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var Designstudio = function ()
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*Jeffrey S. Raikes School of Computer Science and Management*

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**Design Studio**

*Annual Report 2015-2016*

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University of Nebraska-Lincoln



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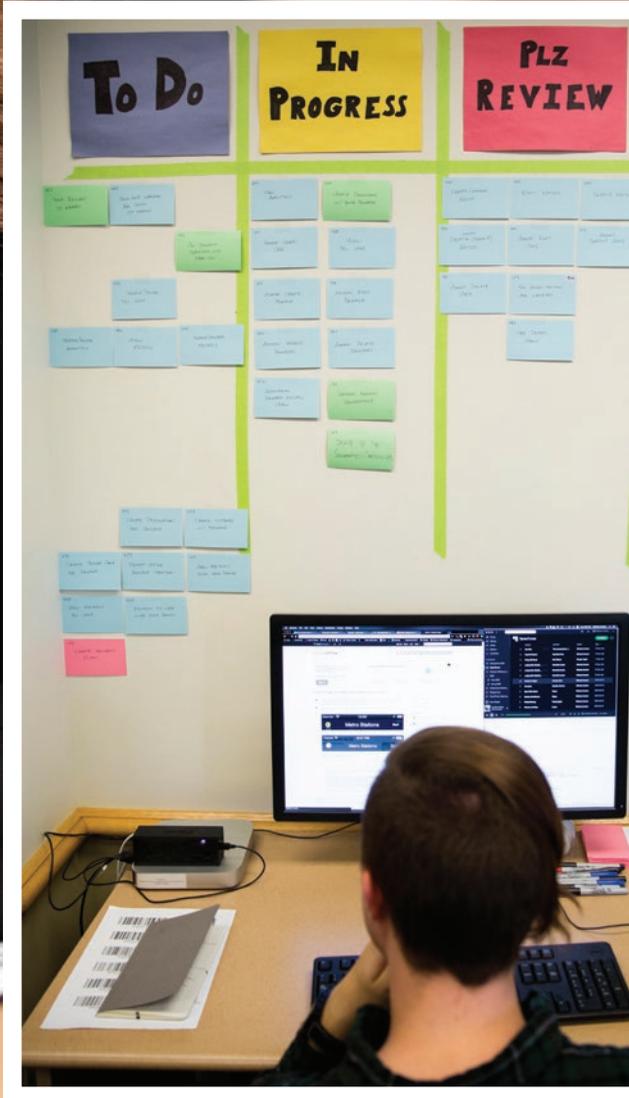


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## EMBRACING CHANGE

**Ian Cottingham**

Director of Design Studio

Design Studio has experienced many changes over the last 16 years. Whether we are forging new partnerships with capstone programs across campus, transforming an unused commercial kitchen into a space to foster innovation, or developing new ways to create opportunities for more students at UNL, Design Studio is always looking forward. The students, faculty, and staff of Design Studio live to tackle the next big problem or find a compelling new opportunity. We embrace change and a chance to make an impact; and make an impact we do!

This year has seen some of the most significant growth in the history of Design Studio. With the completion of the integration of the Computer Science and Engineering Capstone program, Senior Design, 124 students joined us last Fall. Using our release-driven agile process, teams quickly formed and started working to complete 22 projects sponsored by industry, academic, and government partners. These projects ranged from open-ended design thinking approaches to solving social challenges to heavy lifting data analytics to drive user engagement. No matter the challenge, the student teams put the power of their knowledge to work and made an impact. This report celebrates only a few of those impacts. So many more will happen in the years after graduation as these innovative minds embark on their careers.

Delivering a program that is able to accomplish so much takes the effort of a truly diverse team. We bring together academics, developers, coaches, mentors, and managers to show what is possible when the academy and industry come together. Without the support of the community and our project sponsors, none of this would be possible. This year, we are recognizing several milestones for our partners. The University of Nebraska and the State of Nebraska are each completing their 5th projects and Fiserv, its 10th. The collective 20 projects sponsored by NU, the State, and Fiserv have allowed students to put into practice what they are learning in the classroom to delight customers, transform lives, and push the limits of what is possible in interdisciplinary education. The entire team is grateful for the commitment of partner organizations like Fiserv and looks forward to many continued years of successful collaboration.

As we put another year in the books, we pause to reflect on where we've been and where we are going. Whether 1999 or 2016, each year in the Raikes School the next generation of innovator is up late at a white board designing the next big thing, nose in a book studying cutting edge approaches to analyzing problems, or forming new relationships that will lead to the startups of the future. Each year in the Raikes School, the brightest minds in the country are experiencing a truly unique approach to education that will empower them to change the world. That approach and a commitment to always continuing the adoption of something new is constant. So, despite so much change, the Raikes School is constant. We are dedicated to excellence; a dedication that no matter how much changes we will always remain the same.

# THE NEXT ITERATION: THE RAIKES SCHOOL DEVELOPS INNOVATION COURSE

The Raikes School prides itself on working at the forefront of innovation. In recent years, this has involved an overhaul of curriculum and the inclusion of design thinking into the first semester for all Raikes School freshmen.

Leveraging design thinking helps Raikes School students fully engage in one of the School's core functions: "designing creative solutions to complex problems every day." Design thinking is a user-focused, human-centered approach to understanding needs and translating those into a product that solves real problems. After several years of teaching a design thinking course, the Raikes School focused its design thinking curriculum more on the topics students would address in Design Studio and in their careers after graduation by integrating business topics alongside problem solving and solution development material.

This effort became the Innovation Processes course or Raikes School 101. The course introduces students to the concept of innovation, interdisciplinary problem solving, and several team-oriented processes from software engineering, business development, and industrial design.

"Innovation Processes prepares students for success in problem solving and product development as only the Raikes School can," said Ian Cottingham, director of Design Studio and assistant professor of practice. "The course takes a truly interdisciplinary approach to innovation, integrating concepts and processes from software engineering for product development, with strategic management tools for successful business model generation and market development."

Students learn to differentiate innovation from novel approaches to solving a problem. By applying a human-centered approach to problem solving, students are exposed to methods for recognizing wicked problems, identifying potential solutions, developing and testing concepts, and assessing feasibility.

"We weave these concepts together with a strong focus on design thinking," Ian said. "It puts the customer front and center and teaches students how to approach problem solving to understand user needs in the context of developing solutions that will succeed in the marketplace." The





inclusion of design thinking into the Raikes School curriculum has already made a significant impact on several projects in the last few years.

“The entire team is excited to see what this group of students is able to accomplish in two years when they enter Design Studio,” Ian said. “We’ve caught a glimpse of what this kind of education will result in for our project sponsors in the freshmen interns, but that is just the start. We can’t wait to see what teams trained in these processes are able to accomplish for our partners.” In addition, the course serves as a launching pad for the education each student will receive at the Raikes School.

