CSU I-Corps™
Summer Sprint 2017 Syllabus

From NSF: *"The National Science Foundation (NSF) I-Corps program prepares scientists and engineers to extend their focus beyond the university laboratory, and accelerates the economic and societal benefits of NSF-funded, basic-research projects that are ready to move toward commercialization. Through I-Corps, NSF grantees learn to identify valuable product opportunities that can emerge from academic research, and gain skills in entrepreneurship through training in customer discovery and guidance from established entrepreneurs…*
I-Corps Sites nurture and support multiple, local teams to transition their technology concepts into the marketplace. The Sites provide infrastructure, advice, resources, networking opportunities, training and modest funding to enable groups to transition their work into the marketplace or into becoming I-Corps Team applicants."

Summer Sprint 2017 Teams (as of July 7, 2017)

Entrepreneurial Lead	Campus	Short Idea Description
Yao Olive Li	Cal Poly Pomona	food technologies
Karno Ng	CSU San Marcos	portable drug detection system
Byron Purse	San Diego State University	fluorescent DNA sequencing
Nina Robson	CSU Fullerton	wearable device
Patrick Still	CSU Dominguez Hills	small molecule inhibitors

Summer Sprint 2017 Teaching Team

- Susan Baxter, Executive Director, CSUPERB (https://www.linkedin.com/in/smbaxter/; sbaxter@mail.sdsu.edu; 619-594-2510)
- Alex DeNoble, Executive Director, Lavin Entrepreneurship Center San Diego State University (https://www.linkedin.com/in/adenoble/; adenoble@mail.sdsu.edu)
- Stanley Maloy, Dean, College of Sciences, San Diego State University (https://www.linkedin.com/in/stanley-maloy-9831472/ ; smaloy@mail.sdsu.edu)
- Tommy Martindale, Director, Technology Transfer, San Diego State University (https://www.linkedin.com/in/tommy-martindale-710365b/ ; tmartindale@sdsu.edu)
- Cathy Pucher, Executive Director, Zahn Innovation Platform, San Diego State University (https://www.linkedin.com/in/cathy-pucher-340b5110/ ; cpucher@mail.sdsu.edu)
- Kyle Welch, Licensing Associate, Technology Transfer, San Diego State University (https://www.linkedin.com/in/kyle-welch-2181aa57/ ; kwelch@foundation.sdsu.edu)

CSUPERB Program Office Team

- Pam Branger (pbranger@mail.sdsu.edu; 619-594-2822) – Call for travel logistics
- Dayna Zarate
- Oscar Zavala (ozavala@mail.sdsu.edu; 619-777-6608) – Call for on-site assistance

SUMMER SPRINT 2017 SCHEDULE OF ACTIVITIES

LOCATION: All on-campus workshop time will be held in the Pride Room, in the Aztec Student Union at San Diego State University. Workshop time is in-person; remote participation will not be allowed.

INDUSTRY MENTORS: Before arriving in San Diego, teams should pre-schedule times to consult with their industry mentors (IM) during the summer sprint (July 17-21) based on this syllabus. At the same time, you might ask whether he/she could help you schedule one or two expert interviews in the July 17-21 timeframe. During the sprint, it would be great to touch base with your IM each day. Remember – you can schedule Zoom or teleconferences with him/her at breakfast or in the evenings to minimize conflicts with his/her work schedule or our planned activities. Industry mentors are welcome to attend any part of the planned activities in person; but - please contact us at csuicorps@mail.sdsu.edu ASAP if that might be the case, so we can make sure to order meals and provide parking permits!

HOMEWORK AND ASSIGNMENTS: We'll be using a Google Drive Folder to collect homework and videos assigned during the summer sprint. We'll provide a link to a shared folder to each team separately.

