treatment of Traumatized Children and Teens: The Trauma Systems Therapy Approach,’ published in 2006 by Guilford Press, and the soon to be released book ‘Trauma Systems Therapy for Children and Teens (Guilford Press, 2015).’ He is also the Director of the Center for Coordinated Trauma Services in Child Welfare, a National Child Traumatic Stress Network academic center funded to improve trauma services for the nation’s child welfare systems. Dr. Saxe received his undergraduate degree from McGill University and his medical degree from McMaster University in Hamilton, Ontario, Canada. He completed residency training in psychiatry at Harvard Medical School/Massachusetts Mental Health Center, a fellowship in traumatic stress disorders at Massachusetts General Hospital, and a fellowship in Child and Adolescent Psychiatry at Cambridge Hospital in Boston.  

Dr. Saxe’s expertise related to the proposed course is multifold. As one of the nation’s foremost experts on the impact of traumatic events on children, Dr. Saxe has studied the factors that make children resilient – and successful – in the face of terrible adversity. He has worked with children who have managed to succeed in the face of adversities, such as life threatening burns and injuries, war and refugee status, and child abuse and neglect. His understanding of these processes has lead to his development of a widely used treatment for traumatized children (Trauma Systems Therapy) that takes an explicit systems-oriented approach which guides some of the ideas presented in this course. This understanding of the importance of complex systems for children’s response to trauma has lead to his development of methods that employ a complex systems approach to
psychiatric research. He was the principal investigator on a National Institutes of Health research grant to develop the computational methods that would facilitate the integration of complex systems level of analysis to understand mental health and mental illness in children. This funding has lead to the development of the Complex Systems-Causal Network (CS-CN) method that enables the integration of causal discovery with network science analysis in psychiatric research. The conceptual foundations of Network Science/Complex Systems Science – and its analytic approach – will be employed throughout this course. Finally, as an organizational leader, Dr. Saxe has employed ideas of Complex Systems Science in leadership for both the strategic aims of his academic department and for the development of his faculty and staff. Examples of the utility of Complex Systems Science for organizational success and career development will be employed throughout this course.

3. Will any other instructors teach this course?

No.

4. In which semester and year will this course first be given?

Winter 2016

5. How frequently will it be offered thereafter?

Winter of 2016 and then once or twice annually thereafter.

6. What is the anticipated enrollment?

25 students (possibly growing over time, depending upon student interest)

7. Has this course been offered already as a topics course? If so, what was the course number and title?

No.

8. How many points will the course carry?

4 points

9. What prerequisites, if any, will be set for the course?

None.

10. Is the course introductory, mid-level, or advanced?

Introductory

11. Is it a lecture course, seminar, colloquium, laboratory, workshop, or combination of the above?
Lecture

12. Give the number and duration of each week’s lectures, discussion sections, laboratory sections, field trips, and any other meetings.

Twenty-eight 75-minute class sessions.

13. How many pages of reading and writing does this course require?

Students will be expected to read on average between 60-100 pages of material per week. They will complete a midterm multiple choice exam and a multiple choice/short answer final exam, in addition to a final 10 page essay. They will also be expected to make a 15-minute in class presentation and submit a short essay based on their presentation.

A central part of the curriculum will be preparation and production of a final paper based on a system of the student’s choice. Students will identify this system and employ systems thinking – as they have been taught – to understand its capacity for success and failure. In order to best prepare students for this final paper – and to better track student’s progress throughout the course – they will be required to submit three 2-page papers in preparation for the final paper. The content of each of these Preliminary Papers are related to the development of the Final Paper and are comprised of the following themes:
   i. A description of the system chosen for the Final Paper and the rationale for the student’s choice of this system. Due for class 6.
   ii. A preliminary review of the structure and function of the chosen system. Due for class 11.
   iii. A preliminary analysis of the strengths and vulnerabilities of the chosen system. Due for class 20.

B. The Course Description

1. Give the description of the course as it would appear in College course materials, including the online Bulletin (preferably around 100 words; maximum 150).

What makes a person successful? What contributes to failure? What do these terms really mean anyway? This course is designed for students who want to learn about processes known to contribute to success (and failure) in a wide variety of domains. Students will be introduced to an exciting area of study called Systems Science that offers a powerful and useful perspective to understand how success (and failure) happen. Throughout the course, we will consider the occurrence of success and failure in a wide variety of systems including biological systems, ecologies, families, peer groups, business organizations, and societies. Human beings are comprised of systems, and we grow up, live, and work as part of systems. This course will particularly emphasize human development and encourage students to apply the concepts and knowledge they have acquired to those systems they most want to understand and/or within which they most wish to succeed.
2. Give, in fuller detail, the aims of the course. Concisely explain the need for the course.