“Teaching this course was a blast. The freshmen were high energy and passionate about innovation,” Ian noted. “They regularly exceeded my expectations with the solutions they were able to develop and the ideas they brought to class. It’s one of the things I love about the Raikes School, getting to work with, and learn from, some of the most talented students in the country. To see them so engaged so quickly in a class that teaches a skill set that will be the core of their careers as students and innovators shows me we made the right decision in developing the course.”



# WORKING OFFSITE: DS TEAM LIVES AND WORKS IN THE HAYMARKET

The Esther L. Kauffman Academic Residential Center is the home of the Raikes School, containing both learning and living spaces. For Design Studio, that means several rooms become hives of activity, where cream-colored walls are papered in a kaleidoscope of sticky notes and whiteboards are filled with processes, notes, and actions. This year, one Design Studio team had a complete change of scenery, living and working offsite in Lincoln's Haymarket.

"With greater demand across the board for graduates of the Raikes School and limitations on space in Kauffman, we have had to get creative about ways to increase our footprint," recalled Ian Cottingham, director of Design Studio and assistant professor of practice. "Hudl wanted to offer the team a more in-depth experience and decided to have the team live a few blocks from its offices in the Haymarket, and that provided a great way for us to think about the growth challenges."

The Hudl team lived in the Canopy Street Lofts across the street from the Pinnacle Bank Arena, sharing space with Hudl employees visiting the Lincoln headquarters from offices as far away as London.

"It's a more immersive experience," said senior Derek Nordgren. "It feels even more like we're working for Hudl." Sharing living space with Hudl employees has been rewarding for the team.

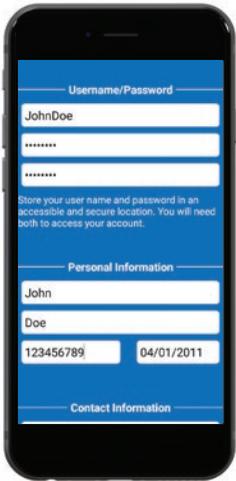
"We had an employee in town from London staying in the apartment," senior Darren Johnson pointed out. "That is pretty amazing and gives you an opportunity to learn about other parts of the company." Integrating the team was a chief goal of the offsite arrangement. Even though several team members had previous experience with Hudl, some did not. Regardless, it allowed the team to hit the ground running and provide value immediately.

"Living near the Hudl offices gave the team a unique opportunity," said Zach Christensen, Design Studio Development Manager. "They did a great job fitting into Hudl's culture and leveraging that for the project."

Current plans for next year's Hudl team involve a similar living arrangement. This year's team has clearly proven the success of the concept, which could become a practice for other Design Studio teams working for other companies in the future.

"In Design Studio, we are always trying to find new ways of doing things and that isn't limited to solving product issues, but can also involve our own processes," Ian said. "I think this experience was a great example of what happens when we put our heads together with our industry partners to solve a problem: everyone wins. I'm glad our students had the opportunity and am looking forward to continuing this type of project next year."

*"In Design Studio, we are always trying to find new ways of doing things and that isn't limited to solving product issues, but can also involve our own processes." —Ian Cottingham*



# DESIGN THINKING HELPS A TEAM CUT RED TAPE

When citizens think about using government services, they usually envision lots of rules, regulations, long lines, and confusion—classic governmental ‘red tape’. Navigating government programs can be a challenge for anyone, but these efforts can seem even more impossible when there are communication issues and the program in question feeds you and your family.

The Nebraska Department of Health and Human Services (DHHS) sought out Design Studio for help in envisioning solutions for cutting red tape and helping users of the Supplemental Nutrition Assistance Program (SNAP) apply for and maintain their benefits. SNAP, colloquially known as ‘food stamps’, is a program that helps low-income people access food. Program recipients have an electronic benefits transfer (EBT) card that can be used at most supermarkets and grocery stores to buy food.

“What we are doing is bridging the gap between the state and program users,” said senior Maddy Petersen. “There are so many rules, forms, and processes involved.” A critical strategy for the team as it investigated and developed solutions to improve the experience for recipients of food assistance was design thinking. Tim Brown, president and CEO of design firm IDEO, defines design thinking as “a human-centered approach to innovation that draws from the designer’s toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.” A core element of design thinking is the use of user empathy in making design decisions.

“Empathizing with a user is something we think we’re doing,” Maddy said, “but often we really aren’t. Design

thinking gives us the tools to actually make empathy a driving factor in our work. It has made a huge difference in this project. It’s not about the coolest technology—it’s about what works for the users.” The team conducted interviews and research to engage with the problems presented by the current DHHS process.

“The importance of communication between DHHS and program users became clear early on,” Maddy said. “Recipients would find their benefits reduced or discontinued and they didn’t know why. Usually, a letter was somewhere in the U.S. mail explaining the action. Those letters were often delayed and when they arrived, they were so dense and detailed that the user couldn’t understand them.”

The team’s solution tackled these issues and involved the development of a Web portal and Android application that allowed users to apply for and maintain benefits, even handling notifications to DHHS of benefit-altering events. The solution also increased transparency and conveyed benefits decisions in more accessible language. Once developed, the team tested its prototypes and made refinements. This project was different from other Design Studio projects that are focused on for-profit ventures and afforded the team a unique chance to make an impact.

“When you peel back the red tape, it helps people in the field help program users. Working on a project that could really help people has been a great experience for me,” Maddy reflected.

*“Working on a project that could really help people has been a great experience for me.”*

*– Senior Maddy Petersen*



# ForceWIN: A SUCCESS STORY FOR THE POWER OF INNOVATION AND PARTNERSHIPS



*“I couldn’t think of a better client,” Rachael said. “He’s very passionate and we were able to feed off of his excitement. This energy keeps us motivated.” – Senior Rachael Dahlman*

The University of Nebraska–Lincoln is a global leader in innovation. Each year brings further development of the tools needed to attract and encourage faculty innovators and educate the next generation of innovators who will push the boundaries of a future we can only imagine. One of the most dynamic engines for this development has been the ability to develop campus-wide partnerships that make groundbreaking products. This year, Design Studio, in continued partnership with NUtech Ventures, had the opportunity to work with faculty on campus to develop a product that will change lives.

A Design Studio team was tasked with developing a prototype device and software application, called ForceWIN10, in order to create the first integrated platform to allow clinicians and researchers to conduct real-time bedside diagnostics and neurotherapeutics of muscle-force dynamics for those who have sustained injuries or progressive diseases of the nervous system. The system measures oral-facial and finger muscle forces to assess injury damage and the impact of treatment. Throughout his decades-long career, Dr. Steven Barlow, associate director of the Center of Brain, Biology and Behavior, has been working on medical device-based solutions for patients with various nervous system disorders.

