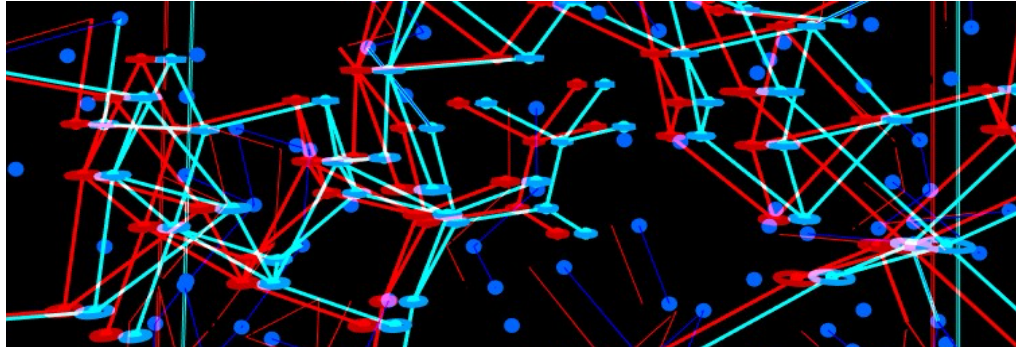




Introduction to  
Art & Design  
for Games



## ART 200: Introduction to Art and Design for Games

Professor **Jia-Rey (Gary) Chang** |  
archgary@udel.edu | www.archgary.com |  
Office Hours | by appointment only (email)|

---

### >> Course Description

*This course offers an introduction to game design from the perspective of Art and Design, focusing on the implementation and integration of essential techniques for producing interactive virtual environments with unique aesthetic styles. This course offers a critical foundation in elements of game design including 3D modeling, basic illustration techniques and connections with related emerging technologies.*

---

### >> Course Meetings

**Mon/Wed 9:05AM - 11:35AM**

@Recitation Hall Room 203, Mac LAB

@SAB Room 208, IxD LAB

**\*First Week Remotely online**

Zoom Meeting: Feb 7<sup>th</sup> & 9<sup>th</sup>

**\*No meeting on**

Spring Break: March 28<sup>th</sup> & 30<sup>th</sup>

#### > Class formats:

##### **Regular classes/Presentation:**

This is the majority of the course, and we will have regular class meetings with related materials and use some of the classes for your project presentation.

##### **Discussion/DeskCritics:**

This will be mostly the meetings with individuals to have in-depth conversations about the development of your assignments/projects.

**Work-in-Class Session:**

There will be some working time for you to use the class hours to develop/produce your projects

**Office Hours:**

Please send me an email for arranging the appointment. It can be either a virtual Zoom meeting or an in-person meeting depending on the case.

---

**>> COVID-19 Condition**

Thank you all for your understanding and tolerance in such a difficult situation. No one signed up for this, so let's work it out together to go through such an unexpected situation. And I would like you to try to understand from both faculty and students' point of view if there is any imperfection in the coming future. We cannot predict the future, but we can make it better for our present.

Besides the course, if you're having trouble, please talk to someone. I'm available of course, but you should also be aware that the University is offering support via the Center for Counseling & Student Development at (302) 831-2141 or (302) 831-1001 for after-hours emergencies. You can also contact Student Health Service at (302) 831-2226 or University Police at (302) 831-UDPD."

---

**>> Mask Guidance & Covid-19 guidelines**

The Safety of Our Learning Environment

Student learning can only occur when students and their instructors feel safe, respected, and supported by each other. To ensure that our learning environment is as safe as possible, and In keeping with CDC guidelines to slow the transmission of COVID-19 and the University of Delaware's Return to Campus Guidelines (Health and Safety Section), we will adhere to the practice of wearing face masks and cleaning your seat and desk area at the beginning of class.

In the Mac Lab:

Must wear a cloth mask that covers your nose and mouth

Must not eat or drink in class

Upon entering the classroom, wipe down your seat and desk area

As necessary, the University may announce modifications to these practices. In that event, these guidelines will be updated to reflect those modifications.

