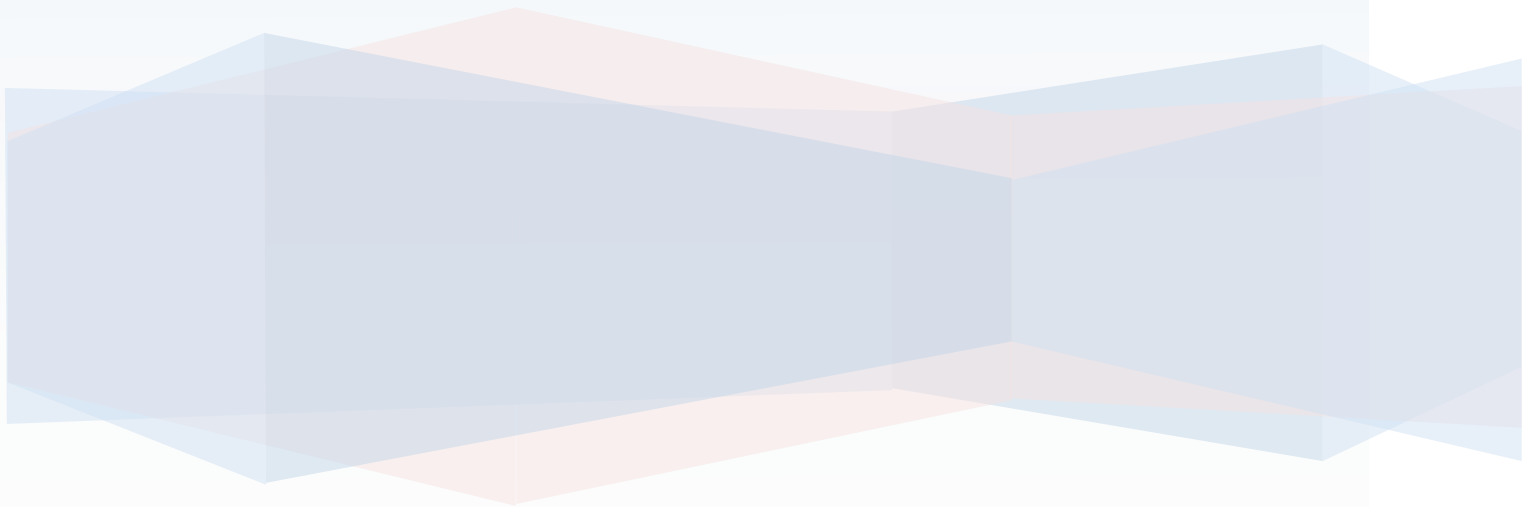


# **iCommunity & iTeam Handbook**

Academic Year 2009-2010

Illinois Foundry for Innovation in Engineering Education (iFoundry)



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## Introduction

This handbook describes the workings of the community of students and teams called *iCommunity* within the *Illinois Foundry for Innovation in Engineering Education* (iFoundry) at the University of Illinois at Urbana-Champaign. iFoundry was conceived as a collaborative incubator for the transformation of engineering education in alignment with the pace and degree of technological innovation and creativity of the 21<sup>st</sup> century. iCommunity was conceived as a way to encourage teamwork and collaboration among students from the very first moments of their engineering education in a way that promotes greater engagement, involvement, and responsibility for positive educational outcomes.

### Brief History of iFoundry and iCommunity

An activity in 2006-2007 called *Engineering and Technology Studies at Illinois* (ETSI, [www-illigal.ge.uiuc.edu/ETSI](http://www-illigal.ge.uiuc.edu/ETSI)) sponsored a seminar series involving engineers and non-engineers alike to consider engineering and technology as human activities. In Fall 2007, ETSI sponsored a Workshop on the Engineer of the Future at the University of Illinois in which Bill Wulf, outgoing president of the National Academy of Engineering and Illinois alumnus, and Sherra Kerns, Founding VP for innovation at Olin College gave keynote talks. That workshop was instrumental to renewing the conversation on engineering education reform at Illinois.

