

CSHD 114: Children and New Technologies- Spring, 2018
Tuesday and Thursday 12:00 -1:15pm

Curriculum Lab at the Eliot-Pearson Department of Child Study and Human Development

Instructor: **Professor Marina Bers**

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Teaching Assistant: **Kathleen Robinson**

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Course Description

In this course we will explore the impact of educational robotics in the lives of young people. This interdisciplinary course will focus on developmental, learning, and design theories. Students will apply theory to the design of technology-rich products for children. In addition to learning basic entrepreneurial skills, students will develop and test a new technology for children.

Course Requirements

- **Readings.** All students are expected to do all the readings
- **Joining the ME84 Robotics class website for project documentation.**
<http://mechatronics2018.dreslab.com/>
- **Class participation.** All students are expected to participate in discussions of the readings in class. Readings will be on-line or distributed in class.
- **Hands-on project.** All students are expected to participate in the hands-on class projects. No more than two absences will be permitted, without explicit authorization and previous notification to Prof. Bers
- **KIBO video assignment** Students will make a short video of their KIBO project and highlight one of the C's of the PTD framework displayed during the learning experiences. Upload video to www.tkroboticsnetwork.ning.com. (Due February 13)
- **Project proposal** In groups, students will develop and present a project proposal to the class. (Due February 27)
- **Project video and Final presentation** In groups, students will do a final presentation in class. (Due April 24 or 26)

During most Tuesdays we will meet with Prof. Danahy's engineering class to be able to work in groups. In the syllabus, these days are marked with **.

Tentative Schedule

Thursday Jan 18: Introduction by Prof. Bers

Prof. Bers will introduce the course materials and goals, herself and the research she is directing at the [DevTech's research group](#).

Tuesday Jan 23: Introduction to Engineering students **

Students will meet the engineering students and Prof. Ethan Danahy. Course dynamics and expectations will be discussed.

Thursday Jan 25: Constructionism (Kathleen)

In groups, students will discuss the theoretical framework of Constructionism.

Bers, M (2012) [Designing digital experiences for positive youth development: From playpen to playground](#), Oxford University Press. Introduction and Part I

Stager, G (2016) [Seymour Papert](#)

Papert, S (1999) [Papert on Piaget](#)

Ackermann, E. [Piaget's Constructivism, Papert's Constructionism: What's the difference?](#)

Bers, M. U. (2017). [The Seymour test: Powerful ideas in early childhood education](#). [International Journal of Child-Computer Interaction](#).

Tuesday Jan 30: Brainstorming topic ideas with engineering students ** (Kathleen)

Students will meet with the engineering students and brainstorm ideas for their projects by focusing on specific topics that are developmentally appropriate for children.

Playground vs playpen

Thursday Feb 1: Developmental Stages and the PTD Framework

Students will explore the different developmental stages.

Professor Bers will discuss this framework and students will participate in a hands-on exercise with the PTD cards.

Reading linked from [here](#)

Tuesday Feb 6: Forming working groups with engineering students (Kathleen)**

Students will meet with the engineering students and, based on topics of interest, form groups. Each group will decide on a topic for their joint project. The project should focus on an educational tool/toy for early childhood.

Thursday Feb 8: Working with KIBO (Emily)

Emily Relkin, DevTech veteran, will conduct a hands-on workshop with KIBO. Students will make a short video of their KIBO project and highlight one of the C's of the PTD framework displayed during the learning experiences. Upload the video to www.tkroboticsnetwork.ning.com. (Due Feb 13)

[KIBO website](#) @ DevTech

Tuesday Feb 13: Brainstorming solutions with engineering students (KIBO video Due)**

Students will teach engineering students about one developmental stage. (15 minute exercise) Students will meet with the engineering students to plan work on the first prototype, as well as timeline and resources needed.

Thursday Feb 15: Robot testing

In groups, the class will explore different robotic kits for young children and will compare and contrast the different experiences.

[P. Blikstein. Computationally Enhanced Toolkits for Children: Historical Review and a Framework for Future Design. Foundations and Trends in Human-Computer Interaction, vol. 9, no. 1, pp. 1-68, 2015.](#)

[Kudrowitz & Wallace \(2010\) The play pyramid: a play classification and ideation tool for toy design. Int. J. Arts and Technology, Vol. 3, No. 1, 2010](#)

Tuesday Feb 20: Defining product features with engineering students**

Students will meet with the engineering students to define and work on product features.

Thursday Feb 22: No class “Tufts Monday”

Tuesday Feb 27: Project proposals ** (Project Proposals Due- Upload to Robotics Course Website)

In teams, students will present a project proposal. Feedback by the class will be given.

Thursday March 1: Kickstarter campaigns

In this session, students will analyze different Kickstarter campaigns developed in the last 3 years with a focus on educational technologies. Each pair will share with the class their findings.

Tuesday March 6: Getting ready for the test**

Teams will develop a protocol to test their product concept with children. They will implement this protocol with EPCS children on March 13.

Thursday March 8: Business canvas **

Professor Bers will teach how to develop a business canvas to start thinking about the potential market and product development needs for their products. Students will use this tool to think about the prototypes they are developing. Students will develop a business canvas for their projects.

Tuesday March 13: Testing of prototype at EPCS with engineering students**

Students will work with children at EPCS. Following their protocol (developed in class March 6), students will conduct a first concept test of their products.

Thursday March 15: Role of children as co-designers

In this class, we will explore the different roles that children can play in the development of a product.

Guha, M. L., Druin, A., Chipman, G., Fails, J., Simms, S., & Farber, A. (2004). Mixing Ideas: A new technique for working with young children as design partners. In Proceedings of Interaction Design and Children (IDC'2004). College Park, MD, pp. 35-42.

Druin, A. (2002). The Role of Children in the Design of New Technology. Behavior and Information Technology, 21(1) 1-25.

Tuesday March 20: Spring recess

Thursday March 22: Spring recess

Tuesday March 27 Reflection on prototype testing and re-design plan**

Students will refine their prototypes.

Thursday March 29: PTD and the project

Using the PTD cards students, will evaluate the testing experience and re-design it.

Tuesday April 3: Documentation plan **

Students will work in groups to create a plan for documenting the final product testing session.

Thursday April 5: Maker Spaces (Amanda)

Students will engage in an activity designed to demonstrate the concept of Maker Spaces.

Tuesday April 10:Final testing at EPCS with engineering students**

Students will share their projects with EPCS students.

Thursday April 12:Learning from children

Students will reflect on and discuss children's learning experiences as well as their own.

Tuesday April 17: Working on video and presentation(Kathleen)**

Students will work in teams to develop a video script and presentation for their projects.

Thursday April 19 Working on video and presentation ** (Kathleen)

Students will finalize the presentations for their projects.

Tuesdays April 24 Final presentation I **

Students will present their projects. This presentation will include a 2 to3 minute video (equivalent to a Kickstarter video) telling us about their product. A panel of judges representing the entrepreneurial high tech world and the educational world, will evaluate the projects.

Thursday April 26 Final presentation II **

Students will present their projects. This presentation will include a 2 to3 minute video (equivalent to a Kickstarter video) telling us about their product. A panel of judges representing the entrepreneurial high tech world and the educational world, will evaluate the projects.