\*\*\*Vaccinated:

Wear a mask at all times.

\*\*\*Not fully vaccinated:

Wear a mask at all times and, when possible, physically distance at least 3 feet from others.

---

## >> Covid-19 Classroom guidelines

In the Mac Lab:

1. Before students use a piece of shared equipment, students should wash their hands with soap and water for 20 seconds or use hand sanitizer.
  2. Students should wipe off the equipment with a sanitizing wipe before and after using the equipment.
  3. Seats will be assigned to individuals for the semester.
- 

## >> Course Objectives

This course will gradually take you through the journey from an introduction to **Programming**, **3D Modeling** to **Basic Game Design Techniques**, and will eventually integrate and intertwine them as an entry-level/foundation for developing games. As your first run through game design from the perspective of Art and Design, the goal of the course is to train you as a visual storyteller to design an interactive/navigable and immersive virtual environment with your chosen aesthetic style. Related **Emerging Technologies** will serve as inspiration and knowledge in support of the course, including Generative Art, AI (artificial intelligence), ML (machine learning), VR (Virtual Reality), AR (Augmented Reality) and MR (Mixed Reality).

### ***Objectives in Coding:***

The goal here is to provide you with a starting point to gain basic **coding** knowledge. Learning the fundamental logic of scripting will benefit the students for entering the creation of games. By completing this course, students will be able to:

- Understand the basic principles, syntax and commands of coding languages (Java as a preliminary language)
- Execute basic coding and scripting techniques as tools for visualization and the creation of as digital art

### ***Objectives in 3D Modeling:***

Learning **3D modeling** gives you the essential senses and abilities to generate 3D digital objects from scratch. It is crucial to gain these fundamental techniques to assist you in making or designing any objects, scenes or characters in games. By completing this course, students will be able to:

- Understand what a 3D virtual space/environment is
- Understand the fundamental concepts of 3D models (mesh, voxel, vertex, etc.)
- Execute the fundamental techniques of generating 3D digital objects through modeling skills

- Execute the basic 3D model rendering skills (materials/lighting/camera) to produce a virtual environment
- Use the 3D modeling skills learned in combination with their own creative input

***Objectives in Basic Game Design Techniques:***

The goal here is to provide you with a starting point to gain basic to utilize basic **design functions (insert/create 3D objects, (visual) coding, physics/collision, lighting, particle, simple game control, etc.)**, using the game engine Unity to build a playful virtual environment using 3D modeling skills. This is a fun, entry-level method of learning and training to achieve your own creative idea and aesthetic style in your future game design projects. By completing this course, students will be able to:

- Utilize the basic functions of the 3D creation, (visual) coding, physics/collision, lighting, particle, simple game control in a game design engine to build a virtual experience in the first-person/ third-person perspective
- Combine the skills learned in the “Basic Game Design Techniques” and “3D modeling” sections as a means of creating interactive virtual environments with a unique aesthetic style
- Understand game design as an ongoing process with numerous iterations

***Objectives in Emerging Technologies:***

The intention here is not only to familiarize students with up-to-date technologies related to game design as a means of inspiration, but also to stimulate them to think beyond current fashions in game design and development. “What a game can / will be” is discussed thoroughly in this section. By completing this course, students will be able to:

- Demonstrate familiarity with current technologies related to game design and development, such as 3D Modeling & Digital Fabrication, Generative Art / Design, Artificial Intelligence, Interaction Design in VR / AR / MR.
- Offer their own answer / definition of “what a game can be.”

\*\* Students are highly encouraged to explore new methods and techniques beyond the skills and knowledge taught in class, and to tap into their own creative, outside-the-box thinking.

---

## >> Software Used

**Coding: Processing**

**3D modeling: Blender**

**Basic Game Design Techniques: Unity**

Processing is also open-source and available for free download and use.