Earlier that summer, a whitepaper (available on [www.ifoundry.illinois.edu](http://www.ifoundry.illinois.edu)) had been written proposing an interdepartmental collaborative incubator called the Illinois Foundry for Tech Vision and Leadership (iFoundry). Representatives from five departments (AE, CEE, ECE, IESE, and MatSE) and others met to design various aspects of the incubator. A subcommittee of the College Executive Committee headed by Doug Beck was appointed by Dean Adesida that fall to study the possibility of an incubator and in Fall 2008, iFoundry was established as a college activity.

Students were involved in iFoundry deliberations from the beginning. Student leaders met with the departmental representatives on the iFoundry ad hoc committee starting in summer 2007, and a course called *Designing the Engineering Curriculum of the Future* was held in the Spring of 2008 with 18 students, roughly 2/3 undergraduate and 1/3 graduate students, participating. Students have been involved in design discussions throughout and Engineering Learning Assistants and other student advisors and mentors are important to the functioning of the iFoundry plan.

The first iCommunity in the inaugural iFoundry class started in Fall 2009, but many of the ideas and practices contained herein were tested in the late 90's as part of the *Teamwork for a Quality Education* (TQE) at UIUC. Those experiments were successful in improving student engagement though a teamwork experience, but the pilot was not integrated into the regular student experience at that time. The design

of iCommunity has been influenced by those experiences together with the growing literature on learning communities.

### **Organization of this Handbook**

This handbook considers the need for iFoundry and iCommunity, the structure of iCommunity and the iTeams, the functions of the iTeams, and the four teams created in alignment with student aspirations. The handbook continues by discussing iTeam meetings, iCommunity checkpoints and other gatherings, the forms of recognition available for iStudents and iTeams, the modes of communication for iCommunity members, and the budget available for these activities.

## **The Need for iFoundry and iCommunity**

The 21<sup>st</sup> century is a fast-paced time characterized by rapid technological advance and global connectedness. This section considers the need for iFoundry and iCommunity in such an environment.

### **iFoundry: Changing Minds & Changing Organizations**

The reform of engineering education has been a hot topic for the better part of two decades. The need for reform is driven by changes in industrial organization and the practice of engineering, but despite much effort and money expended, the amount of effective educational change is quite modest. The reasons for this are becoming increasingly clear. Many reform efforts begin with “the plan,” a list of topics or courses that need to be inserted into the curriculum. “The plan” runs into two problems.

First, colleges operating under a traditional curriculum are reluctant to entertain topics that are “not rigorous.” Yet, many of the topics that are thought to be most necessary in practice are the “soft” design, communications, and people skills necessary to be effective in a modern work environment.

Second, even when some agreement can be reached on the need for change, the organization finds itself unable to make change, because the processes of curriculum voting are deadlocked by a kind of academic NIMBY (“not in my backyard”) problem. The political deadlock results in minimal agreement for change, and very little reform takes place.

Thus, the job of educational reform is not a matter of creating yet another plan or list of topics. Instead it is a matter of changing minds and changing organizations through a combination of conceptual clarification and the creation of loci of experimentation. In engineering and industrial practice, it is commonplace to create pilot plants and R&D facilities to plan and test new products and processes, and iFoundry takes a page out of industry’s playbook in creating an incubator, pilot plant, or R&D facility for educational innovation and testing. Those interested in understanding the intellectual basis and design of the iFoundry mechanism can review literature on the iFoundry website ([www.ifoundry.illinois.edu](http://www.ifoundry.illinois.edu)), the iFoundry

YouTube channel ([www.youtube.com/illinoisfoundry](http://www.youtube.com/illinoisfoundry)), or the iFoundry SlideShare page ([www.slideshare.net/ifoundry](http://www.slideshare.net/ifoundry)).

