Applications – 4.0 units

ITPG.GT.2000.001
(Class Nbr. 17960)  Nancy Hechinger

This introductory class is designed to allow students to engage in a critical dialogue with leaders drawn from the artistic, non-profit and commercial sectors of the new media field, and to learn the value of collaborative projects by undertaking group presentations in response to issues raised by the guest speakers. Interactive media projects and approaches to the design of new media applications are presented weekly; students are thus exposed to both commercial as well as mission-driven applications by the actual designers and creators of these innovative and experimental projects. By way of this process, all first year students, for the first and only time in their ITP experience, are together in one room at one time, and as a community, encounter, and respond to, the challenges posed by the invited guests. The course at once provides an overview of current developments in this emerging field, and asks students to consider many questions about the state of the art. For example, with the new technologies and applications making their way into almost every phase of the economy and rooting themselves in our day to day lives, what can we learn from both the failures and successes? What are the impacts on our society? What is ubiquitous computing, embedded computing, physical computing? How is cyberspace merging with physical space? Class participation, group presentations, and a final paper are required.

This course meets at Cantor Film Center, Room 101 (36 E. 8th Street).

Tuesdays 3:45 PM - 6:30 PM (09.05.17 - 12.05.17)

Comm Lab: Video and Sound – 2.0 units

ITPG.GT.2001.001
(Class Nbr. 24789)
ITPG.GT.2001.002
(Class Nbr. 24790)
ITPG.GT.2001.003
(Class Nbr. 24791)

Staff

This course explores the fundamentals of sound and video. Students will learn the basics of both audio and video recording using audio field recorders and a variety of cameras as well as editing and exporting in Adobe Premiere. Students will work in teams to produce both an audio soundscape and a three-minute video short. This 2-credit course meets for the first seven weeks of the semester.

Section 001: Thursdays 3:20 PM – 5:50 PM (09.07.17 - 10.19.17)
Section 002: Fridays 3:20 PM – 5:50 PM (09.08.17 - 10.20.17)
Section 003: Thursdays 12:10 PM - 2:40 PM (09.07.17 – 10.19.17)  Syllabus

Comm Lab: Animation – 2.0 units

ITPG.GT.2002.001
(Class Nbr. 24784)
ITPG-GT.2002.002
(Class Nbr. 24785)

Staff
This course explores the fundamentals of storytelling through animation. Students will create two short animation pieces over the course of seven weeks. The first part of the course is devoted to the stop motion sing Dragon Stop Motion. The second part of the course is devoted to digital collage animation using After Effects. Drawing skills are not necessary for this class, however, you will keep a sketchbook. Basic video and sound skills are required. This 2-credit course will meet the last seven weeks of the semester.

**Section 001: Wednesdays 12:10 PM – 2:40 PM (10.25.17 – 12.13.17)**
**Section 004: Fridays 3:20 PM – 5:50 PM (10.27.17 – 12.15.17)**
**Section 005: Mondays 3:20 PM – 5:50 PM (11.06.17 – 12.12.17)**  Syllabus

**Comm Lab: Visual Language** – 2.0 units

ITPG.GT.2005.001  
(Class Nbr. 24794)
ITPG.GT.2005.002  
(Class Nbr. 24795)
ITPG.GT.2005.003  
(Class Nbr. 25014)

The goal of this course is to provide students who are new to the principles of visual design with the practical knowledge, critical skills and confidence to effectively express their ideas in a visually pleasing and effective way. Over the course of 7-weeks an overview of the many tools and techniques available to convey an idea, communicate a message and influence an experience will be presented, discussed and applied. Topics covered in the course include: typography, color, composition, branding, logo and information design. This class is intended for students who do not have formal graphic design or visual arts training but recognize the powerful impact of visual decisions in their work.

**COURSE OUTLINE**
Class 1 – Principles of Visual Communication
Class 2 – Signage and Information Systems
Class 3 – Typography/Composition
Class 4 – Logo and Brand Design
Class 5 – Color Theory
Class 6 – Information Design

Each meeting a new topic will be presented. The format will be a class discussion with a focus on examples of the theme for the week. Each topic will have a related assignment that will be done by each student individually and presented and critiqued in the following class. For students new to or with limited skills in Photoshop or Adobe Illustrator there will be a series of informal weekly workshops led by residents to teach the basics and answer questions on use of the software. Completion of the assignments and participation in the class discussion is required. Students must maintain a blog where they post their assignments. This two-credit course will meet for the first seven weeks of the semester.

**Section 001: Wednesdays 12:10 PM – 2:40 PM (09.06.17 – 10.18.17)**
**Section 002: Thursdays 6:30 PM – 9:00 PM (09.07.17 – 10.19.17)**
**Section 003: Fridays 3:20 PM – 5:50 PM (09.08.17 – 12.20.17)**  Syllabus

**Introduction to Computational Media** – 4.0 units

ITPG.GT.2233.001  
Staff
What can computation add to human communication? Creating computer applications, instead of just using them, will give you a deeper understanding of the essential possibilities of computation. The course focuses on the fundamentals of programming the computer (variables, conditionals, iteration, functions, and objects) and then touches on some more advanced techniques such as data parsing, interfacing with hardware, mobile development, and HTML5/DOM. The JavaScript-based 'p5.js' programming framework is the primary vehicle for the class. All sections assume no programming experience at all. The end of the semester is spent developing an idea for a final project and implementing it using computer programming. (Programming (Pure), Foundation)

Section 001: Wednesdays 12:10 PM – 2:40 PM (09.06.17 – 12.13.17)
Section 002: Wednesdays 9:00 AM – 11:30 AM (09.06.17 – 12.13.17)
Section 003: Wednesdays 3:20 PM – 5:50 PM (09.06.17 – 12.13.17)
Section 004: Wednesdays 3:20 PM – 5:50 PM (09.06.17 – 12.13.17)
Section 005: Wednesdays 12:10 PM – 2:40 PM (09.06.17 – 12.13.17)
Section 006: Mondays 6:30 PM – 9:00 PM (09.11.17 – 12.12.17)
Section 007: Tuesdays 12:10 PM – 2:40 PM (09.05.17 – 12.05.17)

Introduction to Physical Computing – 4.0 units

This course expands the students’ palette for physical interaction design with computational media. We look away from the limitations of the mouse, keyboard and monitor interface of today’s computers, and start instead with the expressive capabilities of the human body. We consider uses of the computer for more than just information retrieval and processing, and at locations other than the home or the office. The platform for the class is a microcontroller, a single-chip computer that can fit in your hand. The core technical concepts include digital, analog and serial input and output. Core interaction design concepts include user observation, affordances, and converting physical action into digital information. Students have weekly lab exercises to build skills with the microcontroller and related tools, and longer assignments in which they apply the principles from weekly labs in creative applications. Both individual work and group work is required.
TIER 2

Digital Self-Defense- Security for Everyone – 1.0 unit

ITPG.GT.2143.001
(Class Nbr. 21936)

Dia Kayyali

“Why would the government care about me? — do I really have to worry about surveillance? Facebook and Google already know everything about me….I can’t really do anything, right?”

We’ll answer these questions and more in this course. Students will walk away with some fundamental digital security skills, and the ability to learn new skills and think through security risks. This class is essential knowledge for every student at ITP, since your work inherently requires use of technology, including cutting-edge technology that could present new safety, security, and privacy risks. It's especially useful for any student who could be working with or belong to marginalized communities, or who is doing any work that could be deemed political.

We’ll use hypothetical profiles to learn how to conduct a risk assessment. Students will learn the basics of how to assess digital security risks for themselves and for their projects, a process known as threat modeling or risk assessment. They will also learn some digital security basics, such as how to install and use encrypted messaging on their mobile devices, how to avoid phishing/malware attacks, and how to create and store secure passwords.