Dr. Barlow, also the Corwin Moore Professor in the Department of Special Education and Communication Disorders and creator of ForceWIN10, says, “It measures muscle force for those who have had a traumatic brain injury, stroke, or have autism.”

“When we learned about the Raikes School and the work they do, we thought this would be a great opportunity,”

Steve said. Supporting the effort to engage the Raikes School and further develop ForceWIN10 was NUtech Ventures. NUtech’s mission is to facilitate the commercialization and practical use of innovations generated through the research activities at the University of Nebraska–Lincoln.

“NUtech Ventures really is a catalyst for innovation and we are very fortunate to have the opportunity to participate in this kind of technology transfer project,” said Ian Cottingham, director of Design Studio and assistant professor of practice. “NUtech has been a committed partner who wasn’t just there at the beginning and the end of the project, but was part of the team throughout the process. This is what innovation is all about. Partnerships, teamwork, and making a product that makes a difference.”

“This is a full stack project,” said senior Rachael Dahlman. “We have software and hardware working together as one product. It presents challenges and can be a struggle, but it is a good struggle.” The Design Studio team had several issues to tackle, including reducing the size of the sensor devices, making them wireless, and updating the software for a new operating system. The team achieved this and more. The prototype developed by the Design Studio team has small sensors that connect to a tablet or laptop via Bluetooth.

“It has a very strong application,” said junior Heitor Castro. “We’ve made it possible to easily use ForceWIN10 bedside.”

“This is one of the best projects I’ve ever seen,” said Zach Christensen, Design Studio Development Manager. As it developed a product that incorporated both hardware

and software, the team felt fortunate to be working with Professor Barlow.

“I couldn’t think of a better client,” Rachael said. “He’s very passionate and we were able to feed off of his excitement. This energy keeps us motivated.” Another motivating factor for the team was the potential impact of the project. “This will really help people,” Rachael said. “It helps research. It helps treatment.” The prototype will be tested at Madonna Rehabilitation Hospital in Lincoln and eventually refined into a final product that can be marketed.

“The Raikes School team exceeded our expectations,” says NUtech Executive Director and UNL Associate Vice Chancellor for Technology Development, Dr. Brad Roth. “The students are brilliant, highly motivated, creative and dependable. Their training, professionalism and work ethic is reminiscent of that seen with seasoned industry personnel. We look forward to building on this success with additional Raikes School Design Studio-UNL-NUtech Ventures collaborative projects in the future!”

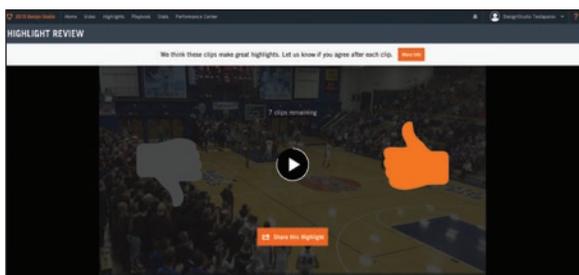
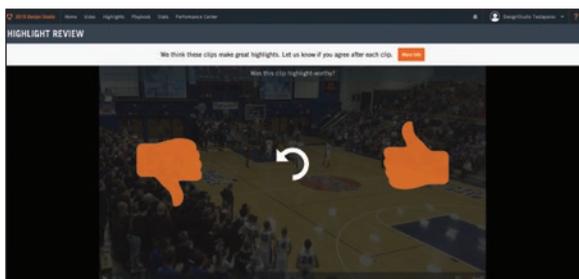
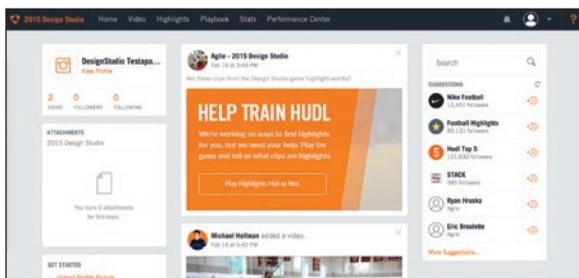
ForceWIN10 is the first biomedical project for Design Studio and is a sign of what is to come for the program, both in partnerships and in projects that make a real-world impact. “Working on ForceWIN10 feels really important,” Heitor added. Rachael echoed the sentiment. “It’s been really exciting for everyone on the team,” she said.

The Raikes School Design Studio project was funded by a Proof of Concept grant to Dr. Barlow by the University of Nebraska.





# WHAT IS HIGHLIGHT WORTHY? DESIGN STUDIO TEAM HITS THE PAINT TO FIND OUT



Lincoln-based Hudl is an industry leader in sports video analysis software. The company prides itself on its mission: “We help teams and athletes win.” Hudl also helps these athletes create highlight reels that play a key role in recruiting. When highlight reels are part of your product suite, but players in a particular sport don’t seem to be taking advantage of the services, what do you do? Hudl engaged Design Studio.

Taking the unique approach of having its team both live and work in Lincoln’s Haymarket, Hudl sought to have the team quickly integrate with Hudl culture and operations as the team worked on its solution. Several members of the team had prior experience working for Hudl, so they were ready to get to work.

“A major feature for Hudl is the creation and sharing of a highlight reel,” said senior Derek Nordgren. “However, they found that basketball players were not really using this feature. There is a lot of sharing in football, but very little in basketball.” The team dove into Hudl’s vast quantity of data, looking for patterns in what was shared and what wasn’t.

“What it came down to was finding what was highlight worthy. That’s where the rubber meets the road,” said senior Darren Johnson. Using state-of-the-art data analytics and machine-learning techniques, the team created a top 10 clip list for each basketball game and had players vote on what was good and what was bad.

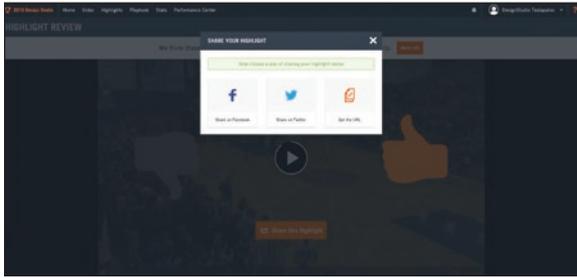
“There are a lot of challenges and possibilities,” Derek said. “Basketball has lots of games per week and a basket isn’t seen the same way as a touchdown. What we found is that many players didn’t think a basket was highlight worthy unless it won a game, was a dunk, or a three pointer.”

“Basketball players were just not in the mindset for a highlight reel,” Darren added. The team has tested several approaches to identifying what is highlight worthy and how behavior can be changed to get players to use the highlight reel feature more. The team greatly benefited from Hudl’s focus on data and the iterative testing it made possible.

