VirginiaTech
Office of the University Registrar (MC 0134)

Request for Special Study

A Special Study course should not be taught more than twice. It then must be submitted through governance for permanent class status. Please attach a syllabus for the proposed course.

General Course Information

Course Number	☐ 0984	☐ 1984	☐ 2984	☐ 3984	☒ 4984	☐ 5984	☐ 6984	☐ 8984
	AT	UG	UG	UG	UG	Grad	Grad	Vet-Med

Department	UNIVERSITY HONORS

Course Title	HONORS DISCOVERY + INNOVATION STUDIO	Anticipated Number of Students	15
Semester and Year	SUMMER I AND II 2017	Meetings Days and Time	TBD	Credit Hours	3

Grade Mode	☐ A/F	☒ P/F	☐ Audit	☐ All

Do you have a room for this course?	☐ No	☒ Yes	Location: BIOCOMPLEXITY INSTITUTE NATIONAL CAPITAL REGION

Justification of Course (Select **ONLY ONE** and attach the course syllabus)

☐ This course is being taught on a "test basis" before being submitted for consideration as a permanent course.

☐ This course meets a non-recurring need that is not addressed by existing courses.

☒ Course proposal has been submitted and is undergoing review by governance (e.g. CAPP, CUC, CUSP) to become a permanent course. Include course number and title as proposed. UH 4504 : TOPICS IN HONORS DISCOVERY AND INNOVATION STUDIOS

☐ Other _____

Comparative Courses

Are there similar courses in the department?	☒ No	☐ Yes
Are there similar courses at Virginia Tech?	☒ No	☐ Yes
Has the course been taught before as a Special Study?	☒ No	☐ Yes
How many times has the course been taught?	
List semester(s) taught in department	

If this course has been taught two or more times, include an explanation of the circumstances that necessitate an exemption to policy.

Required Signatures

	Printed Name	Last 4 of ID #	E-Mail (@vt.edu preferred)	Date
Instructor Signature	GIZEM KORKMAZ	2938	gkorkmaz@vt.edu	02/07/17
Instructor Signature	Aaron Schroeder	9390	aschroed@vt.edu	2/07/17
Dept. Head Signature				
Assoc. Dean Signature	PAUL KNOX	7571	KNOX@vt.edu	1/30/17

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Topics in Honors Discovery and Innovation Studios
UH 4504

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I -- Catalogue Description

Discovery and definition of critical, real-world problems within Virginia Tech's Destination Areas and Strategic Growth Areas. Transdisciplinary collaboration, design thinking, and experimentation. Reflective evaluation of individual and collective problem-solving efforts. Communication of solutions to diverse stakeholders. Junior honors standing. Variable course content. Repeatable for up to 12 credits. (3H, 3C)

Course Number: 4504

ADP TITLE: Topics Honors Dis Inn Studios

II - Learning Objectives

Having successfully completed this course, students will be able to

- discover and define critical, real-world problems within Virginia Tech's Destination Areas and Strategic Growth Areas that need to be addressed;

- collaborate across disciplines and integrate multiple perspectives to address the chosen problem;

- work through multiple iterations of the design process to address the chosen problem;

- work productively with uncertainty, ambiguity, and failure as normal aspects of experimental problem-solving processes;

- reflect on and evaluate the effectiveness of their individual and collective problem-solving processes;

- communicate the results of their problem-solving processes to diverse audiences.

III - Justification

According to the Association of American Colleges and Universities, higher education needs to change to equip learners with the skills and mindsets they will need to address 21st century problems. To this end, universities must help students become –

- comfortable with uncertainty and ambiguity;
- capable of managing unscripted real-world problems that have innumerable causes, are difficult to describe, and do not have one right answer;
- adept problem finders and problem solvers who can harness interdisciplinary perspectives to reframe issues and thus generate non-obvious, truly innovative solutions;
- empathetic agents able to seek and understand the perspectives of diverse, multiple stakeholders;
- bold, imaginative thinkers able to take risks and produce creative work through intention and deliberate practice;
- self-directed lifelong learners and transdisciplinary collaborators who can embrace the value of productive failure as a key part of the learning process.