Course Aims:

Students are curious about the factors that contribute to success or failure and want to learn how to improve the likelihood of success, and minimize the risk of failure, in their endeavors. A relatively new area of science offers an exciting – and powerful – opportunity to understand this elusive concept in a novel and meaningful way. *Systems Science* details a rigorous approach for students to understand human success and failure in a way they may not have previously considered. This course also provides students an engaging way to learn about a scientific framework that has become increasingly integrated within the physical, biological, and social sciences in recent years. Students will be encouraged to apply these ideas to domains of success that are important in their lives such as family and relationships; careers and organizations; ideas, innovation, technology, and society. The course has particular application – and a unique approach – to understanding human development and mental health and therefore provides a unique addition to the Child and Adolescent Mental Health Studies (CAMS) curriculum.

The course will be taught in four sections, outlined below:

**Section I: Success and Failure in Human Systems**

In this first section, we start with basic definitions and first principles: What is success? How can it be defined? From what perspective should it be defined? What is a system and what makes it adaptive? What do success and failure mean from a systems perspective? The first class provides an overview of the variety of systems of which humans are comprised and in which we interact. The next few classes offer an engaging review of the science of systems. This review is necessary to build a common language of the key concepts that will carry throughout the course. In particular, students will acquire knowledge of system dynamics to understand how systems can be transformed for success and failure. These same processes have applicability for understanding human development. Students will learn about a theory of child development based on the dynamics of systems, wherein the achievement of key developmental milestones is integrally related to the well known non-linear properties of systems. Successful child development will be defined as the child’s increasing capacity to engage in - and contribute to - increasingly complex systems. We will then review how the development of various forms of mental illness can be understood through specific dysfunctions related to these same processes.

Throughout this first section, students will be encouraged to reevaluate assumptions they may hold about the nature of success and failure. Most commonly, success and failure are only considered at the level of the individual. This assumption frequently leads to misunderstandings about an occurrence of success and failure because the system in which the individual forms a part is not included in the analysis. Students will be shown examples of success and failure and be asked to identify the entire system in which these respective outcomes occurred. Sometimes the identification of the boundaries of the system is simple and straightforward. Sometimes this identification is subtle and
complex. The accurate identification of the boundaries of the system is critically important so that all available information is used to understand success and failure. These ideas will be illustrated by introducing students to two fascinating communities of creatures: The slime mold and the ant colony. Regarding the slime mold, students will be exposed to groundbreaking research that illustrates how this collection of thousands of individual amoebas are able to perform complex calculations and even solve mazes – when the amoeba forms part of a system. Regarding the ant colony, students will be exposed to research that demonstrates the behaviors and functioning of an ant colony cannot be understood through the behavior of individual ants. The principles of complex systems that are derived from studying slime molds and ant colonies will be applied to all systems described in this course.

**Section II: How Information is used by Systems for Success and Failure?**

Systems use information, learn about their environment from information, and learn about themselves through their use of information. The success and failure of a system is highly related to these processes. Success and failure are also – themselves – highly interrelated through these learning processes. All systems experience failure. The most successful systems have developed strong processes for learning from failure. In this section, we focus on the nature of information and a system’s use of it. We begin by describing the importance of information for the functioning of a system. As described, systems use information to understand qualities of their environment and themselves. Systems turn information into ‘ideas’ that then guide their ‘own’ behavior. Ideas are broadly conceived and can be built from many substrates including biological (e.g., a gene) or conceptual (e.g., a mathematical equation; an ethical rule; a business process; a way for a young child to use the shiny cold thing in front of him - to bring the thing he wants to eat - to his mouth).

We will then review how ideas spread through systems and the role of innovation for system success (and sometimes failure). We will also discuss the powerful evolutionary process related to ideas and how they are passed down the generations in both biological and conceptual form to strongly contribute to our survival and success. We end this section with a discussion of one particular form of information: a signal that indicates that the system may be destroyed. The way in which systems handle these *signals of existential threat* are reviewed and discussed in terms of their potential to transform a system for much greater capacity for success. This potential relates to how a system learns to manage uncertainty. This discussion will then focus on how human beings manage signals of existential threat (and uncertainty). We will review human resilience, posttraumatic stress disorder, and posttraumatic growth in this context.

