

Interdisciplinary Teaching Grant Proposal Application
REVISED: 1/29/15

Gateway course on

Designing Creativity: Innovation Across Disciplines

Target date for enrollment: Fall 2015

Core Faculty:

Professor Bruce Lindsey

Dean & E. Desmond Lee Professor for Community Collaboration
College & Graduate School of Architecture & Urban Design
Sam Fox School of Design and Visual Arts

Professor Robert Mark Morgan

Senior Lecturer in Scenic Design
College of Arts & Sciences
Performing Arts Department

Possible Contributing Faculty (pending approval):

Professor Andrew Knight

Assistant Professor of Organizational Behavior
John M. Olin School of Business

Professor Kurt A. Thoroughman, PhD

Director of Undergraduate Studies, School of Engineering and Applied Science
Associate Professor and Associate Chair for Undergraduate Studies
Department of Biomedical Engineering

Professor Kevin Emerson Collins

Professor of Law
Washington University School of Law

Professor Gay Lorberbaum

Senior Lecturer
Sam Fox School of Design and Visual Arts

Liz Kramer

Assistant Director of Community-Based Design & Sustainability
Sam Fox School of Design and Visual Arts

Professor Monika Weiss

Associate Professor
Sam Fox School of Design and Visual Arts

Professor Sam Chun

Assistant Dean of Executive Programs and Senior Lecturer in Management Practice
John M. Olin School of Business

Dr. Bryce Rutter

Founder of Metaphase Design Group, Inc.

Linda E. Wagner

Senior Lecturer in Human Centered Design & Engineering
Director of Master of Human-Computer Interaction & Design
University of Washington, Seattle

Kevin Botnick

Book Designer

Lecture on 'Subtle Technology' in India

Advocacy for a Proposed Course on

"Designing Creativity: Innovation Across Disciplines"

In the theatre, we seem to always be analyzing our audience in an ongoing effort to provide theatrical offerings that they are more likely to want to see on our stages than not. What can we glean about them that will translate into box office success? What moves them? What will get them to purchase a ticket and see a show?

At least in the academic sense, one could argue that we know virtually everything we need to know about our "audience" at Washington University: our students. After all, we *accepted* them into the university. We know a great deal about the ones we've invited to study here. From test scores to extracurricular activities to student group positions served, we have a mountain of data that tells us who they are and, more than likely, the type of student they will be at Washington University.

We know everything about our applicants that we need to know when it comes to their academic abilities. How well did they do on the SAT, ACT, and IQ tests. We know all that. But what about the rest?

- a. Are they able to collaborate in diverse groups? Are they able to coalesce around a problem, brainstorm ideas, and attempt to collectively solve it?
- b. How do they handle constraints on time, resources, and budgets?
- c. How do they handle adversity? Ambiguity? Uncertainty? Failure?
- d. Do they consider themselves 'creative' and do they apply that creativity to their areas of study, discipline, and interactions?

Take 'failure', for example: Most of our students would shudder at the thought. Why would they need to know how to handle, recover and learn from failure and, even if they did, why would they admit it. It might make them look weak.

Compare that view of failure with the views of failure by some of the most accomplished artists, innovators, and professionals of our age:

"Ninety-nine percent of success is built on failure." – Charles Kettering

"You miss 100 percent of the shots you never take." – Wayne Gretzky

"Do not fear mistakes. There are none." – Miles Davis

"The way to succeed is to double your failure rate." – Thomas Watson, IBM founder

"I have not failed once. I've just found 10,000 ways that didn't work." – Thomas Edison

"Only those who dare to fail greatly can ever achieve greatly." – Robert F. Kennedy

"The greatest artists like Dylan, Picasso, and Newton risked failure. And if we want to be great, we've got to risk it too." – Steve Jobs

The advent and proliferation of standardized testing as a means of quantifying, separating, and assessing students has created an illusion of a clear right answer – always. This line of thinking is valuable as a metric to compare and select students for enrollment, but it also has a tendency to overlook a large portion of who we are and who are students are: our **creative** selves.