“Hudl is very data driven. We have lots of data and we have lots of metrics,” Darren said.

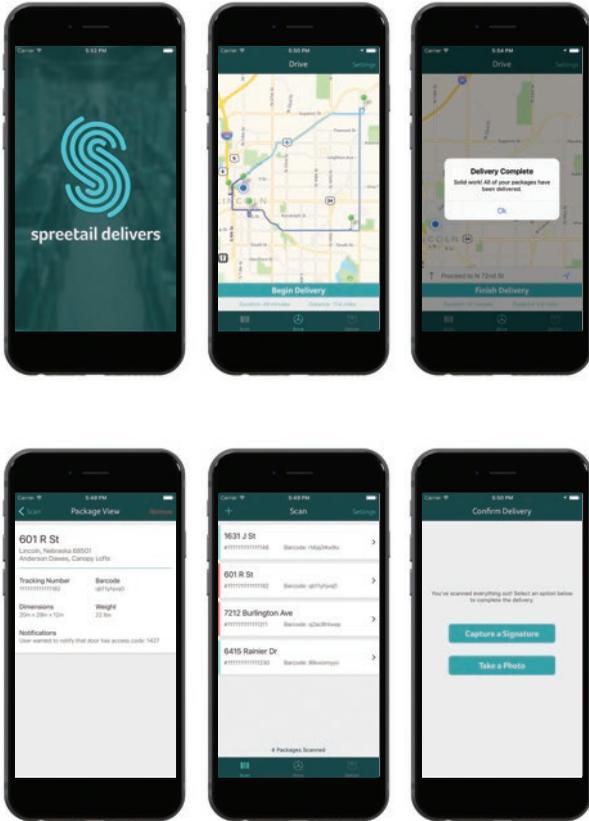
*“What it came down to was finding what was highlight worthy. That’s where the rubber meets the road.”*

*—Senior Darren Johnson*





# FROM THE DOCK TO YOUR DOOR— TODAY!



We live in an age when no product is out of reach. A few clicks and literally anything we want can be found, purchased, and on its way to our doors. It is so convenient, but is it fast enough? For Lincoln-based Spreetail, the answer was ‘no.’

Spreetail’s mission is to connect “customers with the things they need.” In exploring ways to make this a faster and better connection, Spreetail sought out Design Studio.

“What Spreetail wants is pretty exciting,” said junior Mike Jensen. “They want a dock-to-door software solution that allows orders made before 4 p.m. to be delivered the same day.”

To achieve this, delivery drivers need turn-by-turn directions following an optimal route. This route must take into account construction and traffic delays. Further, the solution must integrate hardware tools like barcode scanners.

“It sounds simple until you understand everything that complicates it,” Mike said. “We use Apple and Google map kits and APIs to address construction and other issues. Another challenge we found wasn’t just generating the optimal route, but generating it fast enough. As you approach three seconds, delivery drivers are going to wonder if the software is doing anything.”

A critical tool to addressing these project challenges was the involvement of both the Design Studio team coach and the Spreetail team.

“Our coach, Timothy Braun, was an invaluable resource, especially for our backend database. He helped us avoid some potential mistakes before we made them,” Mike said. “The team at Spreetail was amazing to work with. They were really involved and always available. Any question, any time, they were there.”

“The team has done an amazing job with this project,” said Jeremy Suing, Design Studio Project Manager. “They conducted several rounds of testing with each round getting progressively more realistic, culminating in doing ‘live’ testing all across Lincoln.” Getting ready for real-world testing presented a few challenges.

“I had our team room full of boxes,” Mike said. “I knew people had empty boxes in their rooms and I needed them, so I put out the call.” Mike labeled boxes, scanned labels, and made test deliveries.

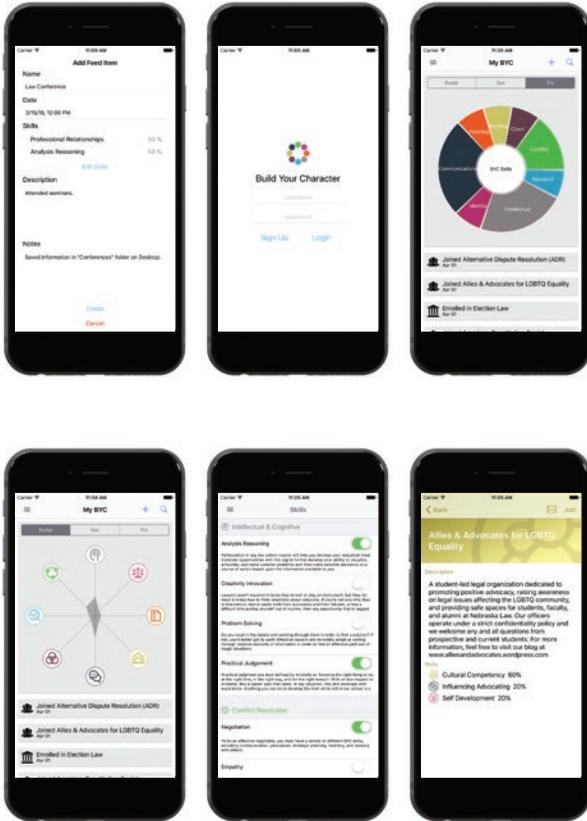
“Our team time is in the evenings. Needless to say, you can look a little suspicious delivering a box at nine o’clock at night!” The team also explored what delivery experience analytics the system could provide, such as average speed, stoppage time, and route deviations.

“It’s been really cool,” Mike said. “This has been such a tangible project that hopefully will have an impact in the coming years. It’s interesting to think that this could bring a package to my door someday soon—and we made it!”

*“Our team time is in the evenings. Needless to say, you can look a little suspicious delivering a box at nine o’clock at night!”*  
– Junior Mike Jensen



# HELPING LAW STUDENTS BECOME LAWYERS



The University of Nebraska College of Law has been a leader in legal education since its founding in 1891. The college offers classes that explore everything from legal research and writing, to space law. But, it takes more than classes to make a law student a lawyer. Recent studies have found that to be an effective lawyer, development in certain areas of professional skills is also required.

To help students master these skills outside the classroom, the College of Law developed the 'Build Your Character Program' (BYC), and engaged Design Studio to develop a mobile application to support that program. The BYC program, based on research from two professors at the University of California, Berkeley, groups 28 skills into eight different themes or 'keys'. The eight keys are: intellectual and cognitive; communications; conflict resolution; working with others; research and information gathering; planning and organization; client and business relations; and identity.

"Research found that law schools don't produce lawyers, they produce those who know the law," said senior Eric Sinovic. The team was tasked with developing a mobile app and supporting Web-based system to facilitate finding events that developed needed skills and tracking attainment of those keys.