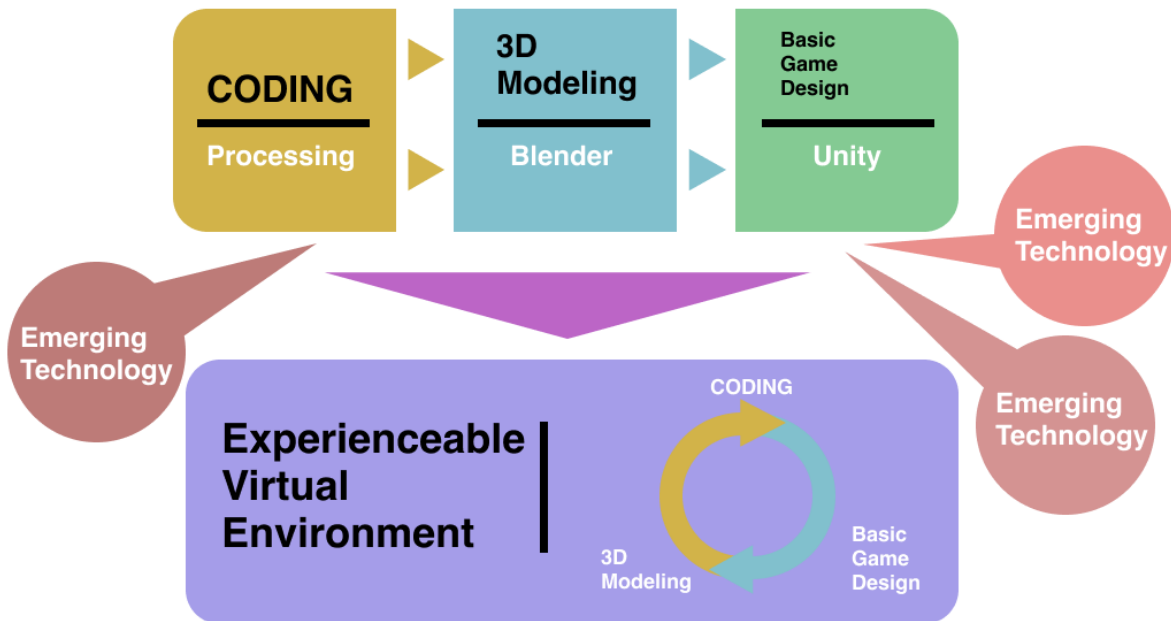
Blender is an open-source 3D modeling application, free to download and use.

Unity is free to download and use for designing non-commercial game projects.

---

## >> Course Structure

As explained in the Course Objectives, this course will begin with “Coding”, followed by “**3D Modeling**” “**Basic Game Design Techniques**,” and ends up with a practical exercise to generate an enjoyable and explorable virtual environment as a start to your long-term game design journey. “**Emerging Technologies**” will come along as minor components to play



the role of inspirations during the semester.

*Figure 1 Diagram of Course Structure*

The course will start with the focus of **Coding and Processing** for the first 1/3 of the semester, then proceed to the **3D Modeling** (with Blender) section, and follow up with learning the **Design Functions** (with Unity) and **Basic Game Design Techniques** for the rest of the semester. The course is designed to train you with these essential techniques to design and generate a 3D game environment on your own. Toward the end of the course, you will be assigned to work on an integrated project to create an interactive/navigable virtual environment based on a unique concept that shows your creativity and aesthetic styles as a storyteller. The outcomes will be expected to be akin to a simplified version of "**Environmental Storytelling**," a concept in game design that refers to the ways virtual environments are designed for immersive experiences that may (or may not) follow a narrative, but convey meaning to the user through free, open-ended exploration of the game environment. The **Emerging Technologies** section will provide supporting materials and a series of lectures along to complement your learning of practical skills.

### **Coding:**

For the **Coding** segment, **Processing** will be introduced in the first place to provide you the basics of coding, such as understanding variables, statements, and algorithms as a graphic generating tool.

### **3D Modeling:**

This section is the crucial starting point for the course, focused on building up your 3D modeling foundation. A series of weekly tutorials will guide you through the navigation of the 3D Modeling software, basic geometries generation, transformation applications, and rendering settings.