This 1-unit course will take place over three evenings. The first meeting will be an introduction to the concepts of risk assessment and digital harm reduction. The students will be assigned a risk assessment for themselves for the next class. In the second class, we’ll discuss some basic security measures. In the final class meeting, we’ll review the assignments and discuss specific security measures based on how the students assessed their own risks.

Prior to the first class meeting, students should please read:


Please take a look at the Electronic Frontier Foundation’s “Surveillance Self-defense” site: https://ssd.eff.org/

Mondays 6:30 PM - 9:25 PM (09.11.17 - 09.25.17)

Implantables – 1.0 unit

ITPG.GT.2144.001
(Class Nbr. 21938)

Chris Andrew Anthony
We frequently implant metal, plastic and other materials in surgical procedures. What are the implications, constraints and possibilities of designing art, objects and tools that must negotiate a symbiosis with living human tissue? In this 1 credit course we will explore previous work in this area in order to equip students with an understanding of how to design and build objects that exist with human tissue. Students will explore relevant topics such as current examples, biocompatibility, infection, material options, and others.

Students will learn, discuss and interact with the presented material at the initial session. Over the next month, each student will be required to develop and subsequently present a final project that might be a short presentation or a more developed prototype.

Students will attend in initial interactive lecture that will explore relevant topics such as current examples, biocompatibility, infection, material options, and others. Over the next month, students will develop a project proposal that will be presented at a follow up class. The course instructor will be available throughout the course period to answer questions, further learning and provide feedback on project ideas.

**Saturday (09.23.17) 10:00 AM - 4:00 PM**
**Saturday (10.28.17) 10:00 AM - 12:30 PM**  Syllabus

**Mindfulness and Transformative Technologies** – 1.0 unit

ITPG.GT.2145.001  
(Com Nbr. 21768)

Zoran Josipovic

Transformative technologies (a.k.a. Transtech) are the wave of the future, yet many challenges remain before their use can become as effective and widespread as that of personal computers and cell phones today. This course will introduce students to this exciting field, starting with the examination of the potential for optimizing experience through mindfulness and meditation, the understanding of basic issues in obtaining and interpreting physiological signals, toward the aim of generating ideas for wearable transtech projects.

Students will examine the ideas behind efforts to optimize human experience; practice different meditation techniques to experience the variety of cognitive and affective strategies they use and the varied effects they generate; explore the basic issues in obtaining and interpreting physiological data, and the use of brain stimulation methods such as TMS, dTCS, etc., and use this info to come up with ideas for wearable transtech devices.

The class will be mix of lectures, exercises and demos.

**Mondays 3:20 PM - 6:15 PM (09.11.17 - 09.25.17)**

**Theories of Change** – 1.0 unit

ITPG.GT.2146.001  
(Com Nbr. 21765)

Howard Silverman

From the personal to the political, we all experience desires for change. But change can be hard. Why is that? In this workshop, we will explore and compare models of change from diverse fields of study and practice, including: complexity/resilience theory, system dynamics, behavioral psychology, social movement theory, and program evaluation.

In a series of hands-on exercises, we will use diagramming and change model “canvases” (in the style of the “business model canvas”) to examine case studies of initiatives motivated by social and environmental concerns and opportunities. The resulting mappings (diagrams and canvases) will inform our conversations as we consider and critique strategies for effective engagement. Participants must be willing to co-create a space for collaborative learning and to support each other in discussing challenging issues.

This workshop is informed by systems approaches. Prior familiarity with systems thinking is not required; this class will serve as both introduction for newcomers and augmentation for old hands.

Students will work in small groups to use mapping exercises in examining case studies of social and
environmental initiatives. Case studies will be provided as text, audio, and video. Students are also encouraged to bring their own case studies for discussion. These exercises will challenge students to articulate and clarify both their understandings of complex situations and their hypotheses about bringing about change in areas of concern or opportunity. Throughout the workshop, hands-on exercises will be woven together with introductions to relevant systems theory.

This one-credit course meets on Saturday, November 4 and Sunday, November 5.

**Saturday (11.04.17) 10:00 AM - 4:00 PM**
**Sunday (11.05.17) 10:00 AM - 12:30 PM**  Syllabus

### Automating Video – 2.0 units

ITPG.GT.2147.001  
(Class Nbr. 21941)

In this experimental video class students will learn to use Python and command line tools to explore the possibilities of automating the film-making process. We will cover techniques for capturing, analyzing, editing and manipulating video with code. We'll treat video as a textual as well as visual medium, repurposing found footage to generate new compositions and narratives, and experiment with home-made camera rigs that can be controlled remotely and algorithmically.


### Canvas for Public Discourse – 2.0 units

ITPG.GT.2148.001  
(Class Nbr. 21760)

When you are given a large public canvas, how do you find something to say? This is a course with two primary goals. The first is to provide toolsets for working with a small group to express yourself in ways that are accessible to a wider audience. The other explores the various tactics used over time to change the appearance of physical objects with controlled light and projections. We will look both at projection mapping projects, but also large scale public art projects.

There will be several exercises focused on students honing their own ways of expressing themselves clearly. There will also be some small scale mapping projects in the beginning of the course. There will be a final project, which could be a large scale mapping presentation.

**Mondays (every other week) 3:20 PM - 5:50 PM (09.11.17 - 12.11.17)**

### Design for Discomfort – 2.0 units

ITPG.GT.2159.001  
(Class Nbr. 21854)

Experiences that lead to meaningful growth (for individuals, in relationships, in communities) nearly always involve discomfort. It can be inherent to the process—even a key aspect—of reaching a desired outcome for participants. Discomfort with good reason. This is the starting point for this course.

In The Art of Interactive Design, Chris Crawford makes an analogy between creating interactive media and holding a conversation. A standard design process often looks to set up "conversations" that are comfortable and pleasurable, with a low barrier to entry for users. But in pursuit of meaningful growth, we need to engineer what Douglas Stone at Harvard Law has termed "Difficult Conversations". As designers, artists, and creative technologists, we can find unique insights and devise innovative solutions for leading people through them.

Weekly lectures and assignments will focus on identifying and prototyping creative experiences that involve one of four forms of discomfort (visceral, cultural, control-related, and intimacy-related). Examples will be considered from fields including visual art, performance, memorials, product design, and speculative design. Students will
benefit from some prior familiarity with one or more of the following: psychology, conflict resolution, design-thinking, art-practice, or user-experience. All technical methodologies welcome.

**Mondays 3:20 PM - 5:50 PM (09.11.17 - 10.30.17)**

**Educate the Future** – 2.0 units

ITPG.GT.2149.001  
(Class Nbr. 21919)  
Gregory Dorsainville

Higher Education is ripe for upheaval, with new thinking in the presence of the digital, mobile, and social media revolutions that have changed many other industries. This course will ask you to observe, imagine and create the vision of Higher Education, 1 year, 5 years, 10 years into the future. How will people learn? How will teachers teach? How will you measure your academic success? How will students connect to peers and experts? Who will be able to attend this future? Will higher ed be on your wrist or in a building? Will education be gamified?

These changes are being driven by new tools and opportunities for teaching and learning, but also by increasing weakness in the existing system. The Atlantic recently reported that although more students are graduating high school, “college-enrollment rates have actually decreased—and for the fourth straight year”, halting a trend of increasing higher education matriculation for four plus decades. As higher education in the US no longer guarantees social mobility, its viability is in doubt.