"These eight keys identify the skills that are needed to be a well-rounded, effective lawyer," said junior

Sydney Goldberg. "So, how do law students find events, competitions, organizations, and other programs that can help them develop these skills? That's what we worked on." Currently, law students are bombarded with emails and flyers from organizations and activities. In conducting its user research, the team found that many law students just deleted these emails due to annoyance.

"We definitely needed to fix that and make finding and tracking activities more user friendly," Sydney said. The Build Your Character tool developed by the team allows students to find activities, track skill development through participation in those activities, and create a printable PDF dashboard showing the overall skill development that has been attained. In short, the team developed an easy, user-focused, self-development tool that works alongside the law school curriculum. "We're totally changing how law students get information," Goldberg said.

"The Design Studio team was amazing—they took our general concept and turned it into an app that we believe will change the way law students think about their education and career," said interim dean Richard Moberly. "We were thoroughly impressed with the team's professionalism, expertise, and hard work."

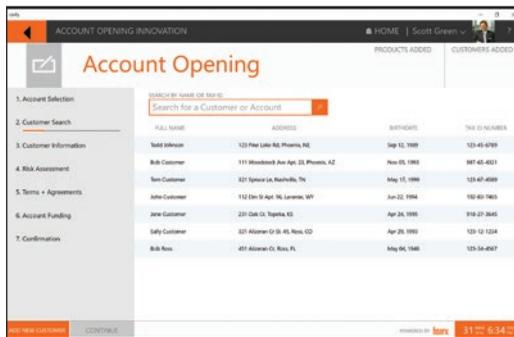
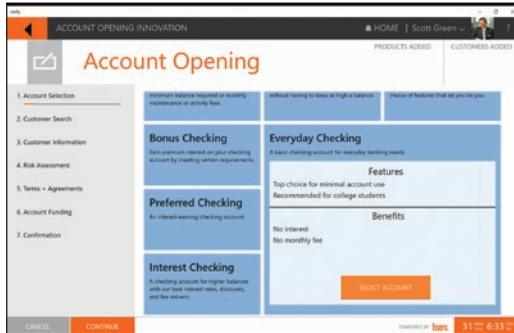
Law students will get to experience this change starting in August 2016.

*"Research found that law schools don't produce lawyers, they produce those who know the law."*

*-Senior Eric Sinovic*



# USING CONVENIENCE TO BUILD A CUSTOMER RELATIONSHIP



Fiserv, with offices in Lincoln, is a global leader in financial services technology. Its clients, including many of the world's largest banks, are always interested in improving the customer experience. Fiserv is a long-time Design Studio client with a focus on disrupting traditional industry behaviors and maximizing relationships between institutions and customers.

For Fiserv and the Design Studio team, this year's project, Fiserv's 10th, focused on the account opening process and how innovations at this point of contact could build customer engagement and loyalty.

"What we're doing is re-imagining the account opening process," said senior Rees Klintworth. "We're re-imagining it from the ground up." The team deployed skills and tools from design thinking to understand the account opening experience from both sides of the table—the banker and the customer.

"We really dug into what was required versus what was superfluous," said junior Ashlyn Lee. "There is a lot going on in the account opening process and we needed to know what we were dealing with."

User feedback told the team that the customer experience wasn't personal enough to build a connection with customers. This connection is critical to getting the customer to engage in the process, open the account, and stay loyal to the bank. Most interesting is how the team approached the account opening exchange between the customer and banker. To maximize the collaborative nature of the meeting, the team called these events 'sessions.' They also found through user feedback that engagement of the

customer in the process is more important than making the process quick.

"There is usually a lot of paper involved. And users sometimes felt like they weren't being listened to because all this paper required them to enter the same information over and over again," said Ashlyn.

To solve this, the team focused on deploying devices such as Surface Pros and iPads to allow the banker and the customer to collaborate on filling out needed forms. Gone are the days of spelling your name for the banker. Instead, the banker simply sends the form to the customer's screen and they fill in the details.

"We also broke down the account information into talking points," Rees said. "This makes the process more standardized, so even bankers with limited account opening experience can jump in and help on busy days. It also allows the banker to send options and highlights to the customer's screen. The customer then selects and confirms the options and features they want."

"What's really interesting," Ashlyn noted, "is how the two devices are working together. You often don't see that and it really makes engagement possible."

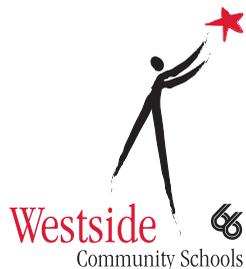
The team has developed a fully functional proof of concept for Fiserv. The team's efforts will be highlighted at the Fiserv Forum Spring Client Conference, which this year focuses on customer engagement.

"Fiserv has been great to work with," Rees said. "And the team is very excited about the potential of this project to positively impact Fiserv and its customers."

*"What we're doing is re-imagining the account opening process. We're re-imagining it from the ground up."*

*- Senior Rees Klintworth*





# SCHEDULING FOR A BETTER LEARNING ENVIRONMENT

This academic year marks the second year Design Studio has worked with Westside Community Schools in Omaha to develop a cutting-edge student management system. Westside Community Schools prides itself on being an innovative educational system that ensures academic excellence and serves the unique needs of all learners.

Westside's efforts to engage with this innovative mission have a long history. In 1967, Westside High School discontinued a six-period class schedule and launched modular scheduling. This system helps students and develops them as independent learners and gives them the equivalent of an additional semester of classes during their high school education.

“Modular scheduling is much more like what we see in colleges today,” said senior Scott Johnson. “Westside sees it as a major advantage for the students. That said, actually making a student's schedule presents a lot of challenges. It takes one person a full year to handle the schedule and it is a very paper-intensive process.” The schedule also presents challenges of having enough large classrooms available for large courses and each course can be of different time duration and have a different number of sessions per week.

“There is no software currently on the market that can handle this high school schedule,” senior Ryan Erdmann said. The Design Studio team dove into developing an algorithm that could handle the scheduling complexities encountered by Westside and the four modes of instruction used: large group, small group, laboratory, and independent study time.