**Blender**, which is a mesh-based modeling tool, will be used in this section as your 3D modeling software.

### **Basic Game Design Techniques:**

For the **Basic Game Design Techniques** part, the game design engine **Unity** will introduce further design functions in software, such as camera, shader, lighting, particle, collision, and interaction, which will assist you in generating a virtual environment that corresponds to your personal aesthetics.

### **Interactive/Navigable Virtual Environments (Simple Environmental Storytelling):**

Eventually, the goal is to integrate and intertwine the skills learned in the **Coding, 3D modeling** and **Basic Game Design Techniques** sections of the course to create a virtual environment as a storytelling platform that allows users to freely navigate and walk through from a first-person/ third-person perspective. The other objective of this section is to give students a glimpse of how game design works as interaction design and to further bridge this course to other advanced courses.

### **Emerging Technologies lectures:**

A series of lectures (from as short as 15 minutes to as long as 90 minutes) on the topics of **3D Modeling & Digital Fabrication, Generative Art/Design, Artificial Intelligence, Interaction Design in VR/AR/MR**, etc., will be included among the weekly tutorial classes to provide inspiration and context. The objective is not only to learn about the current technological environment in the game design industry but also to incite students to think outside the box regarding what a “game” can be.

---

## **>> Course Schedule**

This is a tentative version. Updates will be posted on Canvas.

#Week	Month	Date	Title	Brief
<b>&gt;&gt;Coding</b>				
01	FEB (02)	07	<b>Introduction</b>	Overall Introduction
		09	Introduction	Self-Intro + Play
02		14	Coding Basic	Processing 2D / Geometry
		16	Coding Basic	Processing 2D / Statement
03		21	Coding Basic	Processing 2D / HIC

04			23	*Work in Class	doWhatever
				*Work in Class	doWhatever
	MAR (03)	28	02	<b>1<sup>st</sup> review</b>	<b>doWhatever Project</b>
<b>&gt;&gt;3D Modeling</b>					
-----					
05		07		<b>GenerativeArt</b>	<b>Lecture</b>
			09	3D Modeling	Interface Navigation
06		14		3D Modeling	Mesh Modeling
			16	3D Modeling	Mesh Modeling/ Materials
07		21		*Work in Class	myAvatar
			23	<b>2<sup>nd</sup> review</b>	<b>myAvatar Project</b>
08		28		-Spring Break	
			30	-Spring Break	
09	APR (04)	04		3D Modeling	Texture/Rendering
			06	*Work in Class	myAvater in myRoom
<b>&gt;&gt;Basic Game Design</b>					
-----					
10		11		<b>3<sup>rd</sup> review</b>	<b>myAvatar/Room Project</b>
			13	<b>AI/Interactive A&amp;D</b>	<b>Lecture</b>
11		18		BasicGameDesign	Unity intro (Interface)
			20	BasicGameDesign	Unity intro (Coding)
12		25		BasicGameDesign	Unity intro (VCoding&Others)
			27	BasicGameDesign	Unity intro (VisualCoding)
-----					
13	MAY (05)	02		Final Project Idea	Discussion & Development
			04	*Work in Class	myStory
14		09		*Work in Class	myStory
			11	*Work in Class	myStory
15		16		<b>Final Presentation</b>	<b>myStory</b>

---



Figure 2: A image from *Islands: Non-Places* (Carlburton Llc, 2016; <https://carlburton.itch.io/islands>)

## >> Project (Assignment) Schedule & Point Value

*This is a tentative schedule. Updates will be posted on Canvas and by email.*

### **Requirement:**

All assignments' specific requirements will be posted on the Assignment session of Canvas. Please check the detailed information and requirements there for your submission.

### **Submission:**

Project submissions will not be accepted after due dates without an excuse. Your digital submissions to Canvas should follow each assignment's requirements. Failure to turn in assignments on Canvas will result in "0" points.