This class will imagine how the current system can be repaired or replaced. Our weekly conversation will have voices from people helping to shape and improve education, with futurists, designers, and content creators. We will explore the current education landscape globally. We will restructure education in terms of experience design, with the goal of improving the experience for the learner. We will discuss how our experiences have motivated our learning. At the end we will design experiences that capture the essences of these visions.

**Wednesdays 6:30 PM - 9:00 PM (10.25.17 - 12.13.17)**

**Faking the News** – 2.0 units

ITPG.GT.2151.001  
(Class Nbr. 21942)  
Ben Moskowitz

Lies. Hoaxes. Folk tales. Conspiracies. Rumors. Propaganda. Clickbait. The so-called “fake news” phenomenon is not new. But these days, misinformation seems to be a heightened concern—and it’s transforming politics, public opinion, and most people’s experience of the internet. In this 6-week class, we will creatively engage with the weird state of politics circa 2017.

We will play with new media manipulation tools to explore the frontiers of political expression online. Participants will engage in ethical research and fabrication, learning new technical skills and critically exploring that which is real and unreal. We will experiment with command-line tools for hacking video, trusty apps for image manipulation, the dark underbelly of the ad economy, Twitter bots, and the insidious next-generation of hoax tech.

**Tuesdays 6:30 PM - 9:25 PM (09.05.17 - 10.10.17)**  
**Syllabus**

**Immersive Listening: Designing Sound for VR** – 2.0 Units

ITPG.GT.2022.001  
(Class Nbr. 21943)  
T. K. Broderick

Until recently 3D sound was a novelty reserved for special uses and reaching a limited audience, no medium in popular culture has been as inherently dependent upon spatial audio as virtual reality. The widespread and standardized implementation of surround sound in film brought cinema to a new level of immersion, but is limited to theatrical exhibition and home theater systems. Today a considerable amount of content is consumed on mobile devices and laptops which excludes the cinematic experience of spatial sound. With the current rise
of cinematic VR and the blurring line between gaming and experiential VR, spatial audio is no longer just an added bonus, but rather a necessity in designing immersive VR experiences. In this course we will explore the emerging field of 3D sound design and for both 360 video and game engine-built VR using a digital audio workstation, game engines, and 3D audio plugins.

*Wednesdays 6:30 PM - 9:00 PM (09.06.17 - 10.18.17)*  
Syllabus

**Intro to 3D Printing** – 2.0 Units  
ITPG.GT.2757.001  
(Class Nbr. 21944)  
Xuedi Chen

3D environments and objects are powerful prototyping tools. This class will introduce the basics of 3D modeling techniques in Rhino and students will learn to create assets for prototyping and 3D printing. The class will take an industrial design approach to design and build with specifications and materials in mind. Students will learn to think, plan, design, and produce well thought out objects to fit their specific needs. (examples: motor mounts, enclosures, wearables etc.)

*Mondays 6:30 PM - 9:00 PM (09.11.17 - 10.30.17)*  
Syllabus

**Intro to Fabrication** – 2.0 Units  
ITPG.GT.2637.001  
(Class Nbr. 21947)  
ITPG.GT.2637.002  
(Class Nbr. 21948)  
ITPG.GT.2637.003  
(Class Nbr. 21949)  
ITPG.GT.2637.004  
(Class Nbr. 21950)  
Benjamin Light

Time to get your hands dirty. Prototypes need to be created, motors have to be mounted, enclosures must be built. Understanding how things are fabricated makes you a better maker.

But hardware is hard. You can’t simply copy and paste an object or working device (not yet anyway), fabrication skills and techniques need to be developed and practiced in order to create quality work. You learn to make by doing.

In this class you will become familiar and comfortable with all the ITP shop has to offer. We will cover everything from basic hand tools to the beginnings of digital fabrication. You will learn to use the right tool for the job.

There will be weekly assignments created to develop your fabrication techniques. There will be in class lectures, demos, and building assignments. Emphasis will be put on good design practices, material choice, and craftsmanship.

*Section 001: Wednesdays 12:10 PM - 2:40 PM (09.06.17 - 10.18.17)*  
*Section 002: Thursdays 12:10 PM - 2:40 PM (09.07.17 - 10.19.17)*  
*Section 003: Wednesdays 12:10 PM - 2:40 PM (10.25.17 - 12.13.17)*  
Syllabus

**Learning Machines: Theory to Practice** – 2.0 units  
ITPG.GT.2011.001  
(Class Nbr. 21766)  
ITPG.GT.2011.002  
(Class Nbr. 21767)  
Patrick Hebron
Over the last decade, machine learning has undergone a philosophical Renaissance through the innovation of a set of computational models and algorithms often referred to as Deep Learning. These ideas have led to concrete advancements in long-standing applied domains such as classification and time-series prediction. But the real excitement over Deep Learning lies in its yet untapped potential.

This course will introduce some of the core technical concepts within Deep Learning and explore how these emerging capabilities will transform the next generation of computing interfaces such as search engines, intelligent assistants, connected homes and open-world video games.

We will use class time and weekly incremental programming exercises to explore the underlying theory and key algorithms of machine learning as well as some of the more abstract insights offered by Deep Learning into vexing phenomenological questions like:

Why do we replay and reconfigure memories in our dreams?
Why do we use only a small portion of our brains at any given time?
Why can we catch a baseball without being able to recite Newton’s equations? And most importantly, what defines learning as a phenomenon?

We will also look at the emerging applications of these technologies to art, design and toolmaking and explore more advanced machine learning tools such as Google’s TensorFlow library.

Required Text:

Programming Platform:
This course will be taught in Python and will expose students to scientific computing and visualization libraries including SciPy and Matplotlib.

Section 001: Mondays 12:10 PM - 3:05 PM (09.11.17 - 10.23.17)
Section 002: Mondays 12:10 PM - 3:05 PM (11.06.17 - 12.11.17) Syllabus

Micro-Environment Exploration Lab – 2.0 units
ITPG.GT.2152.001 (Class Nbr. 21920) Chris Woebken / Elizabeth Hénaff

Metagenomics is the field of research which investigates the microbial component of the environment. It is a rapidly growing field, enabled by the recent decrease in cost and increase in throughput of DNA sequencing technology. We can now measure the microbial component of our environment and have the opportunity to incorporate this new microbial metric into the design of our built environments and products.

In this class we will cover a basic understanding of the state of current research in environmental microbiomes. Students will get hands-on experience in which they will collect their own samples, obtain DNA sequences, and learn the computational methods to analyze genomic data. We will design physical devices to interact with this invisible component of our environment, either in form of sampling instruments, bioreactors or bio receptive substrates that propose new symbiotic relationships with the microbial environment.

By the completion of this course, students will be able to:
• Understand of the state of current research in environmental microbiomes
• Hands on experience gathering samples and computational methods for DNA sequence analysis for individual samples and comparative methods for large datasets
• Introduce speculative thinking to their practice
• Materialize concepts with new strategies for rapid product prototyping
• Develop technological visions that provoke thought rather than communicate a vision of how things will or should be
We will work with free and publicly available datasets. Students that are interested in gathering their own sequence data, should expect to cover $200 for outside lab costs (optional).

**Fridays 3:20 PM - 5:50 PM (10.27.17 - 12.15.17)**  Syllabus

**Performative Avatars – 2.0 units**

ITPG.GT.2153.001  
(Class Nbr. 21951)  
Matt Romein

Whether it’s through photo realistic scans found in current-gen video games or the cartoonish and low-fi aesthetic of Bitmoji there is no limit to ways in which the body and the self are represented in digital spaces.

