

# Digital Plankton: Microscopic Marine Life in Rhode Island and Antarctica

Digital Studio Course with  
Microscopic Photography /Video Inter-Active Augmented Reality  
New Media Portraits of Plankton

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## Course Description

Explore innovative means of documenting, interpreting, and presenting the microscopic life of our nearby waters, including the Providence River and Narragansett Bay . Through a series of related projects, students will develop understanding of context and technical expertise, beginning with hands-on gathering of plankton and environmental source materials, developing skill with microscopic technology while learning about plankton as the most basic part of the food chain. The course will culminate in a group installation of individual and collaborative projects, implementing Augmented Reality as part of the interpretive/documentary process. An interest in integrating digital technology into innovative conceptual work is more important than microscope and computer skills, as we will work together to learn necessary technology. Students will have the opportunity to collaborate with oceanographers, including the option to work with unique imagery from Antarctica and other distant locations.

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## Overview:

2 weeks intro project: local plankton & local water environment (near RISD campus)

2 weeks project for group installation, options:  
collaboration with Oceanographers studying Antarctica  
collaboration / independent work on Narragansett Bay  
new / continued project on local sources

Final Week

website / documentation of project  
tweak / improve augmented reality aspects of project  
Final Crit!

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## COURSE DETAILS - MAY CHANGE AS CLASS DEVELOPS

### I. Gathering Plankton: Search, Discover, Interpret

*concepts:*

Scale: Micro to Macro  
Interpreting forms of Plankton  
Making Photographic material readable  
Understanding how Scientists/Artists gather Plankton  
Infusing Photographic material with Personal Aesthetics  
Drawing & Photography: differences/similarities

*technical skills:*

Use of Netting to gather plankton  
Introduction to Microscope Equipment in Nature Lab  
Basic software skills (Photoshop / Image J / Illustrator)  
Digital Drawing & Painting (Illustrator / Painter /ipads)  
Combining software and hand drawing  
Understanding Resolution, image/video formats

*project:*

**Gather plankton from nearby waters, video, photograph, and draw moving live plankton. Create 3 variations of expressive / interpretive still imagery**

Participate in gathering of local plankton. Visit the Edna Lawrence Nature Lab with class for introduction to Microscopes and other equipment. Digitally Capture both stills and video of specimens.

“Clean-up” photos, draw the forms (paper or digitally), or trace form in Illustrator Create clean representations of specimens.

Draw live plankton by hand (tablet or paper)

Document the environment (for following week). Draw, photograph, video.

**Save all raw images and variations - you will use these later in the term**

### **Brief introduction to Augmented Reality**

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Jan 14

### II. Portraits, Biologic Imagery from Across Time and Culture: Examining Models of Describing Context and Concept in Nature and Human Subjects

*concepts:*

Symbolism and Representation in Portraiture  
Continued: Photographic material with Personal Aesthetics  
Cross-Cultural ideas of Representation/Communication

*technical skills:*

Isolating image fragments digitally  
Digital Compositing  
Manipulating Color, Texture, Scale in Digital Imagery

*project:*

Visit the Special Collections at the Fleet Library with the Class (2:00 pm Jan 14)

Continue to work on Drawings, interpretive imagery of Plankton

**Analyze Two Portraits in any medium from 2 different cultures / time periods**

Prepare a short class presentation. This analysis will inform your work with Plankton and Environments.

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### III. Environment and Plankton: What is the Plankton's World?

Jan 15

*concepts:*

The Visible World as host for the Invisible World  
Boundaries of Habitats in the Marine Environment  
Representing Sensations: Scale, Temperature, Light  
Portrait Tradition as inspirational source

*technical skills:*

Continued work with refining Photographs, Drawings, Video  
Scanning Drawings, redrawing, etc.  
Combining Recording Methods (photographs & drawings)

*project:*

**Create an intuitive, interpretative environment for the plankton (3 variations)**

Consider the visible environment (sand, rocks, trees on the shore, bigger fish). Think about this  
List key words that help identify environment of plankton  
Clean up, refine Drawings and Photographs of the Environment (your own - not from internet/books)  
Actual colors, forms, do not have to be realistic; goal is to communicate sensations of the environment.  
Students may incorporate various media, which can be scanned/photographed to be part of final image.