Project Assignment			
# Topic	Due Date *	Point Value	Intention
1 doWhatever	3/2	50	Coding
2 myAvatar	3/23	50	3D Modeling
3 myAvatar in myRoom	4/11	50	3D Modeling
4 myStory	5/16	100	Unity Design Functions

\* Pending minor changes according to progress on the course schedule. There will also be in-class assignments along with the tutorials.

Total Points Possible for Projects: **250**

---



## >> Assignment Evaluation

The evaluation of your assignments' scores will be based on

1. Timeliness of project submission
2. The percentage of the skills you applied in your project
3. The creativity of your projects
4. Your oral presentations (including Q&A)
5. The aesthetics of presentation slides.

On a 50-point (100%) scale, the rubric is:

### **45-50 points (90-100%)**

- submitted on time.
- excellent execution and application of 90% of the skills taught in class.
- great oral and visual presentation.

### **40-44 points (80-89%)**

- submitted on time.
- good execution and application of 80% of the skills taught in class.
- good oral and visual presentation.

### **30-39 points (60-79%)**

- submitted on time.
  - acceptable execution and application of 60% of the skills taught in class.
  - acceptable oral and visual presentation.
- 

## >> Supporting Reading

1. Boycer, Josh. "[An Exploration into Environmental Storytelling](https://game-wisdom.com/critical/exploration-environmental-storytelling)". *Game Wisdom-Theories on Game Design*. Josh Boycer, Feb 28<sup>th</sup>, 2018, <https://game-wisdom.com/critical/exploration-environmental-storytelling>.
  2. Stewart, Bart. "[Environmental Storytelling](https://www.gamasutra.com/blogs/BartStewart/20151112/259159/Environmental_Storytelling.php)". Gamasutra- The Art and Business of Making Games. Informa PLC Informa UK Limited, Nov 12<sup>th</sup>, 2015, [https://www.gamasutra.com/blogs/BartStewart/20151112/259159/Environmental Storytelling.php](https://www.gamasutra.com/blogs/BartStewart/20151112/259159/Environmental_Storytelling.php)
  3. Shepard, Mike. "[Interactive Storytelling - Narrative Techniques and Methods in Video Games](https://scalar.usc.edu/works/interactive-storytelling-narrative-techniques-and-methods-in-video-games/index.38)". *The Alliance for Networking Visual Culture*. The Alliance for Networking Visual Culture, May 12<sup>th</sup>, 2014, <https://scalar.usc.edu/works/interactive-storytelling-narrative-techniques-and-methods-in-video-games/index.38>
  4. Jenkins, Henry. "[Game Design as Narrative Architecture](http://electronicbookreview.com/essay/game-design-as-narrative-architecture/)". *Electronic Book Review*. Electronic Book Review, July 10<sup>th</sup>, 2004, <http://electronicbookreview.com/essay/game-design-as-narrative-architecture/>
-

## >> Course Format

Students are required to be self-motivated and to actively participate in the course both inside and outside of class. If there is anything that is interfering with your ability to perform what is required in this class, it is your responsibility to speak with me so that accommodations can be discussed.

---

## >> Attendance

Do not miss class and do not be late to class. If you do, you are responsible for asking your fellow classmates about what you missed. You are not allowed to have any unexcused absences, and for excused absences you must provide a written excuse from Student Health Services or a doctor. Unexcused absences will automatically reduce your final grade. Total Points Possible for Attendance: **100**.

---

## >> Participation (in-class performance)

You are required to actively participate in every class period. Your level of participation in every class meeting will be evaluated. Total Points Possible for Participation: **100**.

---

## >> Course Website

**Canvas** will be the course website for this course. It will be used for the distribution of assignments, course schedule, posting announcements, weblinks, and grades. Bookmark this website and check it often. I will also send you information via email, so please also pay attention to the announcements, documents, and assignments send out to your Udel email.