**Section III: System Applications**

In the third section, we build upon the concepts learned in previous sections for a more comprehensive analysis of success and failure. Within various forms of systems, we will examine the boundary conditions, how the components interact and function, and how the system develops and uses information about the external world and about itself. We will define, and consider, success and failure within each of these system forms, and several examples of each will be considered. Each class will be dedicated to a different form of system, including:

- Biological Systems
• Nervous Systems
• Family and Peer Group Systems
• Organizational Systems (including the workplace)

Section IV: Systems Thinking Case Studies
In this last section, students will integrate the concepts they have learned previously to build their skills in analyzing systems to understand their capacity for success and failure. We will review the Systems Thinking skills students learned in section 1 and practice the application of these skills with five Systems Thinking Case Studies that will be presented over five classes. We aim to build student’s skill to gather information about any form of system and to critically appraise the identified system’s capacity to achieve success and failure. The five Systems Thinking Case Studies are:

1. Success vs. extinction of an animal species
2. Success vs. cancer of the human body
3. Success vs. divorce of a family
4. Success vs. failure of a student in a university course
5. Success vs. bankruptcy of a business.

The presentation of these in-class case studies will help students with their major class project: Students will choose any specific system that interests them and analyze the system for its capacity for success and failure employing the skills they have developed in this course.

The Society of Mind

The Society of Mind is a landmark book released in 1986 by Marvin Minsky, one of the founders of Cognitive Science. The Society of Mind introduced many of the core ideas presented in this course to a broad audience, including the scientific community. Written in a highly engaging, provocative, and entertaining fashion: The Society of Mind is comprised of 270, one-page essays, each of which communicates a core idea about how the mind works and how it develops over time. A central thesis of the book is that the human mind is not comprised of a central controlling entity but acquires its known characteristics via the way a great many disparate entities are organized, interact, and develop over time. The 270 essays are organized into 30 sections. We will read this book in its entirety throughout the course. The last 15 minutes of each class (occasionally 30 minutes) will be dedicated to students’ presentations of each of these sections. These presentations – and a short essay related to their presentation- will be graded and comprise 10% of students’ final grades. Depending on the class size, students may present in teams.

Knowledge –

Students will be able to:
1. Define the components of a system and how its properties impact success and failure.
2. Apply knowledge about the properties of adaptive systems to success and failure within a diversity of systems, including physical, biological, and social systems.
3. Integrate understandings of the dynamics of systems to human development
and to the success and failure of individuals over the course of development.

4. Apply their knowledge of human development through the dynamics of systems to understand the nature of mental illness and its relationship to human success and failure.

5. Integrate a basic understanding of the nature of information along with knowledge of how a systems' use of information can contribute to its success or failure.

6. Employ knowledge of objectives #1, 2, 3, 4, and 5 to understand success and failure within the systems in which the student forms a part and/or has a particular interest.

Skills –

1. Gather the relevant information related to success and failure within any system by asking six key questions.
2. Appraise the capacity for success and failure of any system.

C. The Syllabus

a. Attach a provisional syllabus with as much detail as possible.

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic and Description</th>
<th>Pages of Reading</th>
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<tbody>
<tr>
<td>Section I: Success and Failure in Human Systems</td>
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<tr>
<td>In this first section, basic principles of systems science are introduced, particularly their relevance for understanding the success or failure within human systems. This section concludes with the application of these ideas for understanding child development and mental health.</td>
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<table>
<thead>
<tr>
<th>Class</th>
<th>Course Introduction and Description of Human Systems</th>
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<tbody>
<tr>
<td>1</td>
<td>A basic introduction to the course and the topics that will be covered. A broad overview of systems related to human development including: Biological Systems, Family Systems, Friendship Systems, Workplace Systems, Cultural/Societal Systems</td>
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Chapter 1: Introduction: Here Comes Everybody! (pages 19-33)

22
<table>
<thead>
<tr>
<th>Class</th>
<th>What is a System? I. Observations</th>
<th>What is a System? System Characteristics</th>
<th>How Systems Succeed and Fail</th>
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</thead>
</table>
| 2     | An interactive introduction to the science of systems by engaging students in observations of four sorts of systems to discern how they work. The discussion will focus on common observations between three systems observed through video presentation:  
- An ant colony  
- A flock of birds  
- Preschoolers in a day care center  
- A computational system (The Game of Life) |
Chapter 1: Introduction to Systems Science (pages 3-40)  
Minsky M (1986), *The Society of Mind*, Simon and Shuster, NY  
Section 1: Prologue (pages 17-23) |
| 3     | Following observations of the four systems from the previous class, the characteristics and behavior of systems will be reviewed. This discussion introduces students to *Systems Science* and will build a language that will be used to discuss the nature of systems throughout the course. The characteristics of systems that will be discussed, include:  
- Boundary conditions  
- Self organization  
- Hierarchical structure  
- Efficient use of information  
- Learning about the external world and about the internal system  
- Adaptation, robustness, and specific forms of vulnerability  
- Computation |
|       | Introduction to Final Paper exercise and the three preliminary papers that will be required of students. Discussion of requirements for first preliminary paper. |
| 4     | With basic knowledge of the way systems operate reviewed in the previous classes, the concept of success and failure will be introduced. Students will be engaged in a discussion of definitions of success and failure from a variety of perspectives. A system’s perspective on success and failure will be detailed including:  
- A definition of the purpose of a system and how success and |
failure relate to a system achieving its purpose.
- A review of how this definition can be applied within a diversity of systems.

Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 3: Conflict and Compromise (pages 31-37)

### Class 5

**The Individual Within the System**
- A review of the distinction between the individual vs. the collective for understanding complex systems.
- A description of the role and importance of the individual for the systems functioning, including ideas about human achievement and creativity from a systems perspective.
- A discussion of the importance of diversity for the functioning of the system.
- A caution about misunderstanding the central themes of this course to mean that individual talent, skill, character, and creativity is not related to success and failure.

Chapter 1: The Myth of the Ant Queen (pages 49-104)
Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 4: The Self (pages 38-46)

### Class 6

**Systems Thinking Skills**
This class provides a framework for gathering information about a system and analyzing success and failure of the system in question. This form of systems thinking will build students’ skill to consider how systems may be protected and improved. Students will learn how to ask (and answer) six questions to understand how success and failure may be determined by the system:

1. What is the definition of the system (i.e., its boundaries with the external world and its internal components)?
2. What is the purpose of the system (i.e., its goals and/or function)?
3. How does the system work (i.e., how do its components interact, particularly related to the processing of information)?
4. How does the system learn about the environment and about itself (i.e., how does it generate knowledge that contributes to its ability to survive and thrive)?
5. How can the system be transformed for greater orders of success (i.e., the rigidity vs. flexibility properties of the system)?

- [Class 5](#)
- [Class 6](#)

### Class 7

**The Individual Within the System**
- A review of the distinction between the individual vs. the collective for understanding complex systems.
- A description of the role and importance of the individual for the systems functioning, including ideas about human achievement and creativity from a systems perspective.
- A discussion of the importance of diversity for the functioning of the system.
- A caution about misunderstanding the central themes of this course to mean that individual talent, skill, character, and creativity is not related to success and failure.

Chapter 1: The Myth of the Ant Queen (pages 49-104)
Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 4: The Self (pages 38-46)
and its capacity to use knowledge – as defined above – for transformative change)?

6. How can the system be destroyed (i.e., what are its main sources of vulnerability, the potential impact of challenge to its vulnerability, and its built-in protections from catastrophe)?

Systems thinking involves students’ ability to critically appraise the capacity of a given complex system to achieve its purpose. This analysis is comprised of appraising a system’s:

1. **Strengths**: What are the adaptive capacities of the system, given its external environment?
2. **Weaknesses**: What are the vulnerabilities of the system, given its external environment?
3. **Opportunities**: How can the system achieve its highest level of success, given its strengths and weaknesses?
4. **Threats**: How can the system fail, given its strengths and weaknesses?

First Preliminary paper due. Discussion of requirements for second preliminary paper.

Chapter 12: Systems Analysis (pages 589-644)
Minsky M (1986), *The Society of Mind*, Simon and Shuster, NY
Section 5: Individuality (pages 47-54)

<table>
<thead>
<tr>
<th>Class</th>
<th>Topic</th>
<th>Description</th>
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<tr>
<td>7</td>
<td><strong>Developing Systems and Development within Systems</strong></td>
<td>This class introduces students to the dynamics of systems. There is a strong scientific literature on how systems change over time. We will review the nature of system change, and the conditions by which this change happens. Such dynamical processes are important for understanding how a system may change for greater success, or greater failure (including system destruction). Understanding the process of system development lays the foundation for understanding human development (including child development). In the next few classes, the ideas reviewed in this section will form the foundation for this discussion of human development.</td>
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<tr>
<td>8</td>
<td><strong>Human–System Developmental Processes I: The Basics</strong></td>
<td>• An introduction to the theory of human development based on dynamical adaptive systems. • An overview of the human developmental process and how the</td>
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</table>
brain develops over time.

- A discussion of how human development follows the non-linear dynamical processes understood through systems science.
- A description of the child’s social world, at various levels of development.
- A definition of successful child development from a systems perspective: The increasing capacity of the child to successfully engage with – and contribute to – an increasingly complex social world.