To steal an idea (something all artists do) from William Deresiewicz's new book *Excellent Sheep* we must not only provide students with the data, but must make every effort to give them the software to do something **with** that data.

But here is the good news:

ALL students and adults alike already possess creative abilities, but rarely know how to apply them to the challenges and tasks that they face.

That's where training in the arts comes in.

In recent years, innovation and creative thinking have become the catch phrases in the private and public sector of our economy. The days of the CEO as rock star are over. More and more, companies recognize that they need diverse teams of individuals that can build upon ideas and collaborate with others in advancing these ideas. They want "people who can think intuitively, who are imaginative and innovative, who can communicate well, work in teams and are flexible, adaptable, and self-confident" (Ken Robinson).

From companies large and small, start-ups to established corporate entities, businesses have recognized the same thing our own students recognize to just get INTO Washington University: they need to stand out. They need "an edge".

Can the arts help us understand and grasp the uncertainties that inevitably crop up in ANY discipline?

Can training and instruction in creative and collaborative abilities give our students an 'edge'.

The short answer is YES.

In both study and practice, the proposed Gateway course will attempt to empower students to harness their creative and collaborative abilities in the three ways:

1. Defining themselves as creative and identifying their creative strengths and weaknesses.
2. Comprehensive study of and, in some cases, discussion with creatives from all disciplines including artists, innovators, and educators.
3. Teaching students to develop into an innovator that is unafraid to ask stupid questions, propose crazy ideas, and (when necessary) fail.

We must focus on giving students both the freedom and a safe venue to experiment with ideas that they glean from discussion on topics that simultaneously empower them to voice an opinion and debate those opinions with professors and classmates alike. We must offer a class where creativity, stupid questions, and crazy ideas are both encouraged and embraced. Creativity must be considered a valuable goal and one that leads to lateral thinking and innovative ideas.

"The way to get good ideas is to get lots of ideas and throw the bad ones away."
– Linus Pauling

Dean Lindsey and myself are proposing a chemistry class...

...a chemistry class of *ideas*.

Basic Course Structure and Layout:

"A designer has one foot in imagination and one in craft." – Brian Collins

As has been evidenced in practice thus far in both courses, a course on the Design Thinking and the Creative Process cannot exist with the study of various theories on the creative process as its sole component. As a designer does, this proposed course must swing between conceiving of ideas and trying them out in order to engender confidence in the student. I've designed the Ideation course to alternatively swing from the study of some of the great artistic thinkers and designers of our time to the actual collaboration and practice amongst the students enrolled in the course as a means of testing the creative tools and ideas they've just studied. This type of dance with uncertainty of one's ideas is evident in all aspects of scientific thought and no less so in this class.

The Design Thinking and Creative Process class should exist as a special hybrid between the study of theories on the concepts of creativity and collaboration and the actual *practice* of those theories.

Anonymous student reviews of Ideation: Idea Generation (Drama 135) as proof-of-concept:

It was literally exactly the Design class that I was looking for that I just didn't see anywhere else at Wash U

The whole idea behind Ideation was really intriguing. What was so great was the thought that the collaborative aspects of design thinking we learned in class were applicable pretty much everywhere. It's a great mantra, and something that anyone can take away to any profession.

I came into it not knowing what to expect. This class did spark a great deal of interest in the design aspect of technology today. I thoroughly enjoyed the class and I learned information that I would not have learned otherwise.

I am not used to thinking about creativity. I feel most comfortable understanding systems and how things work. This study of creativity was new to me and I enjoyed it.

What aspects contributed most to the learning?

I liked the group projects and the focus on design. I was inspired by the possibilities of design and collaborating in a group.

Collaborative work. I was able to explore who I was creatively through the contexts of others.