### **iCommunity: Connecting for a Successful Transition from High School to College**

Engineering is a challenging course of study and many students leave for other fields of study before knowing whether engineering is a good fit for them or not. Engineering student attrition is a complex phenomenon, but a key variable in almost all successful transitions from high school to college (and from college to the workforce) is *social connectedness*. A key idea behind iFoundry and iCommunity is that a community of students working together can increase the success potential of its members and help students stay in engineering long enough to determine whether it is a good fit for them or not.

Also, the University of Illinois has rich engineering student life opportunities as exemplified by many and varied engineering student organizations on campus. Although many engineering students engage with those activities in their junior and senior years, iCommunity provides a bridge to that rich and varied engineering student life for students in the early part of their engineering education.

## **The Structure of iCommunity & iTeams**

This section considers the overall organization of the iCommunity, the iTeam selection process, the organization of individual iTeams, the support available to iTeams, and the iCouncil. In the remainder of the section, each of these is discussed in turn.

### **iCommunity Organization**

The iCommunity consists of all students who are part of iFoundry (**iStudents**). In addition, the iCommunity is supported by a variety of advisors, mentors, sponsors, and iFoundry faculty and staff members (**iFriends**). iCommunity is subdivided into teams of roughly 15-25 students called **iTeams**. Leaders of each of the iTeams form an **iCouncil** (to be discussed below).

### **iTeam Selection Process**

Early in the freshmen year, students are presented with a list of available teams, and the students are asked to rank their preferences for iTeam membership. Every effort is made to assign students to teams according to their top preferences. After the initial iTeam selection process, an iStudent can change teams with the agreement of the iChairs of the two iTeams involved and the Associate Director of iFoundry. Team changes are frozen following the third full week of the semester.

### **iTeam Organization**

At the beginning of each semester, each iTeam elects a chair called an **iChair** by majority vote from among all the members of the iTeam. If a majority vote is not obtained on the first ballot, the top-two vote getters are considered in a runoff

election, and the winner becomes the iChair. Each iChair is responsible for organizing the iTeam into manageable subteams.

### iTeam Support

Each iTeam has a set of advisors as follows:

**iTeam Student Advisor (iSA).** iSAs are undergraduate or graduate students who work for iFoundry to coordinate iCommunity and iTeam activities. Each team is assigned two iSAs, and iSAs are the go-to source of advice and coaching regarding leadership and teamwork matters, iFoundry and iCommunity workings, and informal advice for navigating campus and academics.

**iTeam Faculty Advisor (iFA).** iFAs are faculty members chosen because of their alignment with the thematic subject matter of a given iTeam. All of the iFAs are iFoundry Fellows, and many of them have been involved with iFoundry activities from early in the design process. iFAs help coordinate activities with the corporate/organizational sponsors and will be especially helpful in the early process of getting the iTeams organized.

**iTeam Corporate/Organizational Advisor (iCOA).** Corporate and organizational sponsors have agreed to work with iFoundry to help bring the world of work from outside into the university. The iCOAs meet with iTeams on roughly a monthly basis (often by teleconference), and they will help coordinate meetings with corporate/organizational representatives with iTeams when corporate members are on campus.

In addition to the team-specific advisors as described above, iTeams can seek support from the following individuals:

**iFoundry core team.** Members of the iFoundry core team are available to support iCommunity and iTeams, including Co-directors Dave Goldberg & Ray Price, Associate Director Karen Hyman, iCommunity coordinator Russ Korte, ENG 100++ Coordinator Pete Dragic, and iFoundry Admin, Tracey Johnson.

**iFoundry fellows.** A number of faculty have helped iFoundry intellectually, organizationally, and in other manners. These people are called iFoundry fellows, and many of them are happy to assist iTeams, especially in topics related to their disciplinary expertise. A listing of iFoundry fellows may be found on the iFoundry website at [www.ifoundry.illinois.edu](http://www.ifoundry.illinois.edu).

**iFoundry Council representatives.** Each department has a representative to the iFoundry Council, and these individuals may be helpful to the activities of the iTeams.

