CSU I-Corps™
Summer Sprint 2019 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 2019 Teams

<table>
<thead>
<tr>
<th>Entrepreneurial Lead</th>
<th>Campus</th>
<th>Short Idea Description</th>
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<tbody>
<tr>
<td>Allan Rojas</td>
<td>CSU Long Beach</td>
<td>cellulose recycling</td>
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<tr>
<td>Amy Lammert</td>
<td>Cal Poly San Luis Obispo</td>
<td>sustainable food source</td>
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<tr>
<td>David Collins</td>
<td>San Diego State University</td>
<td>sensing and removing methane</td>
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<tr>
<td>Jacky Lo</td>
<td>San Francisco State University</td>
<td>probiotic sanitizers</td>
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<tr>
<td>Matthew Borglin</td>
<td>Cal Poly San Luis Obispo</td>
<td>biofilm prevention</td>
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Summer Sprint 2019 Teaching Team

- Susan Baxter, Executive Director, CSUPERB (https://www.linkedin.com/in/smbaxter/; sbaxter@sdsu.edu; 619-594-2510)
- Stanley Maloy, Associate Vice President for Research & Innovation, San Diego State University (https://www.linkedin.com/in/stanley-maloy-9831472/; smaloy@sdsu.edu)
- Tommy Martindale, Director, Technology Transfer, San Diego State University (https://www.linkedin.com/in/tommy-martindale-710365b/; tmartindale@sdsu.edu)
- Jim Prince, Associate Dean, College of Agriculture, Cal Poly SLO (https://www.linkedin.com/in/jim-prince-55771bb/; jprince@calpoly.edu)
- Cathy Pucher, Executive Director, Zahn Innovation Platform, San Diego State University (https://www.linkedin.com/in/cathy-pucher-340b5110/; cpucher@sdsu.edu)
- Kyle Welch, Licensing Associate, Technology Transfer, San Diego State University (https://www.linkedin.com/in/kyle-welch-2181aa57/; kwelch@sdsu.edu)

CSUPERB Program Office Team

- Pam Branger (pbranger@sdsu.edu; 619-594-2822) – Call for travel logistics
- Oscar Zavala (ozavala@sdsu.edu; 619-777-6608) – Call for on-site assistance
SUMMER SPRINT 2019 SCHEDULE OF ACTIVITIES

LOCATION: All on-campus workshop time will be held at the ZIP LaunchPad (Engineering Interdisciplinary Sciences Building, Room EISC 103) at San Diego State University. Workshop time is in-person; remote participation will not be accommodated or allowed.