Assessment Plan:

Students will be graded on participation in discussions, team-graded by both peers and faculty in LAB environments, one presentation grade (2nd Thursday). A final major portion of the grade will be in the final project (generative lab) presentations. (Dean Lindsey is currently creating a more elaborate description of our Assessment plan for the course). I will resubmit a new proposal once that is created (Rob 1/29)

Budget:

Core faculty planning stipend (summer 2015 - \$5K x 2)	\$10,000
Affiliate faculty/guest lecturers (non Wash U)	\$2400
Graduate T.A.'s (four total)	\$16,000
Technology and Art Supplies:	\$3000
Total Budget:	\$31,400

Bios of Contributing Faculty:

Bruce Lindsey, AIA, was appointed dean of architecture in the Sam Fox School of Design & Visual Arts at Washington University in 2006. His work in architectural education has focused on beginning design education, sustainable design education, and community design education. Lindsey was named one of the Most Admired Educators of 2009 by *DesignIntelligence* magazine. Previously, he served as head of Auburn University's School of Architecture, where he chaired the Master of Landscape Architecture program and was co-director of the Rural Studio. He taught at Carnegie Mellon University for 14 years, serving as associate head of its School of Architecture from 1994-2001. Lindsey's own research has focused on applying digital tools to design and construction practice; publications include *Digital Gehry: Material Resistance Digital Construction* (2001). A member of AIA, he worked with Davis + Gannon Architects to design the Pittsburgh Glass Center; the project received a Design Honor Award from the AIA and was chosen as one of 2005's top 10 green buildings by the AIA's Committee on the Environment. Lindsey currently serves on the governance group for CityArchRiver 2015 Foundation, the non-profit organization coordinating efforts to improve connections between Eero Saarinen's iconic Gateway Arch, downtown St. Louis, and the Mississippi riverfront.

Robert Mark Morgan is in his 4th year of teaching at Washington University in scenic design for the stage and creativity having relocated to St. Louis following 3 years as an Assistant Professor in Scenic Design at the University of Washington in Seattle. He is a member of United Scenic Artists (USA-829).

He has designed professionally in the areas of theatre, museum, and theme park venues. *Avatar the Exhibition* (museum exhibit) originally designed for Experience Music Project in Seattle toured nationwide for 3 years.

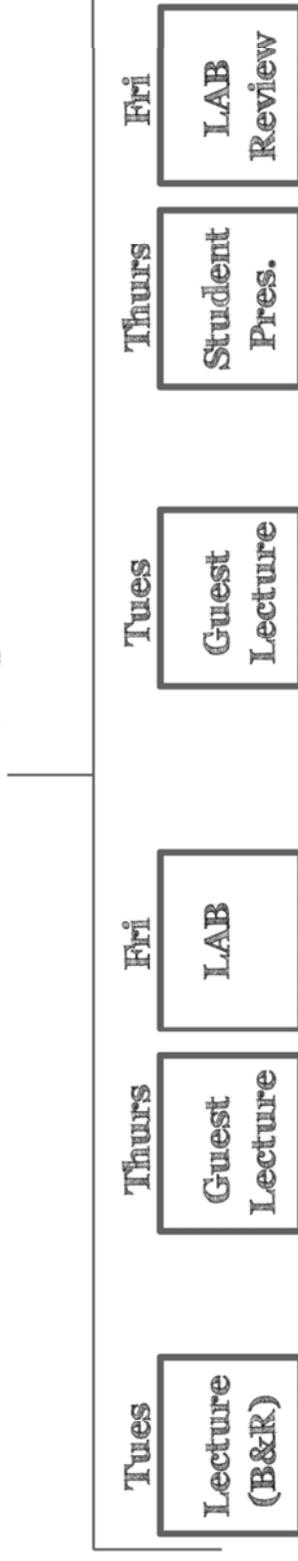
His designs have been seen onstage nationally at the Utah Shakespeare Festival, Asolo Repertory Theatre (Sarasota, FL), Indiana Repertory Theatre, Repertory Theatre of St. Louis, The Old Globe, Cincinnati Playhouse in the Park, Studio Arena (Buffalo, NY), Childrens Theatre Company (Minneapolis, MN), Cleveland Play House, the MUNY - St. Louis, San Jose Repertory Theatre, Denver Center Theatre Company, Alliance Theatre (Atlanta), Barrington Stage, Marin Theatre Company, Magic Theatre, Indiana Repertory Theatre, and American Conservatory Theatre (ACT) in San Francisco. Morgan currently serves on the governance group for CityArchRiver 2015 Foundation, the non-profit organization coordinating efforts to improve connections between Eero Saarinen's iconic Gateway Arch, downtown St. Louis, and the Mississippi riverfront.