### iCouncil

All of the iChairs constitute the iCommunity Council or *iCouncil*, and a chair of the iCouncil is elected by majority vote from among the iChairs. The iCouncil is responsible for coordinating iCommunity activities in a way that social, learning,

and WOW activities are widely shared among iTeams to the extent possible. The iCouncil iChair may appoint inter-iTeam committees or teams to help promote collaboration and coordination among the iTeams.

## iTeam Functions

The iTeam serves a number of functions to help facilitate successful transition from high school to engineering college. In particular, iTeams provide

- a sense of identity and social interaction;
- academic support and iFoundry advising;
- introduction to the world of work;
- a locus for service activities.

Each of these is briefly discussed in turn.

### Identity and Social Interaction

Each iTeam provides a sense of belonging and identity to its members in the same way that a fraternity or sorority or social club might, except that it is up to the iTeam to create its own identity and social activities. **Opportunities for excellence.** iTeams can appoint identity and/or social chairs, create iTeam names, logos, or other identifying marks, use social media (Facebook, LinkedIn, etc.) or digital media (YouTube, SlideShare, etc.), hold social gatherings (with or without other iTeams or campus groups), and purchase iTeam apparel (t-shirts, hats, etc.).

### Academic Support and iFoundry Advising

iStudents are members of their home departments and iFoundry. As such, the primary responsibility for academic support and advice is with the home department; however, iTeams are an important source of informal academic support and advice. iSAs can provide information to students based on their own experience as students, and IFAs and iSAs can provide iFoundry-specific advice about iFoundry offerings, HAPI themes, and new iFoundry-related courses. In addition, iTeams can organize to help their members “survive” the challenges of the freshmen year. **Opportunities for excellence.** iTeams can appoint academic chairs, form study table/groups (generally or by class), form tutoring teams (from those experienced in advanced subject matter by AP test), link to external tutoring or study help, collect study materials, and form systems to monitor academic success.

### World of Work

A key to motivating iStudents is to make sure they understand the way opportunities in the world of work align with their interests. Each iTeam is paired with one or more corporations/organizations and one or more iCOA representatives. **Opportunities for excellence.** iTeams can appoint world-of-work (WOW) chairs to coordinate with iCOAs, the Engineering Career Services office, and other work-related agencies. iTeams can arrange field trips, talks by company representatives, and visits to Engineering Expo and other campus placement

activities. iTeams can record short videos of campus visitors on work-related topics of interest to iStudents and other engineering students.

### Service

Just as many fraternities, sororities, and social organizations perform service activities in their communities, iTeams can choose to perform service to campus entities, the community, and beyond. **Opportunities for excellence.** iTeams can appoint service chairs to organize and monitor service activities, and organize groups of iTeam members to participate in service activities to the campus, the larger community, charities, or religious groups, or organizations such as Engineers without Borders.

### Fall 2009: Four iTeams Aligned with Student Aspirations

In surveying aspirations of the incoming iFoundry class, student interests were classified into three broad categories. First, there were students who were motivated to come to engineering school to design cool technology. Second, there were students who wanted to be the next “Max Levchin” by being part of or founding a tech entrepreneurial firm. Finally, there were students who wanted to make a difference fairly directly in the world by working on the difficult social/environmental problems such as sustainability or world poverty.

Four teams were created in alignment with iStudent aspirations:

**Art & Engineering Design (AED).** AED is concerned with the intersection of art and human-centered engineering design as well as traditional areas of product design. **iFAs:** Jim Leake (IESE) & David Weightman (Industrial Design). **iCOAs:** Keith Besserud (Skidmore, Owings, and Merrill), Gerald Labeledz (Motorola), Martin Neumann, Center for Plasma -Material Interactions. **Recommended for** iStudents interested in intersection of art and engineering, structural engineers (SOM is architecture/engineering firm), engineers interested in product design across disciplines.