This 2 credit class will look at how avatars have been historically used in the realm of art, commerce, and entertainment and utilize existing avatar creation tools to develop projects that examine identity, body politics, and contemporary performance. In class we will cover the basics of Unreal Engine, photogrammetry, 3D scanning, and model rigging although students will be encouraged to use existing skill sets and creative thinking to complete some of the smaller week-by-week assignments. The class will culminate with a short performance, small installation or single/multi-channel video piece using one or more of the techniques covered in class. This can be a solo project or a group project.

In this class students will:
– Explore how avatars can be utilized in your creative practice
– Gain an introductory understanding of Unreal Engine, photogrammetry, model rigging, and 3D scanning.
– Learn how to recontextualize digital spaces for the purposes of art, installation, and performance.
– Broaden your thinking of what performance can be, both in a physical setting and digital setting.
– Think critically about how physical bodies inhabit digital spaces and how our the hardware and software we use reinforces the acceptance and value of certain kinds of bodies.

**Mondays 12:10 PM - 2:40 PM (09.11.17 - 10.30.17)**  Syllabus

**Prototyping Interactive Spaces – 2.0 units**

ITPG.GT.2154.001  
(Class Nbr. 21929)  
Brett Renfer

This class is a hands-on primer focused on quickly concepting and prototyping interactive environments. Through a series of one-week sprint projects, students will learn how to rapidly sketch interactions using a variety of tools and methodologies, ranging from paper prototypes of mechanisms to projection masking. The class will conclude with a 3-week final project that applies the prototyping process to a real-world design challenge.

Each class will include a short lecture and an in-class workshop. Throughout these classes, students will learn how to: role-play/bodystorm spatial interaction; use keyboard hacks to sketch tangible interfaces; build lo-fi mock-ups to test kinetic mechanisms; and use a range of out-of-the-box technical tools such as Spacebrew and TSPS to quickly build proof-of-concept technical prototypes.

**Tuesdays 6:30 PM - 9:00 PM (10.24.17 - 12.05.17)**

**Sketching Communities - Interactive Documentaries – 2.0 units**

ITPG.GT.2155.001  
(Class Nbr. 21952)  
Alon Chitayat

New York City -- perhaps no other place in the world can one be surrounded by more cultures, cliques, and communities. When is the last time you stopped and looked around?

In this class, students will choose a specific community in the five boroughs and explore and document their
way of life through on-site sketching. Through this process, our hope is to uncover and reveal insights about ourselves and the way we perceive the world around us.

The course will begin with a survey of other interactive projects using drawing and sketching as the primary medium for storytelling. Several sketching techniques and media (pencil, charcoal, ink, and watercolor) will be covered, in addition to techniques for sketching environments and perspectives, motion, gestures, and characters on site. The class will culminate in a group show of the students' work -- work that will celebrate the fabric and diversity of the people around us.

All levels of drawing experience are welcome!

**Tuesdays 3:20 PM - 5:50 PM (09.05.17 - 10.17.17)** Syllabus

**Socially Engaged Art and Digital Practice** – 2.0 units

ITPG.GT.2156.001
(Class Nbr. 21755)

Clarinda Mac Low

This course will explore how digital tools are and can be used in socially engaged art practice, where art and creative work intersect directly with people and civic life. Students will be asked to propose several projects as thought experiments, and fully realize one online/digital socially engaged project. The different definitions of “socially engaged practice” will be reviewed and discussed, including discussion of “best practices” when in conversation with different communities, and the politics of how we interact, as well as how we approach the physical as well as social space around us. We will work on how digital tools have been used in socially engaged art and how they could be used further, and experiment with how online life can functions as a public space. We will have some meetings in public spaces, and there will be some writing and reading as well as practical applications of methodology, as well as two or three guest lecturers.


**Talking and Storytelling: The Art of Effective Communication** – 2.0 units

ITPG.GT.2175.001
(Class Nbr. 21955)

Adaora Udoji

Successfully communicating is a critical skill not only for a graduate thesis, but also in the career that will follow. It boils down to this question: Are you persuading, influencing, or communicating your thoughts and ideas effectively, to any audience be it three people or three hundred? In this class we will systematically work our way through a four-step method to improve your ability to connect with your audience. We will explore the science that explains why stories work. We will tackle a basic framework for what a story is, using a process and foundation to develop any talk or presentation. Now that we have what you are going to say, we will also focus on how you say it, along with strategies to give you confidence to be your best self when speaking in front of a crowd. This is a particularly good class to take in preparation for your thesis in the Spring. This seminar examines and deconstructs verbal storytelling as a discipline in its own right. It is an exploration of speaking and storytelling as a fundamental building block of human evolution and innovation. We will look at the learnings from ancient times through modern scientific research—looking at theories attempting to explain what happens physiologically and psychologically when we are moved by a spoken narrative. This is a contextual approach that will focus on both the theory and the application in the marketplace of developing and delivering narrative as it relates to presenting oneself, a product or a service. As such, we seek to understand what drives current trends toward narrative education and storytelling as a competitive advantage in learning, communicating, persuading and influencing. Students will also contribute to designing a collaborative verbal communication template for the class and for the Final Project: a presentation that applies some of the concepts learned to themselves or their projects, products, ventures and/or service concepts.

**Tuesdays 12:10 PM - 2:40 PM (10.24.17 - 12.05.17)** Syllabus

**What Happens When The Internet Dies?** – 2.0 units
What do we do when the Internet is killed or dies? Or when the network is taken down by natural circumstances? How can we re-establish standalone or minimally dependent communications? How can we detect and differentiate between natural interference and designed interference, or can we? This class will investigate the design of the Internet itself, current communications protocols, and emerging techniques to supplement the Internet or establish separate networks. Besides architectural basics, we will look at case studies on how communities, activists, and organizations have reacted to network outage. Guest speakers will describe what they learned about the consequences of dependency on cloud and grid based communications. Topics covered will include meshnets, online-offline synch, re-utilization of non-Internet networks, layers of the current family of Internet protocols, alternate analog techniques, and case studies from Standing Rock, humanitarian disasters, Red Hook Brooklyn, and others. The goal of the class is to challenge students to conceptualize at least one other workable alternative to the Internet in the case of interruption of service. Students with or without network background are both highly encouraged to enroll.

**Tuesdays 6:30 PM - 9:00 PM (09.05.17 - 10.17.17)**

### Culinary Physics – 3.0 units

**FOOD.GE.2160.001**  
(Class Nbr. 4481)  
(Stefani Bardin)

This studio and seminar course explores the basic principles of food biochemistry, enzymology and food processing and how they relate to memory, the senses and the processing of information. Students will also learn basic principles of molecular gastronomy and modernist cuisine as framing devices for understanding how food also functions in the context of bodily health, environmental health as well as cultural and political narratives. Our food system consists of more than food production and consumption and this class will address how science and food science plays a more integral role in this system and how this knowledge can be mined for work that creatively and functionally contributes to this emerging field. Assignments for the class will be based on the incorporation of food science into design and technology projects that uses food as a substrate to explore and illuminate information within the food system. Workshops involve using liquid nitrogen + hydrocolloids as well as creating performative food objects and a Futurist meal.

*Note: This course will meet in the Education Building, 35 West 4th Street, 10th Floor, Room 1080 (Kitchen).*

**Thursdays 7:00 PM - 8:40 PM (09.07.17 - 12.14.17)  Syllabus**

### Developing Assistive Technologies – 3.0 units

**ITPG.GT.2446.001**  
(Class Nbr. 22001)  
(Claire Kearney-Volpe / Scott Fitzgerald / Anita Perr)

This multi-disciplinary course allows students from a variety of backgrounds to work together to learn about and develop assistive technology. Partnering with outside organizations, students will work in teams to identify a clinical need relevant to a certain clinical site or client population, and learn the process of developing an idea and following that through to the development of a prototype product. 