www.morgansetdesign.com

Designing Creativity: Innovation Across Disciplines

Basic Course Layout in 1-1/2 hour classes:

**Two weeks per section
for each of 7 topics**



The course will spend two weeks on each topic relating to Creativity and the application of Creative techniques and principles in each discipline covered. A basic two-week section is outlined above with a breakdown of each day as follows:

1st Tuesday: Topic is introduced with a lecture by Professors Bruce Lindsey and Robert Mark Morgan (B&R) including an overview of the topic, introductions of scheduled guests and their area of expertise, and expectations of students as collaborators on the upcoming LAB project.

1st Thursday: First of two guest lectures on the topic by both Wash U faculty and invited outside guests.

1st Friday: LAB sections (4 total with approximately 16-18 students each) led by TA's with instructions and overseen in the early weeks by Professors Lindsey and Morgan.

2nd Tuesday: Second of two guest lectures on the topic by both Wash U faculty and invited outside guests.

2nd Thursday: Teams of 5 students each lead two separate discussion groups (overseen by Professors Lindsey and Morgan) of approx. 35 students each in presenting an overview and analysis of the two guest lectures on the topic making associations in the material presented and encouraging debate on the topic content.

2nd Friday: LAB sections (4 total with approximately 16-18 students each) present the results of their efforts and reflect on the collaborative process with fellow students and takeaway lessons as a result of a de-brief on the process.

Designing Creativity: Innovation Across Disciplines



An overview of the Creative Process in areas dealing with neuroscience, idea generation, and the constant work of the mind during sleep and daydreaming.

Lecture Topics:

1. Brian Wilson article “A Cork in the Ocean”
<http://www.scientificamerican.com/article/brian-wilson-a-cork-on-the-ocean-creativity-special/>
2. Daydreaming and the ‘ah-ha’ idea moment
3. Norman Seeff (photographer) and the Triumph of the Dream
4. Color Psychology and the effect on the viewer
5. Learning How to Look pdf
6. Types of Reasoning (applied to artworks): Inductive, Deductive, Abductive

Potential Guest Speakers (pending availability):

1. Dr. Marcus Raichle – article and potential guest? “The Brain’s Dark Energy”
<http://www.nil.wustl.edu/labs/raichle/>
<http://www.scientificamerican.com/article/the-brains-dark-energy/>
2. Professor Mark Rollins – Art and the Mind-Brain
<https://philosophy.artsci.wustl.edu/people/mark-rollins>
3. Professor Kurt Thoroughman – Human Learning and Motor Control
<http://engineering.wustl.edu/facultybio.aspx?faculty=391>

Lab Project Options:

Analysis of Kemper Art Museum works from the perspective of cognitive neuroscience

Mind map exercise

Looking at Life in Lenses: Ex – a tree thru lens of language, math, dance, religion, science...

Designing Creativity: Innovation Across Disciplines



An overview of the Creative Process in areas dealing with medicine, the body, and the impact of ideas on medical innovation and advancements.