**Service & Systems Engineering (SSE).** SSE is concerned with the increasing role of technology-based human-centered services and systems as a source of innovation and engineering work. **iFAs:** Ray Price. **iCOAs:** Diane Fodell (IBM, SSME) and John Quarton, Amy Mast, & Russ Smith (State Farm). **Recommended for** iStudents interested in IT consulting and human-centered technology-intensive services and systems.

**Entrepreneurship & Innovation (EI).** EI is concerned with the role of technology entrepreneurship in new enterprises and new product intrapreneurship and innovation in existing corporations. **iFA:** Laura Hollis and Pete Dragic. **iCOAs:** Rhiannon Clifton (TEC) & Carl Chow (HP). **Recommended for** iStudents interested in startup entrepreneurship, large-company intrapreneurship, and business innovation and creativity, more generally.

**Engineering in Service to Society (ESS).** ESS is concerned with direct action to apply engineering to problems of sustainability, poverty, and societal improvement. **iFA:** Bruce Litchfield. **iCOAs:** Keith Besserud (SOM, sustainable architecture), Bruce Litchfield (Engineers Without Borders) & Diane Fodell (IBM, Smarter Planet). **Recommended for** iStudents interested in directly applying their engineering skill to problems of sustainability, the environment, or societal improvement.

These diverse iTeams provide a variety of emphases to accommodate the interests of the iStudent class.

## **iTeam Meetings and iCommunity Checkpoints & Gatherings**

iTeams meet for the first month of the semester on almost a weekly basis to (1) elect iChairs, (2) get organized, and (3) prepare for iCheckpoint and iExpo meetings at midterm and the end of the semester, respectively. Dates, times, and meeting places for early meetings are predetermined, but thereafter, iTeams meet at a frequency determined by the iChair and other team leaders.

### **iCheckpoint**

The iCheckpoint meeting is held at midterm, and iTeams present (1) an overall plan of iTeam organization and activities, and (2) plans and progress in each of the functional iTeam areas (identity/social, academics/advising, world of work, and service).

### **iExpo**

The iExpo meeting is held at semester end, and iTeams make final presentations in each of the iCheckpoint areas. iCOAs, iFAs, departmental faculty, and others are encouraged to attend iExpo.

### **Other iCommunity Gatherings**

iCommunity gatherings can be scheduled for social, intellectual, or organizational purposes as needed. These gatherings may be initiated by iFoundry staff, the iCouncil, or both.

A number of the iCheckpoint and iExpo activities are given special recognition as described in the next section.

## **Recognition**

iCommunity and the iTeams form a support mechanism to help iStudents get through the transition from high school to the University, intellectually and socially, in a manner that introduces the world of work and of broader service. These are intrinsically important functions and their importance provides strong motivation for the iTeams to do their jobs. It is, however, helpful in human affairs to recognize

both team and individual excellence as a way to encourage the accomplishment of primary tasks.

This section outlines the forms of iTeam, iCheckpoint/iExpo, iCommunity recognition.

### **iTeam Recognition**

iChairs may devise means of recognizing individual and group accomplishment within their iTeams. **Opportunities for excellence.** Select a recognition chair. Recognize weekly excellence overall or in functional categories, as individuals or as groups. Post bios, pictures, or videos of those recognized on iTeam Facebook page or blogs. Give ribbons, trophies, medals, t-shirts, books, or other tangible awards in connection with some recognition.

### **iCheckpoint Recognition**

Presentations at the midterm iCheckpoint meetings are evaluated by all audience members and judged by a panel of iFriends. First- and second-place awards are given to the top two presentations in each category. The weighting of presentation quality and content will be roughly 50-50 in determining these awards. **Form of recognition:** iFoundry webpage listing, certificates to the recognized iTeam and all members of the presentation team, and other recognition as determined by the iCouncil.

### **iExpo Recognition**

Presentations at the end-of-semester iExpo meetings are evaluated by all audience members and judged by a panel of iFriends. First- and second-place awards are given to the top two presentations in each category. The weighting of presentation quality and content is roughly 50-50 in determining these awards. **Form of recognition:** iFoundry webpage listing, certificates to the recognized iTeam and all members of the presentation team, and other recognition as determined by the iCouncil.