Minsky M (1986), The Society of Mind, Simon and Shuster, NY

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<tr>
<th>Class 9</th>
<th>Human–System Developmental Processes II: Raising children for Success</th>
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<td>With the definition of successful child development established in the previous class, students will be introduced to the literature on raising children and how good parenting relates to this definition of successful child development. This class will review the following elements of good parenting practice, from a systems perspective:</td>
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<td>• Fostering human attachment</td>
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<td>• Providing sufficient structure and protection</td>
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<td></td>
<td>• Providing information that is truthful about the child’s world and is also developmentally appropriate</td>
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<td></td>
<td>• Providing the opportunity to learn from failure</td>
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<td></td>
<td>• Providing the opportunity to learn from adversity</td>
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<td></td>
<td>• Providing the opportunity to build good character and a strong sense of ethics.</td>
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Minuchin, Patricia (1985), Families and individual development: Provocations from the field of family therapy. Child development, 289-302

Minsky M (1986), The Society of Mind, Simon and Shuster, NY

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<tr>
<th>Class 10</th>
<th>Human–System Developmental Processes III: Developmental Psychopathology</th>
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<td></td>
<td>Developmental Psychopathology is focused on how psychopathology results from specific deviations in healthy child developmental processes.</td>
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In this class, we offer a systems perspective on Developmental Psychopathology via the definition of successful human development defined previously: the child’s capacity (or incapacity) to successfully engage with – and contribute to – an increasingly complex social world. Using this definition, we will review several areas of child mental health problems to see how such systemic problems become expressed, including:

- Depression
- Attention Deficit Hyperactivity Disorder
- Autism
- Conduct disorder

Minsky M (1986), The Society of Mind, Simon and Shuster, NY

### Section II: How Information is used by Systems for Success or Failure

*Systems use information, learn from information, and learn about themselves through their use of information. The success and failure of a system is highly related to these processes. In this section, we focus on the nature of information and how systems use it.*

<table>
<thead>
<tr>
<th>Class 11</th>
<th>How Systems Use Information</th>
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<tbody>
<tr>
<td></td>
<td>An introduction to information theory, including a definition of information as manifest across a diversity of forms (e.g., words, numbers, maps, genes, molecules, photons).</td>
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<td></td>
<td>A description of how all systems process information/ideas and why this is a fundamental component of their functioning.</td>
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<td></td>
<td>A discussion of how the processing of this information/idea is integrally related to a system’s success or failure.</td>
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<td></td>
<td>A comparison of ideas in biological and conceptual form</td>
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<td></td>
<td>A review of how children use information/ideas and how this use is related to the success or failure of the developmental process.</td>
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Second preliminary paper due. Discussion of requirements for third preliminary paper.

<table>
<thead>
<tr>
<th>Class</th>
<th>Information/ideas spread through and change systems</th>
<th>47 pages</th>
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<tr>
<td>12</td>
<td>In order to understand the success or failure of any system, it is critical to understand how it uses ideas (and the result of this use). This class will focus on the power of ideas (in all forms) and the symbiotic relationship between ideas and systems for the achievement of success (and failure). We will review how ideas spread across systems with a focus on human innovation. In this discussion, we will review the differences and similarities between what might be called biological ‘ideas’ (e.g., genes, a virus) and conceptual ideas (e.g., the discovery of the use of fire, the printing press, the iPhone). We will also review how certain ideas - if accepted by a system - can lead to system destruction. This discussion will include biological ideas (e.g., genetic mutations, virus infection) and conceptual ideas (e.g., national socialism, ideas related to a plane crash, delusional thoughts and suicide).</td>
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Rabinowitz A (2015), Why do things go viral, and should we care? The Meme as Meme, Nautilus, 23, 1-6

Minsky M (1986), The Society of Mind, Simon and Shuster, NY

<table>
<thead>
<tr>
<th>Class</th>
<th>Information Transmitted Across Time: History, Culture, Evolution</th>
<th>31 pages</th>
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<tbody>
<tr>
<td>13</td>
<td>Systems exist across time and use information to powerfully improve their capacity for success. In this class, we review the importance of understanding the power of ideas transmitted across time for the success of a system. Both biological and conceptual ideas develop through an evolutionary process. A great many more biological ideas have failed - in the form of extinction - than those that have succeeded. Accordingly, those ‘ideas’ that have survived over the evolutionary time scale and are with us today have great power to succeed. Similarly, history is littered with many more conceptual ideas that went extinct than those that became integrated in human thought, society, and culture. Ideas survive because they impart advantages to the system of individuals who use them. Such advantages may well contribute to the survival of the individual and their system of individuals joined by the shared use of the given idea. Accordingly, the relatively few ideas that have actually survived over generations will usually impart very strong advantages to human beings. As the human genome contains powerful biological information that has</td>
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given human beings such advantages to survive and thrive within a great
diversity of environments, the human ‘conceptual genome’ - a set of ideas
that have come to us across the ages (and can even be seen across
cultures) - has arguably offered even greater advantages. Of course, the
human biological and conceptual genome are inextricably linked via the
way the brain processes ideas. We will engage in a critical discussion
about ideas that may form part of the human conceptual genome. What
ideas will we consider?
• Basic ideas of morality and ethics such as those found in
documents like the ten commandments
• Notions of good character (e.g., honor, compassion, justice,
courage)
• The idea of a monotheistic universe
• Notions of causality and the scientific method
• Mathematics
• Art, literature, music
• The nuclear family

We will also discuss cultural and societal differences and review how
such cultural and societal diversity can serve as ‘breeding grounds’ for
good ideas that can then be shared and integrated within the human
conceptual genome.