Date	**Activities, Deadlines and Milestones**
Wednesday, July 12	Patent Search Homework Due (5 pm PDT); email to: tmartindale@sdsu.edu
Sunday, July 16	11:00 am – 3:00 pm Move-in to Cuicacalli Suites, Tacuba Building, San Diego State University (5150 East Campus Drive, San Diego, CA 92115). Check-in Desk remains open 24 hours. 5:00 – 7:00 pm Dinner for team members staying at Cuicacalli Suites (Faculty Staff Club on SDSU campus)
Monday, July 17	**Day #1:** 7:00 – 7:45 am Breakfast (The Garden, 2nd Floor, Cuicacalli Suites, SDSU) 8:00 am Coffee, Tea, Water Served (Pride Suite, Aztec Student Union) 9:00 am – 6:00 pm Day One Curriculum (timing approximate only!) • 9:00 am: Introduction to I-Corps – Baxter • 10:00 am: Technology Ad Lib - Teams • 11:00 am: Problems Worth Solving – Maloy • 11:30 am: Stoke – Teams (Box Lunches Delivered) • 12:30 pm: Empathy: Who is your customer? – Teams • 1:30 pm: Customer Profiles – Pucher • 2:00 pm: Value Proposition Design – Pucher & Teams • 3:00 pm: Business Model Canvas v1.0 – Pucher • 4:00 pm: The Importance of Understanding the Problem (The Mir Imran Case) – DeNoble • 4:30 – 6:00 pm: Test Cards: What is your Game Plan? +

Date	Activities, Deadlines and Milestones
	Reporting Out – Baxter & Teams • 6:30 – 8:00 pm: Dinner at the Faculty-Staff Club, SDSU campus • Evening: Check-in with Industry Mentors to Check Assumptions, Upload all work from the day to the Google Drive folder
Tuesday, July 18	**Day #2:** 7:00 – 7:45 am Breakfast (The Garden, 2nd Floor, Cuicacalli Suites, SDSU) 8:00 am Coffee, Tea, Water Served (Pride Suite, Aztec Student Union) 9:00 am – 6:00 pm Day Two Curriculum (timing approximate only!) • 9:00 am: Evidence-based Entrepreneurship (The Owlet Case) – DeNoble • 10 am: Intellectual Property Consults - Martindale & Welch (and, while waiting, Craft Interview Questions based on your current assumptions - Teams) • 11:00 am: Technology Video Assignment – Maloy • 11:30 am: Taking with Humans - Baxter (Box Lunches Delivered) • 12:30 pm: Mock Interviewing – Teams • 2:00 pm: Getting Off Campus for Interview #1 w/Teaching Team Mentor • Homework: Complete Test/Learn Card for Interview #1, Upload Test/Learn Cards, BMC v.1, Technology Ad Lib and Value Proposition Ad Lib to Google Drive Folder, Check in with Industry Mentors, Set Up More Interviews for Wednesday late afternoon, Thursday afternoon, or Friday morning, and/or work on your technology video • Dinner – On Your Own
Wednesday, July 19	**Day #3:** 7:00 – 7:45 am Breakfast (The Garden, 2nd Floor, Cuicalli Suites, SDSU) 8:00 am Coffee, Tea, Water Served (Pride Suite, Aztec Student Union) 9:00 am – 6:00 pm Day Three Curriculum (timing approximate only!) • 9:00 am: Team Check-Ins – Lessons Learned & BMC updates • 10:00 am: Test, Learning & Synthesis – DeNoble • 11:00 am: Evolving BMCs - Baxter • 11:30 am: Travel to JLabs for Lunch (http://jlabs.jnjinnovation.com/locations/san-diego)

Date	Activities, Deadlines and Milestones
	• 1:00 – 3:00 pm: Networking & Interviewing at JLabs • 3:00 pm: Head back to SDSU or Out for More Interviews • Homework: Complete Test/Learn Card for Interviews Completed, Upload Test/Learn Cards to Google Drive Folder and new versions of your BMC, Check in with Industry Mentors, Set Up More Interviews for Thursday afternoon or Friday morning, and/or work on your technology video • Dinner – On Your Own
Thursday, July 20	**Day #4:** 7:00 – 7:45 am Breakfast (The Garden, 2nd Floor, Cuicacalli Suites, SDSU) 8:00 am Coffee, Tea, Water Served (Pride Suite, Aztec Student Union) 9:00 am – 6:00 pm Day Four Curriculum (timing approximate only!) • 9:00 am: Team Check-Ins – Lessons Learned & BMC updates • 10:00 am: Pivots & Synthesis – DeNoble • 11:00 am: Telling Your Story - Maloy • 11:30 am: Interviewing at Networking Events – Baxter (Lunch Delivered) • noon – 3:00 pm: Head Off Campus for More Interviews • 4:00 – 7:00 pm: Attend Biocom Open House to interview experts, potential partners or customers (https://www.biocom.org/s/EventDetail?event=Biocom-Open-House-2017), Farmer & The Seahorse, La Jolla • Homework: Complete Test/Learn Card for Interviews Completed, Upload Test/Learn Cards to Google Drive Folder and new versions of your BMC, Check in with Industry Mentors, Set Up More Interviews for Friday morning, put finishing touches on your technology video, and craft a draft Lessons Learned Presentation • Dinner – On Your Own
Friday, July 21	**Day #5:** 7:00 – 7:45 am: Breakfast (The Garden, 2nd Floor, Cuicacalli Suites, SDSU) 8:00 am – noon: Check out of Cuicacalli Suites. Luggage can be stored in the Pride Room at Aztec Student Union, if needed, starting at 8 am. All Morning: Customer Discovery Off Campus - Teams 11:00 am Teaching Team Consults, optional (Pride Suite, Aztec