This course provides an overview of some of the assistive technologies currently used by people with disabilities to participate in life's activities, including those used for computer access, mobility, and activities of daily living (ADLs). Working in small groups, you will work with a mentor with a disability to solve a problem by creating a tech solution making the problem easier to deal with. We have a number of ongoing projects such as developing interactive activities to improve balance of pre-schoolers with hearing impairments and cochlear implants, or working with a deaf woman in Argentina to develop a tool that can allow her to participate in group discussions. Other projects may include working with people with physical and sensory disabilities. This course provides you your own evidence of the benefit of using client centered design with input from multiple professionals.
Interaction Design Studio – 3.0 units
DM.GY.6143.I
(Class Nbr. 21748)
R. Luke DuBois

The Interaction Design Studio is a graduate production course that looks at the ways in which we can build compelling interactions through a combination of software engineering and best practices in HCI. For this course, students will investigate standard (keyboards, mice), expanded (controllers, cameras) and bespoke (custom-built) physical interfaces for sensing user input and look at ways in which these inputs can be mapped in software to develop successful experiences. Students will be assigned regular case studies and design sketches exploring the pros and cons of different interfaces; they will also develop and user-test a semester-length design project using a physical interface in a novel way to create a tool, a performance, an installation, or something in between. The course will be hardware and software agnostic but will be taught primarily in Max/MSP/Jitter, a visual development environment for real-time media.

Course Objectives

Students in this course will:
• familiarize themselves with best practices in HCI through a series of case studies, informed by readings in cognitive analysis.
• apply these best practices to a variety of interface tasks using software.
• learn standard computer interface protocols (serial interfaces, network interfaces) to understand design from a standpoint of maximum interoperability and flexibility.
• experiment with different techniques for mapping a user input under a variety of situations.
• propose and develop a complete experience as a final project.

Alt Docs: Inventing New Formats for Non-fiction Storytelling – 4.0 units
ITPG.GT.2018.001
(Class Nbr. 22014)
Julia Irwin / Ziv Schneider

How does the ability to capture and publish interactive media lend itself to documentary storytelling? How are traditional genres enriched by the addition of new-media techniques, such as 360 video and volumetric capture? How can the use of these techniques help to evolve the definition of nonfiction storytelling?
The goal of the class is to investigate the merging and branching of documentary, journalism and games and to explore ways to innovate in this frontier.

The class focuses on two main technical areas:
1. Capture methods (including 360 video and 3D scanning).
2. Composition of material in a 3D environment in Unity3D: adding interactivity, interface design, optimization and publishing considerations.

This is a production class in which the projects will be content-driven. A successful project is one where the story is better told through the incorporation of the mediums chosen over a traditional cinematic documentary or journalistic piece.

The final project students will create a prototype for an interactive documentary piece in a digital 3D environment composed with Unity. The students are also encouraged to combine other components into their projects (such as sculpture, performance, web experiments and public interventions).

Basic Analog Circuits – 4.0 units
ITPG.GT.2728.001
(Class Nbr. 21756)
Eric Rosenthal
Today’s mostly digital world also requires a basic knowledge of circuits that do not require computer processing. Analog circuits are simpler, lower cost, smaller and require less power and still perform many of the functions of digital circuits. In this course students will learn about the basic principles of electricity, components such as resistors, capacitors, diodes, transistors, audio amplifiers, power supplies and timers and circuits that interface to digital devices. The course includes circuits design and fabrication through lectures and hands on labs. Students will also learn the operation of electronic test equipment such as the digital multimeter, oscilloscope and function generator.

**Mondays 12:10 PM - 3:05 PM (09.11.17 - 12.04.17)**   Syllabus

**Big Screens – 4.0 units**

ITPG.GT.2680.001  
(Class Nbr. 22021)  
Mimi Yin

This class is dedicated to experimenting with interactivity on large-scale screens. Students will work in pairs to develop one project over the course of the semester, culminating with a showing at InterActive Corps' 120 X 12-foot video wall at their corporate headquarters on 18th St. and the West Side Highway. A mock-up of the system is available at ITP for testing. Class time is divided between independent project development, critique, technical demonstrations, and field trips to IAC. Registration for this course will happen through a separate lottery which you will enter in pairs.

**Fridays 3:20 PM - 5:50 PM (09.08.17 - 12.15.17)**   Syllabus

**Bodies in Motion – 4.0 units**

ITPG.GT.2773.001  
(Class Nbr. 22026)  
Todd Bryant / Kathleen Sullivan

**Course Description:** This course provides an introduction to the concepts of motion capture and the motion capture production pipeline to perform and record 3D animations for film and video games as well as stream for live performances. Students will learn all of the tools for tracking props and performers using MAGNET’s cutting edge motion capture studio. Students will also develop concepts around the technology and integrate their data into 3D computer graphics along with keyframe and procedural animation and custom 3D assets to build final projects using the Unreal game engine.

**Program Learning Objectives:** To design a workflow of MoCap and ‘how to’ guides for diverse type of projects using motion capture and the basics of world and character building in the game engine Unreal. Reading assignments introduce students to constructed historical perspective of MoCap and investigates principles particular to animation and performance. The objective of the course is to allow students to understand the importance of pre-production and planning which includes notions of storytelling, 3D modelling and texturing, best practices to capture the sessions, world building methods in video art and game development, and live show running.

**Course Objectives**

- To create storyboards and define recording shots before capturing data.
- To understand and use the correct motion capture pipeline
- To learn the skills to direct an effective motion capture session (best calibration)
- To learn the best practices for capturing and cleaning data
- To be able to apply the data to models in Maya, Unreal Engine, and Max/Jitter
- To be able to perform real-time retargeting for Live Performances

**Course Structure**

The class consists of a weekly lecture and a weekly 2 hour lab session. Students will work in groups and will be required to attend a self-selected lab session on weekends. Examples of motion capture projects will be presented in lectures and discussed in the classroom. Students must demonstrate satisfactory achievement of course objectives through fulfillment of one final project at the end of the semester and a mandatory submission for the programs showcase. Final projects will require
students to use a wide variety of software and studio time at MAGNET’s black box mocap studio. Students will be able to process their motion capture data for use in an animation or live performance. Collaboration with students and faculty from other programs is encouraged.

*This four-credit course will meet at 2 Metrotech, Brooklyn, NY.*

*Tuesdays 6:30 PM - 9:00 PM (09.05.17 - 12.15.17)  Syllabus*

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**Cabinets of Wonder – 4.0 units**

ITPG.GT.2470.001 (Class Nbr. 22028)  Nancy Hechinger

If you were inventing a museum today, what would it look like? Who would be there? What would its main purpose be? The first museums were called Cabinets of Wonder. Usually, a viewer with a guide, often the collector, would open doors and drawers to see what was inside—amazing things from different parts of the world, different times. They were windows on the world to places the visitors would probably never be able to go; to see things they would never otherwise be able to see. And now there’s television, movies, the internet and travel. Why do people go to museums now? Will they in the future? Today, most museums seek to educate and to include more and more diverse visitors than they used to. How do people learn in public spaces? How do we know that they do? How can they make use of the new interactive technologies and not lose what’s special about them? The class is an exploration, observation and theory class with some design mixed in. Museum and exhibit visits are your primary assignments for the first half of the course—usually accompanied by a reading. You will also make some record of your visit (including a sketchbook, a dioramas, reviews). There will be guest speakers from Museums and exhibit design firms, and several field trips. In the second half of the course, you begin to imagine how you might reinvent a museum and develop a full-scale presentation of your own Cabinet of Wonder.