Marmefelt M (2009). Darwin, Darwinism and Social Darwinism
Human knowledge, rules, and the spontaneous evolution of society in the
social thought of Darwin, Hayek, and Boulding. Journal of Economic
Behavior & Organization, 71, 62-74
Lansing, J. Stephen (2003), Complex adaptive systems. Annual review of
anthropology, 8, 183-204.
Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 12: Learning Meaning (pages 118-131)

Class
<table>
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<tr>
<th>14</th>
<th>Information that Threatens a System’s Existence</th>
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<tr>
<td></td>
<td>In the previous two classes, we reviewed the power of information and ideas, particularly those that enhance a system’s capacity to survive. In this class, and the next two, we consider a special sort of information: information that indicates threat to a system’s survival. How do systems process this sort of information? What is the impact of the way a system processes this information on its likelihood of success or failure? We will review signals that connote existential threat, and how systems handle this sort of information. Clearly, these are the contexts in which systems most commonly fail, but successful systems are built with many safeguards for the handling of signals indicating existential threat. What are these safeguards and how do they contribute to the success of a system over time? In this class we will review signals of existential threat with the following examples:</td>
</tr>
<tr>
<td></td>
<td>• A new predator species moves into a (previously) stable ecosystem.</td>
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69 pages
• A 12 year-old boy swallows a toxic substance
• An armed intruder enters a 16 year-old-girl’s bedroom
• A small, family-run, neighborhood grocery store learns that a very large, successful, national grocery chain plans to open a new store down the street.

Saxe GN, Ellis BH, Brown AD (2015), Trauma Systems Therapy for Children and Teens, Guilford, NY
Chapter 1: Introduction to Trauma Systems Therapy (pages 1-30)
Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 13: Seeing and Believing (pages 132-139)

Class 15 Human Existential Threat I: Trauma and Traumatic Stress
• A review of the neurobiological systems that have evolved to help animals and humans manage existential threat.
• A description of how the functioning of these systems relates to the development of Posttraumatic Stress Disorder, or resilience from this disorder.
• A review of the individual’s social system for leading to risk or resilience.
• A discussion of interventions in the face of trauma based on the course director’s intervention model based on systems science: Trauma Systems Therapy (TST).

Saxe GN, Ellis BH, Brown AD (2015), Trauma Systems Therapy for Children and Teens, Guilford, NY
Chapter 2: Survival Circuits (pages 31-44)
Chapter 3: The Regulation of Survival-in-the-Moment States pages (45-63)
Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 14: Reformulation (pages 140-149)

Class 16 Human Existential Threat II: Trauma and Transformation
• A discussion of how information related to existential threat powerfully helps a system learn about the unpredictability of the environment, and its own response to such unpredictability. The way in which systems become configured to respond to this unpredictable information strongly contributes to the success of the system.
• A review of how an individual’s proficiency with managing unpredictability - via learning from adversity - contributes to human resilience and may set the stage for human creativity and increasing levels of success.
• A review of how these same processes lead to communities’ resilience and success.

Myhrvold C (2015), Want to Get Out Alive? Follow the Ants, Nautilus, 23, 1-6
Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 15: Consciousness and Memory (pages 150-161)

<table>
<thead>
<tr>
<th>Class 17</th>
<th>Midterm Exam</th>
</tr>
</thead>
</table>

Section III: System Applications
In this section, we build the ideas learned in previous sections, for a more comprehensive analysis of success and failure within specific forms of systems.

<table>
<thead>
<tr>
<th>Class 18</th>
<th>Biological Systems</th>
</tr>
</thead>
</table>
| • A review of specific forms of biological systems including cells, multicellular organisms, advanced species, and ecologies.  
• A discussion of how biological systems use information, and how success and failure is related to the use of information.  
• A review of the development of biological systems for greater capacities for success over time.  |
Chapter 7: Evolution (pages 527-557)  
Ball P (2015), The Strange Inevitability of Evolution, Nautilus, 20, 1-20  
Minsky M (1986), The Society of Mind, Simon and Shuster, NY  
Section 16: Emotion (pages 162-172) |

<table>
<thead>
<tr>
<th>Class 19</th>
<th>The Nervous System</th>
</tr>
</thead>
</table>
| • A review of the nervous system and how it functions via the systemic properties detailed in the first section of this course.  
• A discussion of how information and conceptual ideas take physical form in patterns of brain activity.  
• A review of neurodevelopment, from a systems perspective.  
• A review of how the human brain and the slime mold achieve success by utilizing remarkably similar approaches.  |
Arnold C. Ants Swarm Like Brains Think (2014), Nautilus, 12, 1-8  
Minsky M (1986), The Society of Mind, Simon and Shuster, NY  
Section 17: Development (pages 173-184) |