---

## >> Maintaining your digital files & Backing up your work

You are required to keep your files for this course on an external hard drive and regularly back up this drive to prevent loss of data if your drive malfunctions. Files left on any computer in the classroom may be deleted at any time, for any reason. Late or missing submissions due to lost files will receive "0" points.

---

## >> Contact

Email is the best way to get in touch with me, and it is how I will contact you. You are required to check your email a minimum of 12 hours prior to each class period.

---

## >> Academic Honesty

All students must be honest and forthright in their academic studies. To falsify the results of one's research, to steal the words or ideas of another, to cheat on an assignment, or to allow or assist another in committing these acts corrupts the educational process. Students are expected to do their own work and neither give nor receive unauthorized assistance.

"Any violation of this standard must be reported to the Office of Student Conduct. The faculty member, in consultation with a representative from the Office of Student Conduct, will decide under which option the incident is best filed and what specific academic penalty should be applied." <http://www1.udel.edu/stuguide/17-18/code.html#honesty>

---

## >> External Materials

Self-motivation is the crucial factor for success in this course. Please take advantage of these generous materials in seeking solutions and inspiration while you are on your creative journey.

### ***Game Style Inspiration:***

#### ***=== Environmental Storytelling:***

- ThatGameCompany: <https://thatgamecompany.com/>
- Abzu: <https://abzugame.com/>
- The Return of the Obra Dinn: <https://obradinn.com/>
- The Witness: <http://the-witness.net/>
- Firewatch: <https://www.firewatchgame.com/>
- Inside: <https://playdead.com/games/inside/>
- What Remains of Edith Finch: <http://www.giantsparrow.com/games/finch/>
- Proteus: <https://store.steampowered.com/app/219680/Proteus/>
- The Vanishing of Ethan Carter: <http://ethancartergame.com/>
- Tacoma: <https://tacoma.game/>

#### ***=== Aesthetics / Atmosphere / Representation:***

- Kentucky Route Zero: <http://kentuckyroutezero.com/>
- Inside: <https://playdead.com/games/inside/>
- Islands: Non-Places: <https://carlburton.itch.io/islands>
- Proteus: <https://store.steampowered.com/app/219680/Proteus/>
- Disco Elysium: <https://zaumstudio.com/>
- Gris: <https://store.steampowered.com/app/683320/GRIS/>

#### ***=== Creative programming:***

- Baba is You: <https://hempuli.com/baba/>
- N++: [https://store.steampowered.com/app/230270/N\\_NPLUSPLUS/](https://store.steampowered.com/app/230270/N_NPLUSPLUS/)
- SpaceChem: <http://www.zachtronics.com/spacechem/>

-Opus Magnum: <http://www.zachtronics.com/opus-magnum/>

**=== Software Learning:**

- Blender official tutorial: <https://www.blender.org/support/tutorials/>
- The Code Train by Daniel Shiffman: <https://www.youtube.com/user/shiffman>
- The plethora project by Jose Sanchez: <https://www.plethora-project.com/education>
- Brackeys for Game Design in Unity: <https://www.youtube.com/user/Brackeys>
- Coding in Unity by Sebastian Lague: <https://www.youtube.com/user/Cercopithecian>

**=== Art Projects:**

- UCLA Game Lab: <http://games.ucla.edu/projects>
- CreativeApplication.Net: <https://www.creativeapplications.net/>
- Keijiro Takahashi: <https://www.keijiro.tokyo/>

---

## >> Final Grade Evaluation

The final grade shows your overall performance including assignments' scores, attendance, and participation (in-class performance) throughout the whole semester. Final letter grades will be determined according to the University of Delaware's Official Grade Scale.