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**Creative Computing – 4.0 units**

ITPG.GT.1000.001 (Class Nbr. 22034)  David Rios

This course combines two powerful areas of technology that will enable you to leap from being just a user of technology to becoming a creator with it: Physical Computing and Programming. The course begins with Physical Computing, which allows you to break free from both the limitations of mouse, keyboard & monitor interfaces and stationary locations at home or the office. We begin by exploring the expressive capabilities of the human body and how we experience our physical environment. The platform for the class is a microcontroller (Arduino brand), a very small inexpensive single-chip computer that can be embedded anywhere and sense and make things happen in the physical world. The core technical concepts include digital, analog and serial input and output.

The second portion of the course focuses on fundamentals of computer programming (variables, conditionals, iteration, functions & objects) as well as more advanced techniques such as data parsing, image processing, networking, computer vision. The Javascript 'p5' programming environment is the primary vehicle. P5 is more oriented towards visual displays on desktops, laptops, tablets or smartphones but can also connect back to the physical sensor & actuators from the first part of the class. The course is designed for computer programming novices but the project-centered pedagogy will allow more experienced programmers the opportunity to go further with their project ideas and collaborate with other students.

The second portion of the course focuses on fundamentals of computer programming (variables, conditionals, iteration, functions & objects) as well as more advanced techniques such as data parsing, image processing, networking, computer vision. The Java-based ‘Processing’ programming environment is the primary vehicle. Processing is more oriented towards visual displays on desktops, laptops, tablets or smartphones but can also connect back to the physical sensor & actuators from the first part of the class. The course is designed for computer programming novices but the project-centered pedagogy will allow more experienced programmers the opportunity to go further with their project ideas and collaborate with other students.
What can computation add to human communication? You will gain a deeper understanding of the possibilities of computation—possibilities that will augment and enhance the perspectives, abilities and knowledge you bring from your field of study (e.g. art, design, humanities, sciences, engineering). At first it may feel foreign, as foreign as learning a new language or way of thinking. But soon, once you get some basic skills under your belt, you’ll be able to make projects that reflect your own interests and passions.

**Tuesdays 3:20 PM - 5:50 PM (09.05.17 - 12.05.17)** Syllabus

**Data Art** – 4.0 units

ITPG.GT.2571.001 (Class Nbr. 22035) Genevieve Hoffman

Fascinating and terrifying things are happening at the intersection of data and culture. Our lives are being constantly measured, and information about us is being surveilled, stolen, and commodified. Dialogue around this data revolution has been dominated by corporations, governments, and industry - but what about the arts? In this class, we’ll investigate the means by which artists can engage (and are engaging) in the collection, processing, and representation of data. Using a research-focused, prototype-based approach, we’ll build a series of collective and individual projects to interrogate the ‘new data reality’. Students will use Processing, along with a variety of analog media or open-source data tools (such as D3.js, Miso, OpenRefine, MapBox & CartoDB).

**Mondays 9:00 AM - 11:55 AM (09.11.17 - 12.04.17)**

**Designing for Digital Fabrication** – 4.0 units

ITPG.GT.2890.001 (Class Nbr. 22036) Daniel Rozin

The ability to digitally fabricate parts and whole pieces directly from our computers or design files used to be an exotic and expensive option not really suitable for student or designer projects, but changes in this field in the past 5 years have brought these capabilities much closer to our means, especially as ITP students. ITP and NYU now offer us access to laser cutting, CNC routing, and 3D stereolithography. In this class we will learn how to design for and operate these machines. Emphasis will be put on designing functional parts that can fit into a larger project or support other components as well as being successful on a conceptual and aesthetic level. In this class we will discover methods to design projects on CAD applications for total control of the result, and we will develop algorithmic ways to create designs from software (Processing) to take advantage of the ability to make parts and projects that are unique, customizable, dependent on external data or random. The class will include 3 assignments to create projects using the three machines (laser, router, 3D) and the opportunity to work on a final project.


**Designing for Live Performance** – 4.0 units

ITPG.GT.2521.001 (Class Nbr. 21757) Andrew Lazarow

For centuries, great works of music, theater, and dance, have combined art and science to make integrated performances that move audiences. Today, we are seeing exciting changes as artists experiment with video and real-time interactivity to draw audiences even deeper into the performance, and enhance the shared experience of the moment. This class explores conceptual approaches to design, industry-standard software, prototyping frameworks, and data flow programming to provide student designers with the cutting-edge tools necessary to confidently collaborate with writers, directors, and performers. Structured as a studio course, students will make designs for contemporary performance pieces, and collaborate with working artists to design original projects.

**Tuesdays 12:10 PM - 2:40 PM (09.05.17 - 12.05.17)** Syllabus
**Digital Imaging: Reset – 4.0 units**

ITPG.GT.2550.001  
(Class Nbr. 21759)  
Eric Rosenthal

Digital cameras and printers are making photography more ubiquitous and more useful than ever. This course is a workshop that looks at changing the rules for capturing and printing digital imagery. By gaining a better understanding of the engineering fundamentals and limitations of digital photography, students can produce breathtaking images with all the benefits of digital media but with an image quality that rivals film. Students experiment using low cost, hands-on tips and tricks in software and hardware to capture high dynamic range, expanded color, night color, 3D, time lapse, and stop motion images using a digital camera and printer. While using mostly off-the-shelf tools, these experiments require students to dig down to see the nitty-gritty of today’s and tomorrow’s technologies for digitally sensing, encoding, compressing, transmitting and displaying images.

**Mondays 3:20 PM - 6:15 PM (09.11.17 - 12.04.17)**  
Syllabus

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**Fandom – 4.0 units**

ITPG.GT.2965.001  
(Class Nbr. 22037)  
Zoe Fraade-Blanar

Doctor Who. Anime. PBR. Why are we into the things we're into? The modern rise in nerd culture has changed the way we think about fans and the way they act. Geekiness, once a mark of stigma, has transformed into an important focus for creators, marketers, and a million internet celebs.

Fandom is the study of the communities that form around popular culture, whether based on a shared love of Star Wars, the New York Yankees, Taylor Swift, or 3D printing. Good fan management can lead to hordes of adoring, evangelical users; bad fan interactions can spell shame and embarrassment. From Pokemon to Air Jordans, this class explores the influences and motivations that have led to the current renaissance in fandom. We chart the evolution of fan culture as a social and economic force, from early 15th century religious manias to its present rebirth in the age of digital connectivity and anonymity. Commercialization, appropriation, monetization, love-bombing, all of these are important tools for any project creator who wants to inspire large groups of people to do their bidding.

**Wednesdays 6:30 PM - 9:00 PM (09.06.17 - 12.13.17)**  
Syllabus

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**Game Design and the Psychology of Choice – 4.0 units**

ITPG.GT.2161.001  
(Class Nbr. 22038)  
Gregory Trefry

As game and interaction designers we create systems and choices that can either prey upon our psychological foibles or help us avoid decision pitfalls. It is our responsibility to understand how we decide, to consider the ethics of the systems we create and to practice designing systems in a purposeful manner.

Game Design & The Psychology of Choice will provide interaction and game designers with an understanding of the factors that influence behavior and decision-making by looking at the intertwining of cognitive psychology and economics through the development of behavioral economics. These disciplines study behavior on the individual and group level, often revealing some of the why behind the rules of thumb and folk wisdom that game designers come to intuitively. But understanding the why—why we fall into decision traps; why certain tradeoffs tax our brain more than others; why we are overconfident about our abilities; why certain decisions make us uncomfortable—allows us to more purposefully apply our design craft, both in and out of games. Finally, as a class, we will take what we learn about how we think and create series of game experiences based around key cognitive science concepts.