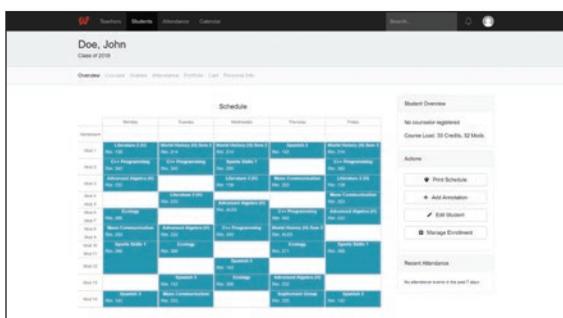
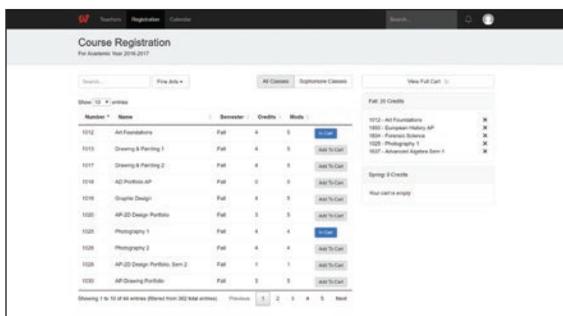
“At least at first, it was all about the algorithm and the different issues we needed to address,” Scott said. Another issue presented by modular scheduling is taking attendance.

“The schedule presents some problems in taking attendance,” Scott said. “Right now, attendance isn't taken until the end of the day. Hopefully with what we've developed, that is no longer a problem.” The student information system that the team created handles class registration, scheduling, and attendance. Although it does not yet include gradebook functionality, that could be on the horizon. The system even simplified the duties of the hall monitor.

“The Westside hall monitors used a lot of paper and binders,” said Ryan. “Now, they are beta testing our software on iPads.”

“This is a project I brag about,” said Zach Christensen, Design Studio Development Manager. “The team has done an excellent job turning a human process into a machine process. They did a great job of developing a product that solves Westside's problem.” Part of the success of the team rests in the engagement and cooperation of Westside Schools.

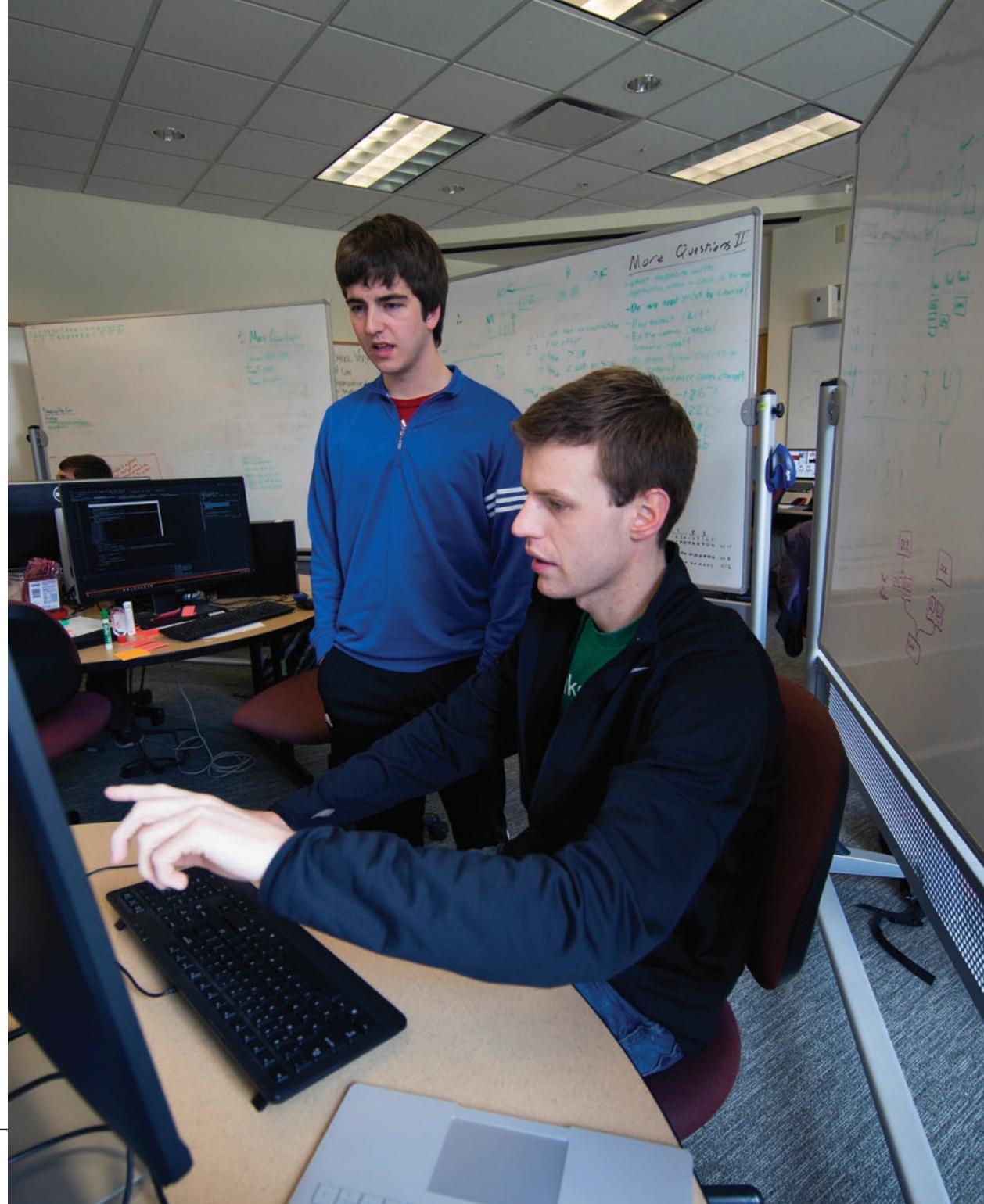
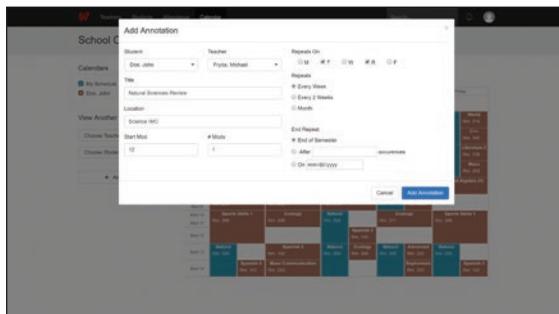
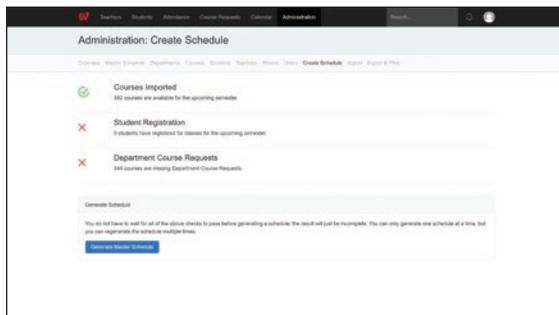
“The Westside team has been amazing to work with,” said Ian Cottingham, director of Design Studio and assistant professor of practice. “This has been a fantastic partnership and we are all looking forward to seeing where these efforts will lead. I think what we've developed



*“There is no software currently on the market that can handle this high school schedule.”*  
 – Senior Ryan Erdmann

for them is going to make a big difference.” Next steps include exploring a collaborative strategy to bring the software to market, creating new opportunities for students in the Raikes School.