Class Families and Peer Groups 33
<table>
<thead>
<tr>
<th>Class</th>
<th>Organizations and the Workplace</th>
<th>42 pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>A review of the application of systems science to human organizations, including small business and corporations.</td>
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<td></td>
<td>A discussion of how organizations succeed and fail based on principles of systems science.</td>
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<tr>
<td></td>
<td>A description of the role of individuals within an organization for contributing to system success and failure.</td>
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</tbody>
</table>


Minsky M (1986), *The Society of Mind*, Simon and Shuster, NY

Section 18: Reasoning (pages 185-194)

Section IV: Systems Thinking Case Studies

*In this last section, students will integrate the concepts they have learned previously to build their skills analyzing systems to understand and predict success and failure within a given system. First, they will learn an approach to appraising systems. They will then apply these skills in five Systems Thinking Case Studies.*

<table>
<thead>
<tr>
<th>Class</th>
<th>Applying Systems Thinking Skills</th>
<th>17 pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>A review of systems thinking skills, introduced in section 1</td>
<td></td>
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<tr>
<td></td>
<td>A review of the process of evaluating ant system</td>
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<td></td>
<td>An introduction to the Systems Thinking Case Studies</td>
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<td></td>
<td>A review of expectations for the final class paper</td>
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</tbody>
</table>

Minsky M (1986), *The Society of Mind*, Simon and Shuster, NY

Section 20: Context and Ambiguity (pages 206-215)
<table>
<thead>
<tr>
<th>Class</th>
<th>Case Study 1: Success vs. Extinction of an Animal Species</th>
<th>70 pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>A case study of an ecology (a food web), so that students can practice their systems thinking skills to analyze its success and failure.</td>
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<tr>
<td></td>
<td>Chapter 3: Street Level (pages 128-181)</td>
<td></td>
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<td></td>
<td>Minsky M (1986), The Society of Mind, Simon and Shuster, NY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section 22: Expressions (pages 225-236)</td>
<td></td>
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<tr>
<td></td>
<td>Section 23: Comparisons (pages 237-243)</td>
<td></td>
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<tr>
<td>Class</td>
<td>Case Study 2: Success vs. Cancer of the Body</td>
<td>21 pages</td>
</tr>
<tr>
<td>24</td>
<td>A case study of the failure of the human biological system that produced cancer, and an opportunity for students to bring their systems thinking skills to this devastating problem.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graber C. The Diseaseome Could Take Medicine Beyond the Genome. NovaNext, Oct. 9, 2014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minsky M (1986), The Society of Mind, Simon and Shuster, NY</td>
<td></td>
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<tr>
<td></td>
<td>Section 24: Frames (pages 243-252)</td>
<td></td>
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<td></td>
<td>Section 25: Frame-Arrays (pages 253-259)</td>
<td></td>
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<tr>
<td>Class</td>
<td>Case Study 3: Success vs. Divorce of a Family</td>
<td>33 pages</td>
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<tr>
<td>25</td>
<td>A case study of a family system and the various factors that lead to its success and failure as manifest in a divorce. Another opportunity for students to exercise their systems thinking skills.</td>
<td></td>
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<tr>
<td></td>
<td>Minsky M (1986), The Society of Mind, Simon and Shuster, NY</td>
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<tr>
<td></td>
<td>Section 26: Language Frames (pages 260-272)</td>
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<td></td>
<td>Section 27: Censors and Jokes (pages 273-281)</td>
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<tr>
<td>Class</td>
<td>Case Study 4: Success vs. Achieving an ‘F’ on a University Course</td>
<td>41 pages</td>
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<tr>
<td>26</td>
<td>A case study of a student taking a university course who achieves an ‘F’ on his final grade. Students will use their systems thinking skills to analyze what went wrong, and to consider the advice they would give this student if he went to them for help after he received a midterm grade of C-.</td>
<td></td>
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<tr>
<td></td>
<td>Gavett G (2014). When We Learn From Failure (and When We Don’t). Harvard Business Review</td>
<td></td>
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<td></td>
<td>Minsky M (1986), The Society of Mind, Simon and Shuster, NY</td>
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<tr>
<td></td>
<td>Section 28: The Mind and the World (pages 282-290)</td>
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<td></td>
<td>Section 29: The Realms of Thought (pages 291-299)</td>
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<tr>
<td>Class</td>
<td>Case Study 5: Success vs. Bankruptcy of a Business</td>
<td>36 pages</td>
</tr>
<tr>
<td>27</td>
<td>A case study of a business that achieved considerable success over five years, and then went bankrupt in its eighth year. Students will play the role of business consultant to consider the advice they would give the</td>
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</tbody>
</table>
CEOs if she sought their engagement after a surprisingly poor sixth business year.