### **iStar Recognition**

Individuals and groups of individuals may be nominated for iStar recognition based on their contributions to the iCommunity. Any iStudent or iFriend may nominate any iStudent or group of iStudents for iStar recognition in a 150-350 word email sent to the iFoundry Associate Director prior to the nomination deadline at the end of each semester. The email should list (1) the iStudent(s) nominated, (2) the ways in which the iStar nominee(s) aided the iTeam, iCommunity, iFoundry, the College, the Campus, or society at large, and (3) the iCommunity/iTeam functions that were advanced by these accomplishments. **Form of recognition:** iFoundry webpage listing, a certificate to all iStar award winners, and other recognition as determined by the iCouncil.

### **iCommunity Recognition**

iTeams are eligible for recognition in each of the following ways:

**iGPA award.** Following each semester teamwise GPA is calculated and awards for first and second place are given. **Form of recognition:** iFoundry webpage listing, certificate to iTeam, and other recognition as determined by the iCouncil.

**iECS award.** Following the first semester the proportion of iTeam members who have registered with Engineering Career Services (ECS) is calculated and awards for first and second place are given. **Form of recognition:** iFoundry webpage listing, certificate to iTeam, and other recognition as determined by the iCouncil.

**iWOW award.** Following the summer of the first year the proportion of iTeam members who have completed professionally related summer internships or jobs is calculated and awards for first and second place are given. **Form of recognition:** iFoundry webpage listing, certificate to iTeam, and other recognition as determined by the iCouncil.

**iService award.** Following the second semester the proportion of iTeam members who have engaged in a service activity during the preceding year is calculated and awards for first and second place are given. **Form of recognition:** iFoundry webpage listing, certificate to iTeam, and other recognition as determined by the iCouncil.

**iIdentity award.** Following each semester each iTeam submits a list of identity and social activities for the semester. A judging panel evaluates the submissions and awards first- and second-place awards for the best entries. **Form of recognition:** iFoundry webpage listing, certificate to iTeam, and other recognition as determined by the iCouncil.

## iCommunication

iFoundry has adopted the following standard systems for social and digital media usage:

**Facebook.** In the first semester all iStudents are expected to have a Facebook account and to be fans of iFoundry. Many iTeams will establish Facebook presence for their teams on Facebook.

**LinkedIn.** In the second semester before summer internship season, all iStudents are expected to have LinkedIn account and join the iFoundry group. Many iTeams will establish a LinkedIn presence for their teams.

**YouTube.** YouTube is the primary video repository for iCommunity activities. iCommunity, iTeam, and iStudent YouTube channels should link with the iFoundry YouTube channel ([www.youtube.com/illinoisfoundry](http://www.youtube.com/illinoisfoundry)) and group.

**Slideshare.** Slideshare is the primary powerpoint and document repository for iCommunity activities. iCommunity, iTeam, and iStudent Slideshare pages should

link with the iFoundry Slideshare page([www.slideshare.net/ifoundry](http://www.slideshare.net/ifoundry)) and group.

**Blogger.** iFoundry hosts its own blog on university servers; however, Blogger is the official blog site for iCommunity, iTeam, and iStudent blogs. Once blogs are established for these purposes, send a URL to Tracey Johnson ([tjohnsn@illinois.edu](mailto:tjohnsn@illinois.edu)) to get the blog linked to the iFoundry blog.

**Twitter.** iFoundry tweets @ifoundry and iFoundry co-director David E. Goldberg tweets @deg511. iCommunity, iTeam, and iStudent twitter accounts should follow @ifoundry, and optionally, @deg511.

Efforts should be made to use these standard tools to permit maximal interlinking and connectivity.

## iBudget

A budget is available to each iTeam each semester to cover expenses related to iTeam meetings and activities. iChairs should consult the Associate Director at the beginning of each semester to determine the budget amount available. iChairs should then work with iSAs and iFoundry staff to plan and make their expenditures.

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