“It is great building software for someone who really cares about it. How involved the client is really makes the difference for the product. Westside’s involvement was critical to our team’s success,” Scott said.



# 2015-2016 DESIGN STUDIO SPONSORS



## Design Studio / BuilderTrend / Seamless Cloud Document Editing

Develop cloud-based document edit and synchronization functionality to allow native editing of BuilderTrend documents locally without the need to download, edit, and reupload the document.



## Design Studio / Fiserv / Project Unify

Explore ways to disrupt traditional banking by creating new connections between bankers and customers through the use of emerging innovative technologies.



## Senior Design / Fiserv / Project Unify

Design and develop mobile application prototypes with latest technologies to demonstrate a fast, streamlined, user-friendly process for intaking user information tailored around opening a pre-paid banking solution.



## Senior Design / GC Image / Cheminformatics for Metabolomics

Develop familiarity with bioinformatics and data science, two exciting fields with many lucrative applications, and, more generally, for scientific software for data analysis and visualization.



## Design Studio / Hudl / Sports Highlight Clip Sharing

Develop tools for athletes to easily identify, create, and more easily share highlight video to increase user engagement in Hudl.



## Design Studio / Raikes School / Student Information Tracking System

Work with the Raikes School administration to develop a Web application that allows the Raikes School to easily update and track student information as well as perform analytics across a number of student success metrics in order to allow the school to increase the quality of student support and engagement.



## Senior Design / Raikes School / Programming Education for STEM

Evaluate tools and software technologies towards the development of curriculum to teach K-12 students about STEM fields by introducing them to programming concepts to be used for data analysis and visualization.



## Design Studio / MacPractice / MyDoctor

Develop a mobile solution to enhance and enrich the provider-to-patient relationship through a seamless and streamlined native patient-facing mobile application that leverages the full APIs that iOS and Android platforms provide.



## Design Studio / Microsoft / Office365 Financial Reporting

Develop a solution using Office365 that will enable Microsoft Dynamics Management Reporter customers to utilize cloud-services to incorporate ERP data from multiple sources into a single Excel workbook for analysis.



## Design Studio / Mutual of Omaha / Group Claims Reporting Solution

Review current enterprise tool set and implement a solution that encompasses self-service automation, reporting, mobility, advanced analytics and data mining, integration, and customized development.



## Design Studio / Nelnet / Honeycomb Service-Oriented Architecture

Develop an SOA that shares common data between application platforms in an enterprise and create Web-based tools to interact with the various integrated systems.



## Design Studio / NUtech Ventures / ForceWIN

Develop the first integrated platform to allow clinicians and researchers to conduct real-time bedside diagnostics and neurotherapeutics of muscle-force dynamics among key motor control systems involved in daily activities that require skilled movements in a wide range of clinical populations across the lifespan who have sustained injuries or progressive disease of the nervous system.



### Design Studio / Pen-Link / Atlas

Develop a minimum commercially viable Web-based software-as-a-service solution for law enforcement investigators to inject and analyze telecommunication data.



### Design Studio / Spreetail / Spreetail Delivers

Develop an all-encompassing driver facing solution focusing on traveling salesman type routing problems with turn-by-turn directions that will integrate with a hardware barcode scanner and interface with backing API services.



### Senior Design / The Ohio State University / Data Analysis and Smarter

Visualization of Data Build machine learning pipeline(s) using Python and R that can digest input data, prepare it, train classifier, develop the model, and test it.



### Design Studio / The State of Nebraska / Bridging the Communications Gap

Apply the design thinking process to develop technology tools to bridge the communication gap between AccessNebraska administrators and consumers to enable more effective delivery of essential services.



### Design Studio / Together+Clinic / Healthcare Prediction Algorithm

Develop novel machine learning techniques that can be integrated into a healthcare dashboard that will assess current conditions and alert physicians to high risk trends in patient recovery.



### Design Studio / University of Nebraska College of Law / Build Your Character

Develop a mobile application and supporting Web-services creating a social network that allows University of Nebraska College of Law students to track professional skills gained by attending various classes and events.



### Senior Design / UNL Computer Science and Engineering / A Decision Support System for Soil Science

Develop a user interface able to deliver maps, graphs and tabular information about human effects on DSPs that will support graphical queries to remote and local databases, and maintain a local database, which will be populated via an automated text mining system.



### Senior Design / UNL Computer Science and Engineering / Internship Management System

Develop an online system to manage the internship process of collecting and storing data about the internship experience and the organization sponsoring the intern, facilitating and storing documents related to the internship, providing an interface to query statistics related to the internships, collecting electronic signatures, and facilitating secure communication related to internships.



### Senior Design / UNL Animal Science / Web Portal for 3D Medical Data

Build a serving platform and website using HTML5 and PHP to survey and prototype visualization of medical imaging data of an animal (pork and/or beef) to render 3D models and segment the various bones and muscle geometries from the source CT and MRI images.

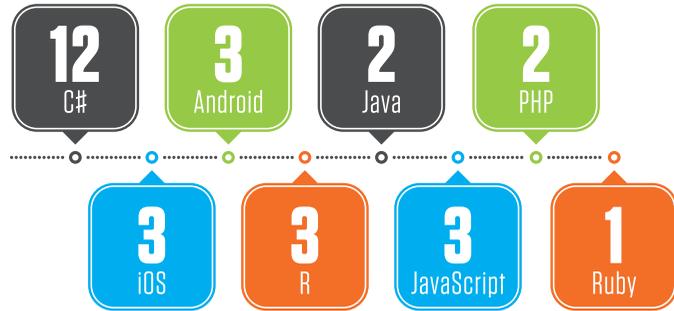


### Design Studio / Westside Community Schools / Student Management System

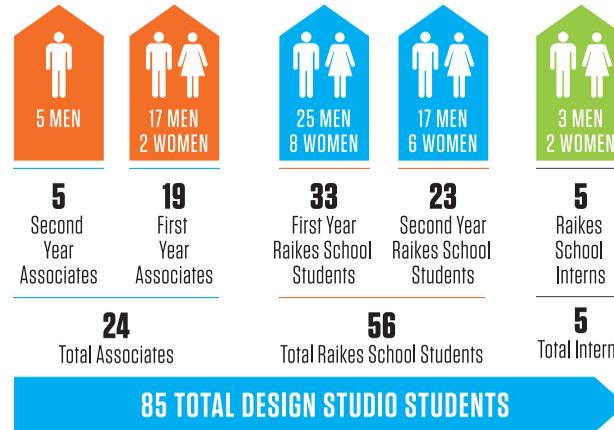
Develop a custom solution to fit the unique modular scheduling system of Westside High School, including an algorithm that is capable of generating a master schedule and a Web interface that encompasses the key aspects of a student information system.