As a result, centers devoted to innovation have been proliferating at universities nationwide. These centers work from principles of design thinking and problem-based learning – recursive cycles of identifying a problem, framing the problem, ideating, iterating/fast prototyping, user testing, and implementation – to help students come to inhabit the human-centered, hands-on, and experimentation-driven processes needed to discover and creatively solve 21st century problems.

According to the Eberly Center for Teaching Excellence and Educational Innovation at Carnegie Mellon, studio courses allow students to explore, observe, practice, and gain mastery of the procedural skills needed for complex problem-solving through hands-on learning. Problem-based learning gives students maximum ownership over the process of discovery as they pursue questions that cannot be answered by an individual working alone but must instead be considered through multiple and equally valid modes of inquiry, which requires a maximum degree of transdisciplinary teamwork and communication, interdependence, and reflection among the students. Faculty roles in problem-based studios become those of situating a problem within various contexts, modeling expert practices, coaching while students engage in those practices themselves, and fading until the students can work on the problem without assistance.

Virginia Tech's Destination Areas (Adaptive Brain and Behavior, Data Analytics and Decision Sciences, Global Systems Science, Integrated Security, Intelligent Infrastructure for Human-Centered Communities) and Strategic Growth Areas (Creative Technologies and Experiences, Economical and Sustainable Materials, Equity and Social Disparity in the Human Condition, Innovation and Entrepreneurship, Policy) are specifically

conceived as areas of study that can bring students together across disciplinary lines in collaborative, problem-based learning environments. Students need discovery and innovation studios in these areas of inquiry that will challenge and allow them to focus on real problems and thus engage in the purpose-driven, "hands on, minds on" work that is a hallmark of the Virginia Tech undergraduate student experience.

IV - Prerequisites and Corequisites

Junior honors standing.

V - Texts and Special Teaching Aids

Required Texts

American Academy of Arts and Sciences. *Advancing Research In Science and Engineering: Unleashing America's Research & Innovation Enterprise*. American Academy of Arts and Sciences Cambridge, Massachusetts: 2013. 72 pp.

Andrade, Heidi, and Anna Valtcheva. "Promoting Learning and Achievement Through Self-Assessment." *Theory into Practice* 48 (2009): 12-19.

Brown, Tim. *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*. New York: HarperBusiness, 2009. 272 pp.

Domik, Gitta, and Gerhard Fischer. "Transdisciplinary Collaboration and Lifelong Learning: Fostering and Supporting New Learning Opportunities." *Rainbow of Computer Science: Dedicated to Hermann Maurer on the Occasion of His 70th Birthday*. Eds. Cristian S. Calude, Grzegorz Rozenberg, Arto Salomaa. Berlin: Springer 2011. 129-143.

Gudykunst, William B. Ed. *Cross-Cultural and Intercultural Communication*. New York: Sage, 2003. 312 pp.

Kanpur, Manu, and Pee Li Leslie Toh. "Productive Failure: From an Experimental Effect to a Learning Design." *Educational Design Research*. Eds. Treed Plomp and Nienke Nieveen. Netherlands Institute for Curriculum Development: Enschede, 2013. 343-353.

Kolko, John. *Wicked Problems: Problems Worth Solving: A Handbook & A Call to Action*. Austin, TX: Austin Center for Design. 2012. 176 pp.

Virginia Tech. Office of the Executive Vice President and Provost. "Destination Areas." http://provost.vt.edu/destination-areas.html 2 November 2016.

VI — Syllabus

	Percent of Course
Discovering and defining critical problems	20%
Transdisciplinary collaboration	20%
Design thinking and experimental processes	20%
Evaluating problem-solving processes	20%
Communicating solutions	20%
Total	100%

VII - Old (current) Syllabus

N/A

VIII - Core Curriculum guidelines

N/A