Lecture Topics:

1. Innovation in medicine
<http://www.npr.org/blogs/health/2014/01/03/259436844/saving-babies-lives-starts-with-aquarium-pumps-and-ingenuity>
2. Lateral and 180 Degree Thinking
3. Readings from:
http://books.google.com/books/about/Lateral_Thinking.html?id=OYZQcUPBbqC

Potential Guest Speakers (pending availability):

1. Peter Tuteur – Art in Medicine
<http://pulmonary.wustl.edu/faculty/peter-g-tuteur-m-d.html>
2. Gammon Earhart – Treatment of Parkinsons via Argentine Tango
<https://pt.wustl.edu/AboutUs/pages/facultybio.aspx?FacultyId=14>
3. Joe Klaesner (physical therapy and biomedical engineer)
4. Diana Parra (physical therapy & social work)
<http://prcstl.wustl.edu/AboutUs/Pages/DianaParra.aspx>

Lab Project Options:

Pairs: Create a product pitch using two random words (ex: fish and bicycle)

Lateral Thinking Puzzles such as: <http://www.folj.com/lateral/>

Rube Goldberg (Easy Company Tea) Project?

Remote Association exercises

Designing Creativity: Innovation Across Disciplines



An overview of the Creative Process in areas dealing with the human empathy stage of the Design Thinking process including human-centered design and engineering.

Lecture Topics:

Big Ideas Lead to Greater Good:

- a. Olafur Eliasson on How to do Good Art:
 - i. <http://tmagazine.blogs.nytimes.com/2014/11/13/olafur-eliasson-interview-fondation-louis-vuitton/>
- b. Meld with Creativity in Crisis examples and potential project?:
<http://www.vanderbilt.edu/curbcenter/?project=curricular-innovations>
- c. Boyan Slat on clearing the oceans of plastic:
<http://inhabitat.com/19-year-old-student-develops-ocean-cleanup-array-that-could-remove-7250000-tons-of-plastic-from-the-worlds-oceans/ray-collection/>

Reference to Stanford 'Thinking Matters' class:

<https://undergrad.stanford.edu/programs/thinking-matters/explore/why-thinking-matters>

Potential Guest Speakers (pending availability):

1. Linda E. Wagner – Human Centered Design & Engineering
Director of Master of Human-Computer Interaction & Design
University of Washington, Seattle
<http://www.hcde.washington.edu/wagner>
2. Heather Corcoran – Data Visualization
http://samfoxschool.wustl.edu/portfolios/faculty/heather_corcoran
3. Mark Manary & the Peanut Butter Project:
<https://together.wustl.edu/Pages/News/Peanut-Butter-Project.aspx>
4. Liz Kramer – Community Based Design & Sustainability
<http://samfoxschool.wustl.edu/directory/9897>

Lab Project Options:

Empathy Maps(CC pg 222-223)

Pairs: Wallet Exercise (Rapid Design Thinking) CC pg 240-244

Wicked Problem as a Design Problem

Designing Creativity: Innovation Across Disciplines



An overview of the Creative Process in areas dealing with the prototyping and the use of 3D design in testing ideas and eliminating ambiguity.

Lecture Topics:

1. Constraints in Creative Endeavors:
Embrace the Shake TEDtalk:
http://www.ted.com/talks/phil_hansen_embrace_the_shake?language=en
2. Prototyping as a 3D idea
3. Creative Confidence: Chapter 4
4. Berger text chapter (Umpqua Bank example)
5. Discuss potential guest speakers on prototyping of different systems:
Experiences, Products, Mock-ups

Potential Guest Speakers (pending availability):

1. Bryce Rutter w/ Metaphase as potential guest
Design of medical instruments: <http://www.metaphase.com/>
2. Ken Botnick and Subtle Technology in India
http://samfoxschool.wustl.edu/portfolios/faculty/ken_botnick
3. Elisa Kim – Prototyping systems

Lab Project Options:

Marshmallow Challenge (<http://marshmallowchallenge.com/Welcome.html>)

Design a Pencil project

Team Exercise: Egg Drop or Flying Pen Competition

Designing Creativity: Innovation Across Disciplines



An overview of the importance of failure and testing ideas (mistakes and all) in the Creative Process.