# DESIGN STUDIO STATISTICS

## TECHNOLOGY

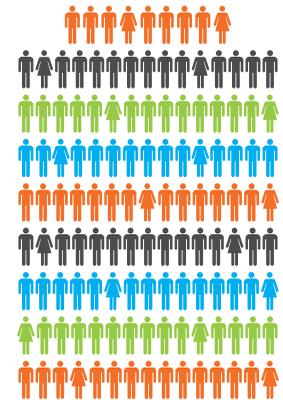


## DESIGN STUDIO



## TEAM DEMOGRAPHICS

129 STUDENTS



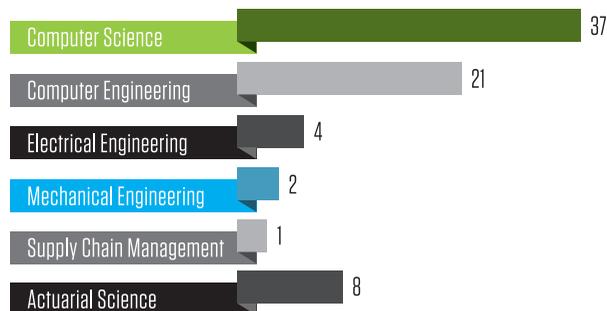
## SENIOR DESIGN



## LOCATION AND SIZE



## MAJORS



## PROJECTS



## DESIGN STUDIO FACULTY & STAFF

**Zach Christensen**  
Design Studio Development Manager

**Ian Cottingham**  
Director of Design Studio

**Doug Durham**  
Adjunct Associate Professor

**Sebastian Elbaum**  
Professor  
Computer Science and Engineering

**Ashu Guru**  
Associate Professor of Practice

**Ying Lu**  
Associate Professor  
Computer Science and Engineering

**Kylie Penner**  
Administrative Coordinator

**Jeremy Suing**  
Design Studio Project Manager

## DESIGN STUDIO COACHES

Name	Project	Company
Mark Antonson	UNL Internship System	Fiserv
Armen Badeer	Microsoft	Hudl
Caitlin Bales	Raikes School	Bulu Box
Paul Bauer	Westside	Ocuvera
Timothy Braun	Spreetail	opendorse
Jordan Degner	Hudl	Hudl
Nick Ebert	BuilderTREND	Spreetail
Marie Gregoire	The Ohio State University	Gregoire Consulting
Jeff Hale	GC Image	Agilx
Jake Heidelk	UNL Soil System	Spreetail
Curtis Johnson	Pen-Link	Don't Panic Labs
Stephanie Mahlin	College of Law	Dvorak & Donovan
John McCarthy	Mutual of Omaha	Nelnet
Chad Michel	NUtech	Beehive Industries
Rob Nickolaus	UNL Animal Science	Arbor Day Foundation
JR Noble	State of NE	University of Nebraska
Suzette Person	Fiserv	University of Nebraska
Heath Roehr	Raikes School	Powderhook
Carl Steffen	Nelnet	Stone Fin Technology
Leon Stewart	MacPractice	Fiserv
Jason Wilkinson	Fiserv	Firespring
Brian Zimmer	Together+Clinic	Don't Panic Labs

## DESIGN STUDIO STUDENTS

Sirous Abak  
Diksha Ahuja  
Abdullah Alhoshan  
Mohammad Almarri  
Alex Bainter  
Mitchell Balschweid  
Jacob Bohac  
Katie Boylen  
Ben Bradley  
Kaitlyn Brady  
Nicholas Brockman  
Tobin Brown  
Phong Bui  
Joseph Burr  
Michael Casper  
Heitor Castro  
Asher Chester  
Ryan Claybrooks  
Travis Collins  
Rachael Dahlman  
Rebecca Dahlman  
Maanas Verma Datla  
Nathan DeMaria  
Joshua Dunne  
Ashley Dyer  
Justin Eberlein  
Ashkon Eckbal  
Ryan Erdman  
Sam Ervin  
Brendan Gallo  
Robert Gamble  
Sydney Goldberg

Wyatt Goodin  
Noah Gould  
Jacob Greenwood  
Amanda Halek  
Trevor Hall  
Nicholas Harloff  
Maggie Haverland  
Ryan Helmoski  
Greg Hofman  
Michael Hollman  
Ian Howell  
Sawyer Jager  
Michael Jensen  
Lance Johnson  
Scott Johnson  
Darren Johnson  
Ethan Johnson  
Rees Klintworth  
Jennifer Kruse  
Spencer Kulwicki  
Cole Kurkowski  
Shannen Lambdin  
Ashlyn Lee  
Jimmy Lee  
Andrew Lee  
Nik Leger  
Yichang Liang  
Adam Lif  
Samuel Lindvall  
Ryan Long  
Patrick Luddy  
Chi Ma

Cameron Maciejewski  
Nathan McKain  
Daniel McManus  
Jay Michels  
Max Miller  
Joel Mohrmann  
Jordan Molacek  
Tracy Moody  
Kody Musick  
Davyen Nelson  
Alan Nelson  
Brett Newkirk  
Hoang Nguyen  
Derek Nordgren  
Matt Ober  
Stephen Pandorf  
Marcus Pasell  
Maddy Petersen  
Trudy Pham  
Trevor Poppen  
Aaron Post  
Paul Quint  
James Reynolds  
Michael Rilett  
Kevin Rock  
Hanna Rogoz  
Timothy Rolling  
Robert Root  
Senad Salja  
Jake Sanchez  
Andrea Schleicher  
Matthew Shattil

David Shriver  
Zachary Sims  
Eric Sinovic  
Trevor Slawnyk  
Brendan Smith  
David Socha  
Brad Steiner  
Tyler Steiner  
Brady Sullivan  
Rachael Sutcliffe  
Nick Swanson  
Bryan Tarantino  
Veronica Telega  
Adam Templeton  
Huy Thai  
Jake Thiem  
Alex Tobias  
Quan Tran  
Tim Volkmer  
Derek Von Seggern  
Shichun Wang  
Austin Wendt  
Treyner Wolfe  
Hao Yang  
Mengmei Ye  
Jiawei Yu  
Caden Zach  
Caleb Zatorski

```
this.course = function(req,
resp, params) {
  var self = this;
  geddy.model.Course.
first(params.id, function(err,
data) {
  self.respond({params:
params, course: data}, {
  format: 'html'
  , template: 'app/
views/academics/course'
  });
});
});
```

[raikes.unl.edu](http://raikes.unl.edu)