

# Soft Technologies, Minor

## Soft Technologies Minor

Kelly Delaney, *Advisor*  
 kellydel@andrew.cmu.edu  
<https://ideate.cmu.edu> (<http://ideate.cmu.edu>)

### Overview

Soft technologies is an emerging field of robotics, the arts, craft, and engineering with far-reaching commercial, research, and social implications. Individual disciplines address components of this burgeoning field, but the IDeATe Soft Technologies minor helps students integrate the pieces to be able to make significant contributions to this developing sphere.

Through the courses in the minor, students weave together a rich set of established and experimental techniques in traditional soft materials (such as fibers and textiles) and new soft materials (such as current hybrid and dynamic materials) to design and create a variety of forms with applications ranging from novel to practical. Students explore the unique qualities that soft material technologies afford in design and interaction in relationship to environments and the human body— responsiveness, adaptivity, flexibility, sensitivity, morphing, and biomimicry. Students will engage in project-based inquiry, using research, experimentation, making, and reflection to inform their creativity and to develop critical perspectives. Students will be able to envision their own projects and develop sensitivities to the breadth and limitations of soft technologies.

#### Gain skills and competencies in:-

- Manipulating traditional soft materials (such as fibers and textiles) and new soft materials (such as current hybrid and dynamic materials)
- Constructing 3D forms and structures from strings, flexible planes, and amorphous materials
- Articulating material and conceptual choices in discussions and critiques
- Analyzing the relationships between materials, form, use, and content integral to making
- Researching and engaging with contemporary and/or historical precedents in the field

The Soft Technologies minor is offered through a collaboration between IDeATe and the Robotics Institute (<https://www.ri.cmu.edu/>), bringing together expertise from across the university.

### Curriculum

Soft Technologies Minor Minimum of 45 Units

#### One Computing Course - Minimum of 9 Units

|        |                                                  | Units |
|--------|--------------------------------------------------|-------|
| 15-104 | Introduction to Computing for Creative Practice  | 10    |
| 15-110 | Principles of Computing                          | 10    |
| 15-112 | Fundamentals of Programming and Computer Science | 12    |
| 60-212 | Intermediate Studio: Creative Coding             | 12    |

#### One IDeATe Portal Course - Minimum of 9 Units

|        |                                                                                                         |    |
|--------|---------------------------------------------------------------------------------------------------------|----|
| 62-150 | IDeATe Portal: Introduction to Media Synthesis and Analysis<br>Section A: Introduction to Textile Media | 10 |
| 99-361 | IDeATe Portal<br>Section C: Garment Patterning, Construction, and Experimentation                       | 9  |

#### IDeATe Soft Technologies Courses - Minimum of 27 Units

|        |                                                                   |    |
|--------|-------------------------------------------------------------------|----|
| 09-227 | The Culture of Color: Dyes, Chemistry, and Sustainability         | 9  |
| 15-367 | Algorithmic Textiles Design                                       | 12 |
| 16-224 | IDeATe: Re-Crafting Computational Thinking with Soft Technologies | 12 |
| 16-376 | IDeATe: Kinetic Fabrics                                           | 10 |
| 16-480 | IDeATe: Creative Soft Robotics                                    | 10 |

|        |                                      |      |
|--------|--------------------------------------|------|
| 27-505 | Exploration of Everyday Materials    | 9    |
| 53-330 | IDeATe: Inflatables                  | 12   |
| 54-346 | Introduction to Costume Construction | 6    |
| 54-486 | Understanding Textiles               | 3    |
| 62-315 | Shaping Environments: Biomatter      | Var. |

**Additional course options as available. Please refer to the IDeATe website for courses for the current and upcoming semester.**

#### Double-Counting

Students may double-count up to two of their *Soft Technologies* minor courses toward requirements for other majors and minors.