### **Rubric**

#### **A**

- completion of all assignments
- evidence of care and creative solutions in the finished work
- assignments are executed well and apply 80% - 100% of the skills taught in class.
- attentiveness during class and openness to criticism

#### **B**

- completion of all assignments
- evidence of effort given to finished work
- assignments apply 60% - 79% of the skills taught in class.
- attentiveness during class

#### **C**

- missing completion of one assignment
- absence of more than three classes
- evidence of effort given to finished work
- assignments apply less than 60% of the skills taught in class.
- leaves class early and/or arrives late at times

#### **D**

- missing more than one assignment
- absent more than four classes
- lack of effort given to finished work
- leaves class early and/or arrives late on a regular basis

#### **F**

- has fallen significantly short of above requirements, or basic competence, or both

---

## **>> Statement on Attending Visiting Artists, Designers, Critics, and Curators Lectures and Gallery Exhibits**

Art Majors are expected to attend all Visiting Artist Lectures in the Department of Art & Design during the semester. In addition, students are expected to see all the art exhibitions in the department's galleries. As a part of this course, you are asked to bring a sketchbook and take notes. Engaging in dialogue with our guests by asking questions is highly recommended.

---

## **>> Documentation of Art & Design Projects from ALL CORE classes for CORE REVIEW**

It is essential that you document all of your work from all of your CORE classes. You will need high quality (clear, color-balanced, high resolution) images of your art and design assignments for the required CORE Review. It is highly recommended that, in addition to storage on your computer, that you store these images on a back-up drive and in some form of cloud storage. The submission of images of your work from your CORE classes is a requirement of CORE Review, which is a requirement to advance in the department to complete your BA or BFA degree. It is also an important professional practice. NOTE: Required for all CORE classes.

---

## **>> Field Trips (not applied at this moment)**

Academic field trips are an important—and enjoyable—element of education. They often significantly enhance the content of a course by providing a type of information hard to convey in the classroom. Site visits to museums, galleries, contemporary art centers, design studios, and advertising agencies help to contextualize and enhance understandings of contemporary and historical practice. Students are strongly encouraged to attend.

---

## **>> Inclusion of Diverse Learning Needs**

Any student who thinks they may need an accommodation based on a disability should contact the Office of Disability Support Services (DSS) office as soon as possible. The DSS office is located at 240 Academy Street, Alison Hall Suite 130, Phone: 302- 831-4643, fax: 302-831- 3261, DSS Website (<http://www.udel.edu/DSS/>). You may contact DSS at [dssoffice@udel.edu](mailto:dssoffice@udel.edu)

---

## **>> Harassment and Discrimination**

The University of Delaware works to promote an academic and work environment that is free from all forms of discrimination, including harassment. As a member of the community, your rights, resource and responsibilities are reflected in the non-discrimination and sexual misconduct policies. Please familiarize yourself with these policies at <http://www.udel.edu/oei> . You can report any concerns to the University's Office of Equity & Inclusion, at 305 Hüllihen Hall, (302) 831-8063 or you can report anonymously through UD Police (302) 831-2222 or the EthicsPoint Compliance Hotline at <http://www1.udel.edu/compliance>. You can also report any violation of UD policy on harassment, discrimination, or abuse of any person at this site:  
<http://sites.udel.edu/sexualmisconduct/how-to-report/>

---

## **>> Title IX Statement**

The University of Delaware does not discriminate on the basis of race, color, national origin, sex, disability, religion, age, veteran status, gender identity or expression, or sexual orientation, or any other characteristic protected by applicable law in its employment, educational programs and activities, admissions policies, and scholarship and loan programs as required by Title IX of the Educational Amendments of 1972, the Americans with Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, Title VII of the Civil Rights Act of 1964, and other applicable statutes and University policies. The University of Delaware also prohibits unlawful harassment including sexual harassment and sexual violence. For inquiries or complaints related to Title IX, Section 504 of the Rehabilitation Act of 1973 and/or the Americans with Disabilities Act, and Title VII and age discrimination please contact:

Susan L. Groff, Ed. D.  
Director, Institutional Equity & Title IX Coordinator  
305 Hüllihen Hall  
Newark, DE 19716  
(302) 831-8063  
[titleixcoordinator@udel.edu](mailto:titleixcoordinator@udel.edu)

OR contact the U.S. Department of Education – Office for Civil Rights  
(<https://wdcrobcolp01.ed.gov/CFAPPS/OCR/contactus.cfm>).