Assignments may include:
• Mod a cognitive science experiment into a game or experience  
• Analyze and present a game through the lens of cognitive science and behavioral economics  
• Create game or experience based around a particular insight from cognitive science or behavioral economics
Fridays 9:30 AM - 12:15 PM (09.08.17 - 12.15.17)

**Live Web** – 4.0 units

ITPG.GT.2734.001  
(Class Nbr. 22039)

Shawn Van Every

The World Wide Web has grown up to be a great platform for asynchronous communication such as email and message boards which has extended into media posting and sharing. Recently, with the rise of broadband, more powerful computers and the prevalence of networked media devices, synchronous communications have become more viable. Streaming media, audio and video conference rooms and text based chat give us the ability to create new forms of interactive content for live participants.

In this course, we'll focus on the types of content and interaction that can be supported through web based and live interactive technologies as well as explore new concepts around participation. Specifically, we'll look at new and emerging platforms on the web such as HTML5, WebSockets and WebRTC using JavaScript and Node.js.

Experience with web technologies are (HTML and JavaScript) are helpful but not required. ICM level programming experience is required. ( Social Software, Internet, Video )

Tuesdays 12:10 PM - 2:40 PM (09.05.17 - 12.05.17)

**Magic Windows and Mixed-Up Realities** – 4.0 units

ITPG.GT.2122.001  
(Class Nbr. 22041)

Rui Pereira

Magic windows that allow us to peek into different realities without leaving our physical space, lenses that reveal hidden layers of objects or navigating new universes within the same room. More than ever, mobile/wearable devices are getting a human-scale understanding of space and motion allowing us to create more intimate interactions with our surrounding spaces, leveraging them as a canvas to experience other realities. We now have the potential to give life to inanimate objects, tell stories through space, customizing private views of public spaces and recognize places we've never been.

We'll question what it means and how can we blend reality exploring themes such as: augmented space and new paradigms in social interaction, public space and privacy; storytelling and navigating the physical space like turning pages in a book; tangible interfaces, mixed objects and animism; Magic windows, x-ray vision, time-machines and impossible universes; Far away so close: telepresence and remote collaboration.

The course will survey the past, current and up and coming technologies and experiences in Mixed Reality including environmental augmented reality and interactive projection mapping, handheld devices and head mounted displays fostering a strong user experience perspective on the affordances and constraints of each. We'll research and discuss the design principles and guidelines for creating mixed reality experiences focusing on the links between real and virtual objects, interaction space and asymmetries between physical and digital worlds, environmental semantics and multimodal and tangible interaction.

Technologies explored will include and are not exclusive to Unity3D, Vuforia, Microsoft Hololens, Google Project Tango, volumetric video, SLAM, image and object recognition, depth sensing, projection mapping.

Students should have previous working knowledge of Unity3D and feel comfortable with independently developing using this platform. Code samples will be provided for each technology/platform taught.

A working knowledge of Unity3D may be gained by going through the Unity 5 3D Essential Training Lynda Course prior to the course (log in to Lynda for free via https://www.nyu.edu/lynda).

Students should feel free and are invited to use any other technologies they might find suitable to develop their ideas.

Wednesdays 6:30 PM - 9:00 PM (09.06.17 - 12.13.17)
New Interfaces for Musical Expression – 4.0 units

ITPG.GT.2227.001
(Class Nbr. 22084) Greg Shakar

The course focus is on the design and creation of digital musical instruments. Music in performance is the primary subject of this class. We approach questions such as "What is performance?" "What makes a musical interface intuitive and emotionally immediate?" and "How do we create meaningful correlations between performance gestures and their musical consequences?" Over the semester, we look at many examples of current work by creators of musical interfaces, and discuss a wide range of issues facing technology-enabled performance - such as novice versus virtuoso performers, discrete versus continuous data control, the importance of haptic responsiveness as well as the relationship between musical performance and visual display. Extensive readings and case studies provide background for class discussions on the theory and practice of designing gestural controllers for musical performance. Students design and prototype a musical instrument - a complete system encompassing musical controller, algorithm for mapping input to sound, and the sound output itself. A technical framework for prototyping performance controllers is made available. Students focus on musical composition and improvisation techniques as they prepare their prototypes for live performance. The class culminates in a musical performance where students (or invited musicians) will demonstrate their instruments. Prerequisites: ITPG-GT.2233 (Introduction to Computational Media) and ITPG-GT.2301 (Physical Computing).

Tuesdays 6:30 PM - 9:00 PM (09.05.17 - 12.05.17) Syllabus

Political Uses of Social Media – 4.0 units

ITPG.GT.2930.001
(Class Nbr. 22085) Clay Shirky

In this course, we will define politics as group struggle over rules for allocation of scarce resources or treatment of people, then ask "What difference does social media make to those struggles?"

The relationship between media and politics has always been complex. Newspapers accompanied the rise of democracy; radio and TV have always been tools of propaganda. Social media tools, such as Twitter, Facebook, WeChat and even simple text messaging offer new capabilities. They let amateurs publish without professional intermediaries. They help previously uncoordinated groups to synchronize opinions and coordinate actions. And they let groups document the results, feeding back into their new ability to publish.

The goal of the class is to help students think about political uses of social media as analysts – “What is changing as a result of social media?” – and as designers – “How could someone use social media to create political pressure?” We will discuss how groups typically excluded from the political process us social media to pursue their goals. The work of the class is weekly readings and forum posts, along with three papers of increasing size and complexity.

To keep the scope manageable, we will study uprisings, but not ordinary electoral politics. We will pay particular attention to the use of social media to affect interactions between citizens and governments, discussing interventions or events like the the Arab Spring, the Occupy movement, and the Wukan protests.

Mondays 12:10 PM - 2:40 PM (09.11.17 - 12.12.17) Syllabus

Pop Up Window Displays – 4.0 units

ITPG.GT.2162.001
(Class Nbr. 22086) Gabe Barcia-Colombo

In New York City, every storefront window has the possibility to tell a story, spark a conversation or inspire an interaction. This workshop will focus on creating innovative interactive pop up installations designed for public window displays. A successful window is one that clearly delivers a message directly to the public. How do we create interactive displays that engage the public with a distinctive voice or style? Over seven weeks, students will concept, prototype and build an interactive experience meant to be installed in a storefront or commercial
display. This course will explore lighting, design, and budgeting of durable interactive window installations. Previous fabrication or programming experience is encouraged.

This is a four-credit course.

Wednesdays 6:30 PM - 9:00 PM (09.06.17 - 11.29.17) Syllabus

Programming from A to Z – 4.0 units

ITPG.GT.2536.001 Daniel Shiffman
(Class Nbr. 22087)

This course focuses on programming strategies and techniques behind procedural analysis and generation of text-based data. We'll explore topics ranging from evaluating text according to its statistical properties to the automated production of text with probabilistic methods to text visualization. Students will learn server-side and client-side JavaScript programming and develop projects that can be shared and interacted with online. This fall the course will also explore topics in machine learning as related to text. There will be weekly homework assignments as well as a final project.

Tuesdays 12:10 PM - 2:40 PM (09.05.17 - 12.05.17) Syllabus

Project Development Studio – 4.0 units

ITPG.GT.2564.001 Mitchell Joachim
(Class Nbr. 22378)

This is an environment for students to work on their existing project ideas that may fall outside the topic areas of existing classes. It is basically like an independent study with more structure and the opportunity for peer learning. This particular studio is appropriate for projects in the area of interactive art, programing, physical computing and digital fabrication. There are required weekly meetings to share project development and exchange critique. Students must devise and then complete their own weekly assignments updating the class wiki regularly. They also must present to the class every few weeks. When topics of general interest emerge, a member of the class or the instructor takes class time to cover them in depth. The rest of the meeting time is spent in breakout sessions with students working individually or in groups of students working on related projects.