Date	Activities, Deadlines and Milestones
	Student Union, SDSU) – Baxter & Pucher 11:30 am Lunch delivered to Pride Room; working lunch for Teams 1:00 pm Finalize Technology Videos & Lessons Learned Presentations – Teams 2:00 – 4:00 pm Final Lessons Learned Presentations (2-minute Tech Video + 10-minute talk + 10-minute Q&A) to Evaluation Panel 4:00 – 5:00 pm Commercialization Planning (Key Activities & Key Resources) – Maloy & Baxter & Pucher 5:00 – 5:30 pm Reflections and Closing - Maloy
July 22 – August 3	Continued Customer Discovery – Aim for 20-30 interviews total Continue to complete Test/Learn Card for Interviews Completed, Upload Test/Learn Cards to Google Drive Folder
Friday, August 4	All Test/Learn Cards and Final 2-minute Lessons Learned Videos Due in Google Folders by 5 pm PST
August 7 - 20	Final Reporting for NSF
Week of August 21	"Go / No Go" Decisions from Teaching Team

READING:

Talking to Humans
https://s3.amazonaws.com/TalkingtoHumans/Talking+to+Humans.pdf

Value Proposition Design (Sneak Preview version only, 100 pages):
https://strategyzer.com/value-proposition-design

Business Model Generation (Preview version only, 72 pages):
http://www.businessmodelgeneration.com/downloads/businessmodelgeneration_preview.pdf

RESOURCES AND VIDEO LIBRARIES:

Lean LaunchPad Master Video Library: http://venturewell.org/i-corps/llpvideos/

University of Michigan Intellectual Property Video Library:
http://keeplearning.engin.umich.edu/intellectual-property/all-videos/

U.S. Food & Drug Administration Learning Portal: http://www.fda.gov/Training/learningportal/default.htm

CSU I-Corps Resources: http://www.csuperb.org/csuicorps/biosciences-site/resources/

CSU I-Corps Site Program Learning Outcomes (Summer 2017 version)

Upon completion of the CSU I-Corps Site Program, participants should:

1. **Communicate biotechnology ideas in a non-confidential manner to preserve intellectual property**

Assessment methods: Teams will develop 3-minute descriptions of their biotechnology and its value proposition as part of Lessons Learned presentations at final meeting. Evaluation panels (subject area experts [SMEs] & patent attorney on teaching team) will assess effectiveness of non-confidential presentations.

2. **Deliver a presentation to a live audience and subject matter experts, including a lessons learned presentation deck and story**

Assessment methods: Teams will develop 10-minute Lessons Learned presentations and present them to evaluation panels at final meeting. After two more weeks of customer interviews, teams will develop 3-minute lessons learned video. Panels and teaching team will evaluate effectiveness of communication as part of final evaluation using score sheets.

3. **Use the Business Model Canvas (BMC) framework, focusing on Value Proposition Design, to evaluate an early stage biotechnology.**

Teams will describe The Problem (*What customer job/pain/gain are you trying to address?*), a Problem-Solution Fit (an overall metric of quality of work) and a Value Proposition (*What competitive advantages does the biotechnology have over current solutions?*).

Assessment methods: Teaching Team will collect CSU I-Corps application answers as initial baseline for learning. Teaching Team will evaluate trajectory of learning during the 3-week period (July 17 – August 4). In addition, the evaluation panels will assess teams' Value Proposition Design based on final presentations.