Lecture Topics:

The Value of Failure / Rejection

1. Rejection Breeds Creativity:
 - i. <http://99u.com/articles/7251/how-rejection-breeds-creativity>
2. Be Wrong as Fast As You Can:
 - i. <http://www.nytimes.com/2013/01/06/magazine/be-wrong-as-fast-as-you-can.html?pagewanted=all&r=0>
3. Failure feature in NY Times:
 - i. <http://www.nytimes.com/interactive/2014/11/12/magazine/16innovationsfailures.html?action=click&contentCollection=Magazine&module=RelatedCoverage®ion=Marginalia&pgtype=article>
4. Dyson article on Failure:
 - i. <http://www.wired.com/2011/04/in-praise-of-failure/all/>
5. Failure is a good thing:
<http://www.npr.org/templates/story/story.php?storyId=6196795>

Potential Guest Speakers (pending availability):

1. Holden Thorp? – The importance of learning from experimentation in chemistry
2. Monika Weiss – Capturing moments on Film and learning from failure
http://samfoxschool.wustl.edu/portfolios/faculty/monika_weiss

Lab options:

Failure resume and failure job interview
Learning Agility w Changing Parameters/Variables

Designing Creativity: Innovation Across Disciplines



An overview of the Creative Process in areas dealing with leadership skills and confidence acquired through physical improvisation and creative outlets.

Lecture Topics:

1. Directing Creativity: The Art and Craft of Leadership:
<http://www.highbeam.com/doc/1P3-1638263291.html>
2. Charles Limb: Your Brain on Improv:
http://www.ted.com/talks/charles_limb_your_brain_on_improv?language=en

Potential Guest Speakers (pending availability):

1. Ed Reggi – Improv and use of “Yes...and” to Build on Ideas
<http://www.edreggi.com/>
2. Annamaria Pileggi – Theatre for Social Change
<http://pad.artsci.wustl.edu/annamaria-pileggi>
3. David Marchant – Dance and Contact Improvisation
<http://pad.artsci.wustl.edu/david-marchant>
4. Cecil Slaughter – Slaughter Project
<http://pad.artsci.wustl.edu/cecil-slaughter>

Lab Project Options:

Teams: Shadow Puppet presentations?
Stranger Observation exercise (Tharp pg 50-51)
Create sculptures from objects found in nature (a la Andy Goldsworthy)

Designing Creativity: Innovation Across Disciplines



An overview of the Creative Process in business and its importance in innovation, learning agility, and design-thinking processes.
(note: this is a 3-week section)

Lecture Topics:

1. Learning Agility and Change Management:
<http://www.ccl.org/Leadership/pdf/research/LearningAgility.pdf>
<http://www.forbes.com/sites/kevincashman/2013/04/03/the-five-dimensions-of-learning-agile-leaders/>
2. Design Thinking as taught by David Kelley (IDEO & d-school)

Potential Guest Speakers (pending availability):

1. Sam Chun – Change Management and Improvisation in Business
<http://www.olin.wustl.edu/EN-US/Faculty-Research/Faculty/Pages/Facultydetail.aspx?username=schun>
2. Steve Knight, COCAbiz director:
http://www.cocastl.org/about/staff_detail.cfm?vSection=about&vPage=staff&userID=461&keepThis=true&TB_iframe=true&height=300&width=400
3. Andrew Knight, Olin Business School – Organizational Behavior
<http://apknight.org/>
4. Scott Witthoft (Wash U alum now at Stanford d-school)
<http://dschool.stanford.edu/bio/scott-witthoft/>
Maker Spaces and d School Thinking

Lab Project Options:

Pairs: Wallet Exercise (Rapid Design Thinking) CC pg 240-244

Teams: Re-purpose of the Classroom

Generative Lab – Design-Thinking to solve a problem in society (extra week allowed for group work)