**Save everything - you may find these materials useful later in the term**

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Jan 16

### IV. Augmented Reality Intro: Exploring new methods of presenting multiple modes

*concepts:*

Dialogue of Multiple Levels of representation  
Revealing "the real" and the intuitive  
Exploring inter-activity  
superimposition / juxtaposition of imagery  
aesthetically mediated / "real" imagery

*technical skills:*

Learn the basics of Aurasma, AR application  
Creating trigger images  
Uploading images to the Environment  
User testing and assessment

*project:*

**Insert Plankton from First Project into the Environments You Created**  
**Create 3 interactive (AR) elements to pop-up from Environments**

Isolate and Resize Plankton from your earlier work / or gather new specimens (512 px x 512 px)  
Insert 3 plankton images as Augmented Reality elements in Environment  
include one 6 second video  
Research and insert other "portrait" elements to create inter-active portrait  
Test and Adjust the interactive experience

Jan 22

## V. Field Trip to Meet Oceanographers, Gather additional Source Material

*concepts:*

artists & scientists: collaboration and idea exchange  
scientific process - how different approaches work  
observations on site  
integrating multiple methods of input  
evaluating importance of multiple sensory clues

*technical skills:*

improved skills with gathering plankton  
interviewing skills  
on-site drawing, photographing  
*possible option to use Flowcam or other equipment*

*project:*

Draw/Photograph/Video environment in Narragansett (URI Bay Campus)  
include vegetation, human scale elements

Make notes of sensations of the environment: sunny, cold, etc.

Digitize newly gathered plankton as soon as possible

Organize Source Material

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Jan 23

## VI. Motion: Tracking live Plankton

*will fit this in earlier if possible*

*concepts:*

motion as expressive quality  
rhythm of plankton movements and interactions  
qualities of still vs. moving imagery  
time as creative element  
creative enhancing of raw video  
Making movement captivating

*technical skills:*

Basic video software: iMovie, Aftereffects, Final Cut,  
(student's choice of software)  
Basic edits, cropping and enlarging video captures  
Color Correction, Distortion  
option: exploration of tracking functions in Image J,  
AfterEffects / other software

*project:*

**Create a series of short (15 secs) videos of moving plankton**

Work from new captures or earlier specimens, or from Antarctica Materials

extract 6 second, 512 x 512 elements for AR

Option:

Animating still photographic images and drawings

## VII. AR Portrait Scroll

*concepts:*

culmination of course concepts

*technical skills:*

refine all course skills

*project:*

**Create visual documentation grounded in real science to accompany the imaginative**

**Create a coherent expressive work to be part of Group Installation, with an interactive element.**

Present 3 ideas for Group Crit

Students may collaborate (2 students, 2 works / 3 students, 3 works)

Work should reflect a personal aesthetic, as means to attract viewer response

Work should also include documentary visual information, to provide context for interpretive work

Text is optional - focus is on visual communication

Feb 4, Feb 5

## VIII Website, Blog, other Documentation

Create a website or blog with:

class work

raw source material

documentation of project (visual or written)

Add relevant key words, other meta-data to images and text

### Final Crit!

**Note: Dates are subject to change - depending on:**

**Class interest and progress**

**Weather Conditions**

As the term progresses, students are encouraged develop a personal focus within class framework

## **MATERIALS:**

Portable drive for back-up (500+ gigs)  
Other materials as needed

**Recommended:**  
Smart Phone or Tablet for AR applications

## **REQUIREMENTS:**

### **Complete Projects on Time**

New projects are assigned biweekly, with overlap in projects as needed.

Works in Progress must be uploaded to Google Drive or other shared server space by Monday at midnight, with updates by class on Thursday.

The time between classes is an opportunity to explore how to carry the project into your own aesthetic, and to experiment with new possibilities, even if they do not lead to resolved compositions.

Class discussion will enable students to ask both conceptual and technical questions, as well as scientific questions.

We will formulate and research scientific questions together, with visits and virtual exchanges from scientists. This is a studio course, but you will learn science along the way!

Class research trips to the RISD Museum, Library, Ocean Beaches, and science labs are required.

Each project requires multiple experimental variations, plus research notes.

### **Participate in Class Discussions and Group Critiques:**

Group critiques are an essential exchange

Sharing technical information is important: students will be asked to do brief presentations on technical tools that they find particularly useful.

## **Conceptual / Technical Expertise**

The emphasis in the course is on Conceptual Growth in the Context of learning new technical imaging skills, and in discovering a new world under the microscope that can be shared through creative imaging

Students are free (and encouraged) to explore other techniques including software that will help them in their conceptual explorations.

## **FINAL PORTFOLIO:**

The work through the term leads to the final installation, which serves as a final project.

Students must keep all variations and stages of project to present for a mid-term and final evaluation.