4. **Apply evidence-based approach to business model design by using Customer Discovery process to iterate hypotheses and assumptions.**

Assessment methods: Teams design experiments and apply them on a consecutive basis by completing ~30 customer interviews over the course of the program. Throughout the program, the teaching team will track whether teams are completing interviews and learning from their experiments, based on the completed CSU I-Corps Interview Records for each interview. Feedback will be given continuously during summer sprint. In addition, evaluation panels (SMEs) will assess teams' learning, based on final presentations. They will also evaluate teams' ability to synthesize their captured learning.

5. **Show how evidence from Customer Discovery activities results in key learnings, leading to "persevere" or "pivot" decisions in the business model and how they influence future plans.**

Assessment methods: Teams report their synthesis by submitting a series of Business Model Canvases (BMCs) throughout the program. The Teaching Team will assess whether BMCs are submitted and whether they are changing over time. Feedback will be given during course. The lessons learned presentations can be used to assess thinking, as well as evaluations of final presentations from panel.

To assess "go/no-go" decisions for NSF:
The Teaching Team will review team's ability to meet deadlines, teams' participation level (attendance, interviews completed, work submitted), and the scores from the Evaluation Panel. In addition teams will self-report whether they want to advance their ideas or not as part of the national I-Corps Team program ($50,000 grants from NSF). Together these data will lead to the Go/No-Go decisions submitted to NSF by CSUPERB.

BIOTECHNOLOGY PRODUCT / PROCESS / SERVICE CONCEPT & TEAM EVALUATION

CSU I-Corps Evaluation Description
http://www.csuperb.org/csuicorps/team-evaluation/

Nationwide, all I-Corps™ teams get out of their labs, innovation centers and classrooms and off campus to interview customers and consult with advisors, mentors, and potential customers or partners. As a result, teams get feedback continuously to hone product concepts, improve their understanding of biotechnology markets, and formulate commercialization pathways.

Using the key principles of the Lean Startup approach to entrepreneurship, student teams learn about evidence-based business model design. Teams use the customer discovery process to test hypotheses and assumptions underlying their initial business models. During the course, teams synthesize key learnings to evolve their problem-solution fit. Teams publicly present their biotechnology concepts and their learning stories at the final meeting.

Panels drawn from the CSU I-Corps' network of alumni, life science industry professionals, and experienced entrepreneurs evaluate teams' learning. Panels review the teams' presentations to assess the problem-solution fit, biotechnology maturity and teamwork. Panels will give special recognition to teams who demonstrate significant learning over the course of the Challenge and/or who identify a compelling entrepreneurial opportunity.

Important evaluation criteria will include, but are not limited to:
- The Problem-Solution Fit
    - Value Proposition (What competitive advantages does your biotechnology have over current solutions?)
    - The Problem (What customer job/pain/gain are you trying to address?)
- The team's understanding of the initial customer segment served (early adopters/partners)

- The team's understanding of market size and aspects of a multi-sided market (regulatory issues?), if applicable
- The team's understanding of key partners needed (Which partners are important when?)
- The team's plan for developing the product (Is it feasible? What might be the capital investment required? What IP protection is needed? What milestones do you need to hit in the next 3-6 months to move forward?)
- The team's tenacity, enthusiasm and story-telling skills
- The team's arc of learning, demonstrated by evidence-based evolution of their product/solution concept (based on customer, partner and/or expert interviews)

CSU I-Corps Program Culture

Before immersing teams in a start-up culture, there are some things we need to explain.

- Biotechnology commercialization is a time- and cash-constrained process. Likewise, we have limited time and we're planning to push and challenge you to learn quickly. Just like real-world companies, we have no time (or money) to waste! Your team will be evaluated based on your tenacity – that is - your ability to work as a team, deliver homework on time, use your budget effectively, and show up as promised.

- Commercialization teams tend to be "flat," especially in startup companies. This means teams work best when they bring a diversity of perspectives to the project and there is no hierarchy. This is the optimal configuration for creative activities. You should all work consciously to "break deferential habits" around student-teacher, boss-subordinate hierarchies while you're working in I-Corps. There is so much work during I-Corps that everyone must weigh in and pull their own weight at the same time! Don't let one team member dominate conversations; during lessons learned, we'll be watching for team cohesion and expertise from each team member.

- Each team needs to submit "homework assignments" before each webinar. Homework will be collected at an assigned, shared Google Drive Folder. Homework assignments help us assess each team's arc of learning and whether they are keeping up with customer discovery activities (tenacity). Late submissions will be noted and go into the overall team evaluation shared with NSF.