Tuesdays 3:20 PM - 5:50 PM (09.05.17 - 12.05.17)

Prototyping Electronic Devices – 4.0 units

ITPG.GT.2845.001 Deqing Sun
(Class Nbr. 22088)

The most difficult part of prototyping is not the building process, but the process of deciding how to build. If we choose proper technology for prototypes, we can improve their robustness and simplicity. This course will cover available and affordable technologies for ITP students to build prototypes. The course will start from soldering, wiring and LED basics. Then it extends to multitasking, signal processing, communication and advanced skills beyond PCom class. Each session will have lectures followed by in class practice with guidance. Workshop sessions during midterm and final period allow students to work on their own project with help from instructors. No required assignment. Students will listen to lectures and do hand-on practice in class. There will be workshops for students to work on their midterm and final project for other classes.

Tuesdays 6:30 PM - 9:00 PM (09.05.17 - 12.05.17) Syllabus

The Future of Sculpture – 4.0 units

ITPG.GT.2164.001 Kevin Siwoff
(Class Nbr. 22090)
This is an advanced seminar exploring the themes, production methodologies, and dynamic definition of sculpture in the 21st century. Much of the class will look with a critical eye through the lens of technology - What is technology’s role in the motivation, production, and proliferation of sculpture?

Students in this course will: Gain understanding of major topics/themes in contemporary sculpture; Learn about the various digital and historical processes used in sculpture / object making; Apply critical thinking and discourse to weekly readings and discussions; Visit studios / museums / facilities dedicated to the production and support of sculpture in NYC.

The class will consist of weekly discussions, based on readings, lectures, guest artist visits and a class trip to a fabrication facility. The decision to split the class into 3 sections: Production, Themes of power / the politics of objectification today, and A multi-sensory, multimedia definition of sculpture, was inspired by the Sculpture Center’s publication series Inquiries Into Contemporary Sculpture.

Thursdays 6:30 PM - 9:00 PM (09.07.17 - 12.14.17) Syllabus

The Independent Business – 4.0 units

ITPG.GT.2165.001 Joshua Knowles / Jennifer van der Meer
(Class Nbr. 22091)

Most businesses achieve success without raising millions of dollars or becoming the media darling start-up unicorn du jour. That’s what we’ll focus on: how can you corral the resources you have available right now to turn an idea you’re passionate about into a functional business?

Maybe you’re looking for a “lifestyle” business — something that fits into your existing life and interests. Or maybe you do want to drive hard and compete, but you want to run your business on your terms and for your benefit without being steered by investors. Even if you do find the idea of hitting the VC jackpot compelling, you still have to take your first baby steps and prove your business first.

Many ITP alums and professors have gone down this path of the smaller, independent business with great success. We’ll explore how these businesses (and others) have found their niches. And we’ll adapt methods from business school and startup accelerators that optimize for focusing on customer needs, establishing a business model, and validating your work by getting to that first sale. Join this class to work as an individual or with a team.

Thursdays 6:30 PM - 9:00 PM (09.07.17 - 12.14.17)

The Poetics of Space – 4.0 units

ITPG.GT.2166.001 Sarah Rothberg
(Class Nbr. 22092)

"Memories are motionless, and the more securely they are fixed in space, the sounder they are." (Gaston Bachelard, The Poetics of Space). This course is about exploring the unique affordances of virtual space in order to create VR experiences that transcend the (still awkward) headset. In class we will: Read and discuss relevant interdisciplinary writings from architecture, philosophy, neuroscience, art history, and poetry; Have in-class demos for core concepts of Unity3d for VR; Group critique of each other's work; Analyze the successes and failures of available VR apps; Have visits from guests VR creators

Students will walk away with:
An introduction to 3d concepts and Unity for VR (for multiple headsets)
A deep dive into what makes a meaningful VR experience
A light introduction to other methods of developing Virtual Reality experiences (360 video, Oculus Medium, AFrame)
Command of current practices in VR design
Several weekly explorations (both low-tech and virtual)
A final interactive Virtual Reality project (which can be executed in Unity or on another platform)
Wednesdays 6:30 PM - 9:25 PM (09.06.17 - 11.29.17)

The Temporary Expert: Research-based Art and Design Practice – 4.0 units

ITPG.GT.2853.001 (Class Nbr. 22093) Marina Zurkow

Cultivating a “Research-based Practice” requires an artist/designer to be a pioneer, a detective and a mystic all in one. What does it look like to make work in, through and as research? How do you follow a hunch? Engage experts and passersby to explore both legitimate AND preposterous leads? Be expansive? How do you leave your own trail of documentation that can contribute to a body of knowledge beyond the products of your own art? These forms of research may mix a variety of scientific and intuitive methods. The artist/designer is free to employ speculation, open-endedness, and irony; to use design as a way to probe or even provoke the chosen fields of inquiry.

The class is devoted to the question of how to initiate and investigate research and incorporate it intelligently and sensitively into your work. This class is about developing your own idiosyncratic and well-documented means of pulling threads, following leads, and becoming fearless about asking for help and others’ expertise. You become a temporary expert.

Through experimentation, hands-on practice, case studies, guest speakers from both art and science, and readings on ethnography, research, and the idea of a public, we will explore method, documentation and presentation of your research, and the merits of both success and failure.

Student work is divided into one 4-week research topic/prototype and one final 8-week research topic/project. All topics will have historical, technological and social components to explore. Research includes ethnography, interviews, published papers, media, video, drawing, visiting archives, and at least three face-to-face meetings with strangers for each of the assignments. We will look at artists and designers whose work is based on research, and ones whose work IS the research (art in the form of lecture, field notes, tours, experiments, etc).

Wednesdays 3:20 PM - 5:50 PM (09.06.17 - 12.13.17) Syllabus

Understanding Networks – 4.0 units

ITPG.GT.2808.001 (Class Nbr. 22094) Thomas Igoe

Interactive technologies seldom stand alone. They exist in networks, and they facilitate networked connections between people. Designing technologies for communications requires an understanding of networks. This course is a foundation in how networks work. Through weekly readings and class discussions and a series of short hands-on projects, students gain an understanding of network topologies, how the elements of a network are connected and addressed, what protocols hold them together, and what dynamics arise in networked environments. This class is intended to supplement the many network-centric classes at ITP. It is broad survey, both of contemporary thinking about networks, and of current technologies and methods used in creating them. Prerequisites: Students should have an understanding of basic programming (Intro to Computational Media or equivalent). Familiarity with physical computing (Intro to Physical Computing or equivalent) is helpful, but not essential. Some, though not all, production work in the class requires programming and possibly physical and electronic construction. There is a significant reading component to this class as well.

Possible topics include:

* topologies: how to think about them (nodes and links), how few workable ones there are, and how there's no topology so stupid it isn't in use some place.
* addressing and routing: what a namespace is, three ways to generate a name (nesting, serial uniqueness, random pseudo- uniqueness), the difference between smart and dumb networks, why the phone network and the internet differ even though they use the same wires
* protocols: envelopes and contents, the stack and the reference lie, end-to-end principles, reliability vs. speed tradeoffs
* scale: more is different, scale breaks otherwise workable systems, makes redundancy and degeneracy critical, tends to push systems
* a discussion of security and its effects

Possible exercises include:
* Basic socket communication, both software and embedded hardware versions
* Client-server programming
* A group protocol/messaging exercise
* An HTTP/RESTian model exercise

_Tuesdays 3:20 PM - 5:50 PM (09.05.17 - 12.05.17) Syllabus_