INDUSTRY MENTORS: Before arriving in San Diego, teams should pre-schedule times to consult with their industry mentors (IM) during the summer sprint (June 24-28) based on this syllabus. At the same time, you might ask whether he/she could help you schedule 2-3 expert interviews in San Diego in the June 24-28 timeframe based on the syllabus here. During the sprint, teams should touch base with IMs each day if possible to help synthesize their learning. 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 Oscar Zavala (ozavala@sdsu.edu) so we can make sure to order meals and provide campus maps and 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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Activities, Deadlines and Milestones</th>
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<tbody>
<tr>
<td>Friday, June 21</td>
<td>Patent Search Homework Due (5 pm PDT); email to: <a href="mailto:tmartindale@sdsu.edu">tmartindale@sdsu.edu</a></td>
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<tr>
<td>Sunday, June 23</td>
<td>After 3:00 pm Check into hotel (Hilton Garden Inn San Diego Mission Valley Stadium, 3805 Murphy Canyon Road, San Diego, CA 92123) Dinner – On Your Own</td>
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| Monday, June 24           | **Day #1:** 8:30 am – 6:00 pm Day One Curriculum (except for start-time, session timing approximate only!), ZIP LaunchPad (EISC 103)  
  - 8:30 am: Introduction to I-Corps – Baxter  
  - 9:30 am: Technology Ad Libs - Teams  
  - 11:00 am: Problems Worth Solving – Maloy  
  - 11:30 am: The Importance of Understanding the Problem/Problem Statements - Maloy (Box Lunches Delivered)  
  - noon: Working Lunch: Customer Profiles - Baxter  
  - 1:00 pm: Business Model Canvas v1 - Baxter  
  - 1:30 pm: Interviewing People – Getting Off Campus - Baxter |
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<tr>
<td><strong>Tuesday, June 25</strong></td>
<td>Day #2:</td>
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<td><strong>Wednesday, June 26</strong></td>
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| Thursday, June 27  | **Day #4:**  
| 8:00 am            | Coffee, Tea, Water Served - ZIP LaunchPad (EISC 103)                                                                                                                                                                                                  |
| 8:30 am – 6:00 pm  | **Day Four Curriculum**  
|                    | - 8:30 am: Team Check-Ins – Lessons Learned, BMC updates & Teaching Team Feedback - Martindale  
|                    | - 9:30 am: Tests, Learning & Synthesis w/BMC – Baxter  
|                    | - 10:45 am: Evolving the BMC part 2: Preparing Disciplined Interviews based on BMC – Teams (Lunch Delivered)  
|                    | - (During lunch): Story Telling: Final Lessons Learned Presentations (in person on Friday AND video due July 31) - Maloy  
|                    | - noon – 3:00 pm: Head Off Campus for More Interviews  
|                    | - 4:00 – 7:00 pm (optional): Networking at BioLabs Towne Center ([https://www.eventbrite.com/e/larger-than-life-science-trust-your-gut-tickets-63083107272](https://www.eventbrite.com/e/larger-than-life-science-trust-your-gut-tickets-63083107272))  
|                    | - Homework: Upload updated Tracking Interviews Spreadsheet, Upload 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 draft your 10-minute Lessons Learned Presentation  
|                    | - Dinner – On Your Own  
|                    | updates - Prince  
|                    | - 9:30 am: How to interview 101 + Mock interviews #2 – Maloy & Baxter  
|                    | - 10:45 am: Prep for meetings at Jlabs  
|                    | - 11:00 am: Travel from SDSU to J Labs San Diego for Lunch ([https://jlabs.jnjinnovation.com/locations/jlabs-san-diego](https://jlabs.jnjinnovation.com/locations/jlabs-san-diego))  
|                    | - 11:30 – 2:00 pm: Tour, Lunch, & Interviewing at J Labs  
|                    | - 2:00 pm: Head Out for More Interviews  
|                    | - Homework: Upload updated Tracking Interviews Spreadsheet, Upload new version 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  
|                    | - Lunch (optional)
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| Friday, June 28           | **Day #5:**
|                           | All Morning: Customer Discovery Off Campus - Teams
|                           | 11:00 am  Teaching Team Consults, optional (ZIP LaunchPad)
|                           | 11:30 am  Cold Box Lunch delivered to ZIP LaunchPad
|                           | 1:00 pm   Working Lunch: Finalize Technology Videos & Lessons Learned Presentations – Teams
|                           | 2:00 – 4:00 pm  Final Lessons Learned Presentations (2-minute Tech Video + 10-minute Lessons Learned Presentation + 10-minute Q&A & Feedback with External Evaluation Panel)
|                           | 4:00 – 5:00 pm  Commercialization Planning (Key Activities & Key Resources)
|                           | 5:00 – 5:30 pm  Reflections and Closing – Maloy                                                                                                                        |
| June 29 – July 30         | **Continued Customer Discovery – Aim for 20-30 interviews total**
|                           | Continue to update Interview Tracking Spreadsheet, Consult with your Industry Mentor, and Iterate BMC based on interviews - upload new versions to Google Drive Folder throughout July.                                                                                     |
| Friday, July 31           | **Final 2-minute Lessons Learned Videos and BMC Due in Google Folders by noon pacific time**
| August 1 - 15             | Final Reporting for NSF                                                                                                                                                    |
| Week of August 20         | “Go / No Go” Decisions from Teaching Team                                                                                                                                                                                                                                                                                |

**READING:**

The Mom Test

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

Business Model Generation (Free Sneak Peek version only, 72 pages):

**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 Site Program Learning Outcomes (Summer 2019 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 2-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 2-minute Technology Videos and 10-minute Lessons Learned presentations and present them to an evaluation panel at final meeting. After 1.5 more weeks of customer interviews and synthesis, teams will develop 2-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 Summer Sprint. In addition, the evaluation panel 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 ~25 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 Team check-ins each day during the Summer Sprint. The teaching team will give direct feedback continuously during the week. 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 will be used to assess critical and informed thinking, as well as evaluations from external 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 Final 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**


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. Similarly, we have limited time during the Summer Sprint 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 and learning needed during I-Corps that everyone must weigh in, speak up, and pull their own weight! Don’t let one team member dominate conversations;
during Lessons Learned presentations, 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@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 6/13 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 June 25

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). CAPTURE HYPOTHESES ON YOUR BMC!

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


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 June 26

**Top 10 Ways Entrepreneurs Pivot a Lean Startup** (Martin Zwilling)


Interview Experts, Potential Customers or Partners to test your value proposition & investigate the problem you’ve identified. Upload updated BMC & Tracking Interviews Spreadsheet to Google Drive.

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

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Day Four HOMEWORK due 8 am June 27

**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 problem you’ve identified. Upload updated BMC & Tracking Interviews Spreadsheet 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 June 28

INTERVIEW More Experts, Potential Customers or Partners to test your value proposition & investigate the commercial path (BMC) for your idea aimed at solving the problem you’ve identified.

SUBMIT AN UPDATED 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 Tracking Interviews Spreadsheet to Google Drive.

Upload your 2-minute Technology Video by Friday at noon!
Work up a draft 10-minute Lessons Learned presentation!

FINALS HOMEWORK due noon July 31st

INTERVIEW More Experts, Potential Customers or Partners to test your value proposition & investigate the commercial path (BMC) for your idea aimed at solving the problem you’ve identified.

SUBMIT AN UPDATED BUSINESS MODEL CANVAS & INTERVIEW TRACKING SHEET – 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 your Google Drive folder.

Upload your final 2-minute Lessons Learned (not technology!) Video by Friday (7/31) at noon!