Minsky M (1986), The Society of Mind, Simon and Shuster, NY
Section 30: Mental Models (pages 300-308)

<table>
<thead>
<tr>
<th>Class 28</th>
<th>Course Wrap-up</th>
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<tbody>
<tr>
<td></td>
<td>• A review of the central themes of course</td>
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<td></td>
<td>• An open discussion of the application of course ideas to students lives</td>
</tr>
<tr>
<td></td>
<td>• A question and answer session about concepts that students find unclear</td>
</tr>
<tr>
<td></td>
<td>• A discussion about the final examination</td>
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</tbody>
</table>

**Books To Be Purchased By Students:**

The remainder of listed articles will be placed on NYU Classes for students to download and/or placed on reserve at the Bobst Library.

**Methods of Assessment:**
1) Midterm exam (20%): Multiple-choice and short answer questions related to the content of sections 1 and 2 of this course.

2) Final Paper (25%): Students will identify a system of their choice and employ systems thinking – as they have been taught – to understand its capacity for success and failure. The format of the paper will be to ask six questions of the system (taught in section 1) and to appraise its capacities based on answering these questions.

3) Preliminary Papers (15%, 5% for each of three 2-page papers). In order to best prepare for the Final Paper – and to better track students progress throughout the course – students will submit three 2-page papers in preparation for the final paper. The content of each of these Preliminary Papers are related to the development of the Final Paper and are comprised of the following themes:
   i. A description of the system chosen for the Final Paper and the rationale for the student’s choice of this system. Due for class 6.
   ii. A preliminary review of the structure and function of the chosen system. Due for class 11.
   iii. A preliminary analysis of the strengths and vulnerabilities of the chosen system. Due for class 20.
3) Final Exam (30%): This final exam will have two parts. Part one will be comprised of multiple-choice questions related to the content of sections 3 and 4 of this course. Part two will require students to perform a systems level SWOT analysis of a success/failure case study integrating knowledge they have gained through participating in section 4 of the course.

4) Presentation and Short essay (10%): As described, towards the end of each class students (or teams) in rotation will present a section of the book Society of Mind. These presentations will be graded and comprise 10% of students final grade. Students will also submit a short essay (2 pages) based on their presentation.

Policy on Late Submissions: Late papers will be accepted. However, grades on all late papers will be lowered by 1/3 for each day they are late (e.g., from an A- to a B+ on late day #1, from a B+ to a B on late day #2, etc.). Under no circumstances will any papers be accepted after the date of the final exam. Papers received after this date will not be graded and will receive a score of zero. Students requesting an exemption from the late submission policy must present a written note from a school Dean, Academic Advisor, or personal physician (e.g., not the student’s parent or family member) justifying the late submission, which will then be considered by the instructors.

D. Information about the Course in the Context of the CAS Curriculum

1. Will the course (a) service majors and/or minors in the department or program; or (b) serve non-majors particularly?

The course will serve students in the Child and Adolescent Mental Health Studies (CAMS) Minor and will be of utility to other students majoring and minoring in Psychology, Sociology, Applied Psychology (in Steinhardt), and Social Work (in Wagner), and perhaps students from the Stern School of Business.

2. Will the course be cross-listed with any other departments or programs? If so, list the departments and the faculty members there who have been consulted, and indicate the results of those discussions.

We do not plan to cross-list this course with other departments or programs.

Statement by the Director of Undergraduate Studies (to be completed after the faculty member proposing the course has filled out the form)

1. Check here to affirm that the course has been approved by the departmental undergraduate curriculum committee and/or faculty. ☐YES (jps)

2. Check here to attest that the DUGS has reviewed departmental course offerings to ensure that the new course is not redundant with other courses within the Department or elsewhere in CAS. YES (jps)

Course catalogues for all undergraduate NYU colleges were reviewed and the following
courses have minimal cross-over.

**When the Nightmare is Real: Trauma in Childhood and Adolescence:** Course number CAMS-UA.0104

The proposed course reviews trauma in a very specific way: to illustrate how a system learns from adversity and existential threat. Unlike the existing course, the proposed course is not in any way a survey of the field of trauma and traumatic stress and covers overlapping topics in two classes.

**Risk and Resilience in Urban Teens: Mental Health Promotion and Practicum:**
Course number CAMS-UA.0111 (Fall semester), CAMS-UA.0112 (Spring semester)

The proposed course reviews resilience in a very specific way: to illustrate the way in which systems develop robust processes to manage and adapt to adversity. Unlike the existing course, the proposed course neither focuses on urban teens nor on mental health promotion.