- All team members are required to attend all activities during the summer sprint. If you cannot attend, you must contact Susan Baxter (sbaxter@mail.sdsu.edu) ASAP.

- During each session, the instructors will call on teams to present their lessons learned and homework – this means you'll need to be ready to present to the CSU I-Corps on what you've learned from your interviews. This means you'll learn to get comfortable with public feedback. But we also know teams will learn from each other – a classic "win-win!" CSU I-Corps is not a competition – it's a challenge! Be respectful of the other teams, listen to what they are learning, and think about how it might apply to your own learning

HOMEWORK ASSIGNMENTS

Day One: HOMEWORK To Prepare for Summer Sprint

Watch University of Michigan Intellectual Property Videos Assigned by 7/1 Email: http://keeplearning.engin.umich.edu/intellectual-property/all-videos/

Complete the Patent Search Homework assigned!

Talk with your campus Research or Tech Transfer Office about student IP and ownership policies. Ask about shared ownership, especially if your product concept is based on faculty research or your underlying research is funded by a federal grant.

Day Two HOMEWORK due 8 am July 18

Use the ad lib Value Proposition (VP) Card and Business Model Canvas (v1) to articulate your team's starting VP. Refer to *Value Proposition Design* (pages 51-63, sneak preview version). Enter your first customer segment(s) and value proposition into your first Business Model Canvas (v1, VP & CS sections only).

Work with your industry mentor to generate list of people to interview and draft interview questions to test your key assumptions. Read pages 73-93 in *Value Proposition Design* (Sneak Preview Version). **FILL OUT AND COMPLETE TEST CARDS!**

Watch all four "Before Leaving the Building" videos: http://venturewell.org/i-corps/llpvideos/customer-discovery/before-leaving-the-building/

Watch all six "Outside the Building" (Rules of Customer Interviews) videos: http://venturewell.org/i-corps/llpvideos/customer-discovery/outside-the-building/rules-of-customer-interviews/

Read (& memorize?): ***Ground Rules for Interviewing*** poster (Strategyzer), http://blog.strategyzer.com/posts/2015/11/8-tips-for-conducting-interviews-that-deliver-relevant-customer-insights

Day Three HOMEWORK due 8 am July 19

Top 10 Ways Entrepreneurs Pivot a Lean Startup **(Martin Zwilling)**
http://www.forbes.com/sites/martinzwilling/2011/09/16/top-10-ways-entrepreneurs-pivot-a-lean-startup/

Videos: Watch all 6 "Back in the Building" videos: http://venturewell.org/i-corps/llpvideos/customer-discovery/back-in-the-building/

Interview Experts, Potential Customers or Partners to test your value proposition & investigate the market. Complete Test and Learning Cards for each interview and upload to Google Drive, as well as updated BMCs, if relevant.

Work on your 2-minute Technology Video due Friday at noon!

Day Four HOMEWORK due 8am July 20

WATCH: Users, Payers and Multi Sided Markets. 2 Minutes to See Why
https://www.youtube.com/watch?v=LGVijZLcQNY

INTERVIEW More Experts, Potential Customers or Partners to test your value proposition & investigate the market. Complete Test and Learning Cards for each interview and upload to Google Drive.

SUBMIT A NEW BUSINESS MODEL CANVAS – Fill out all nine segments and mark where assumptions have been validated or disproven, based on what you're learning about the market from your Industry Mentor, Experts and Customers. Upload to Google Drive.

Work on your 2-minute Technology Video due Friday at noon!

Day Five HOMEWORK due noon July 21

WATCH: Users, Payers and Multi Sided Markets. 2 Minutes to See Why
https://www.youtube.com/watch?v=LGVijZLcQNY

INTERVIEW More Experts, Potential Customers or Partners to test your value proposition & investigate the market. Complete Test and Learning Cards for each interview and upload to Google Drive.

SUBMIT A NEW BUSINESS MODEL CANVAS – Fill out all nine segments and mark where assumptions have been validated or disproven, based on what you're learning about the market from your Industry Mentor, Experts and Customers. Upload to Google Drive.

Upload your 2-minute Technology Video by Friday at noon! Work up a draft 10-minute Lessons Learned presentation (You'll have time Friday morning to continue work on it)!