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**MEMORANDUM**

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**ATTENTION** Senate  
**FROM** Jeff Derksen,  
Chair of Senate Graduate Studies  
Committee (SGSC)  
**RE:** New Course Proposals

**DATE** June 21, 2018



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**For information:**

Acting under delegated authority at the meeting of June 5, 2018, SGSC approved the following new courses, effective **Spring 2019**:

**Faculty of Applied Sciences**  
School of Engineering Science

- 1) New course: ENSC 813 Deep Learning Systems in Engineering

**Faculty of Communication, Art and Technology**  
School of Interactive Arts and Technology

- 2) New course: IAT 848 Mediated, Virtual and Augmented Reality

School of Communication

- 3) New course: CMNS 893 MA project

MEMORANDUM

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Attention Dr. Jeff Derksen Date April 19, 2018  
Dean, Graduate Studies

From Dr. Mirza Faisal Beg [mfbeg@sfu.ca](mailto:mfbeg@sfu.ca)  
Faculty of Applied Science, Graduate Studies Committee

Re: New ENSC Graduate Course Proposal – ENSC 813 **Mirza Faisal Beg**

Digitally signed by Mirza Faisal Beg  
DN: cn=Mirza Faisal Beg, o=Simon  
Fraser University, ou=Engineering  
Science, email=mfbeg@sfu.ca, c=CA  
Date: 2018.04.19 13:05:32 -07'00'

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The faculty of Applied Sciences Graduate Studies Committee would like to send the attached course proposal for ENSC 813 – Deep Learning Systems in Engineering for consideration by SGSC. These have been approved by FGSC by electronic vote.

I request you to please place these on the agenda for the next SGSC meeting.

Cc: Dr. Greg Mori, Director, School of Computing Science  
Dr. Glenn Chapman, Director, School of Engineering Science  
Dr. Farid Golnaraghi, Director, School of Mechatronic Systems Engineering



SCHOOL OF ENGINEERING SCIENCE

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May 25, 2018.

To the Faculty of Applied Sciences Graduate Studies Committee:

At its meeting of April 13, 2018, the School for Engineering Science approved the following new course:

- ENSC 813 – Deep Learning Systems in Engineering

Please place this proposal on the agenda of the next meeting of the Faculty Graduate Studies Curriculum Committee.

Sincerely,

A handwritten signature in black ink, appearing to read "Paul Ho".

Paul Ho, Ph.D., P.Eng.  
Professor and Graduate Program Chair  
School of Engineering Science  
Simon Fraser University  
e-mail: [enscgpc@sfu.ca](mailto:enscgpc@sfu.ca)

# New Graduate Course Proposal

Course Subject (eg. PSYC) <b>ENSC</b>	Number (eg. 810) <b>813</b>	Units (eg. 4) <b>3</b>
Course title (max. 100 characters) <b>Deep Learning Systems in Engineering</b>		
Short title (for enrollment/transcript - max. 30 characters) <b>Deep Learning Systems</b>		
Course description for SFU Calendar (course descriptions should be brief and should never begin with phrases such as "This course will..." or "The purpose of this course is..." If the grading basis is satisfactory/unsatisfactory include this in the description) Covers machine learning basics, generalization theory, training, validation and testing. Introduces artificial neural networks, feedforward networks, convolutional networks, and types of layers in deep models. Provides overview of hardware architectures for deep learning: architectural and memory calculations; regularization and optimization of deep learning models. Analyzes recurrent and discursive networks. Culminates in a major project focusing on engineering applications of deep learning in signal processing, communications, biomedical engineering, robotics, or other areas.		
Rationale for introduction of this course Many engineering systems are nowadays being designed and built around deep learning models. It is important for engineering students to understand the basics of deep learning, be able to implement and test deep learning models, and understand the challenges around their training and deployment. This course teaches deep learning "as a tool" to be used in various engineering streams.		
Term of initial offering (eg. Fall 2019) <b>Spring 2019</b>	Course delivery (eg. 3 hrs/week for 13 weeks) <b>3hrs/week for 13 weeks</b>	
Frequency of offerings/year <b>once a year</b>	Estimated enrollment per offering <b>30</b>	
Equivalent courses (courses that replicates the content of this course to such an extent that students should not receive credit for both courses) <b>CMPT 880 - Special Topics in Computing Science: Deep Learning (topic ID 4447)</b>		
Prerequisite and/or Corequisite <b>MATH 251 or ENSC 280 or ENSC 380 or permission of instructor</b>		
Criminal record check required? <input type="checkbox"/> Yes <input type="checkbox"/> No if yes is selected, add this as prerequisite		Additional course fees? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Campus where course will be taught <input checked="" type="checkbox"/> Burnaby <input type="checkbox"/> Surrey <input type="checkbox"/> Vancouver <input type="checkbox"/> Great Northern Way <input type="checkbox"/> Off campus		
Course Components * <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Lab <input type="checkbox"/> Independent <input type="checkbox"/> Capstone <input type="checkbox"/> _____		
Grading Basis <input checked="" type="checkbox"/> Letter grades <input type="checkbox"/> Satisfactory/ Unsatisfactory <input type="checkbox"/> In Progress / Complete		
Repeat for credit? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Total repeats allowed? _____	Repeat within a term? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Required course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Final exam required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Capstone course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Combined with a undergrad course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, identify which undergraduate course and the additional course requirements for graduate students:		

\* See important definitions on the curriculum website.

**RESOURCES**

If additional resources are required to offer this course, provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course <b>Ivan Bajic, Jie Liang</b>
Additional faculty members, space, and/or specialized equipment required in order to offer this course None


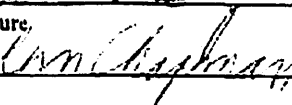
**CONTACT PERSON**

Academic Unit / Program <b>Engineering Science</b>	Name (typically, Graduate Program Chair) <b>Ivan Bajic</b>	Email <b>ibajic@sfu.ca</b>
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**ACADEMIC UNIT APPROVAL**

A course outline must be included.

Non-departmentalized faculties need not sign

Graduate Program Committee <b>Dr Michael Adachi</b>	Signature 	Date <b>April 18/18</b>
Department Chair <b>Glenn Chapman</b>	Signature 	Date <b>Apr 18 '18</b>

**FACULTY APPROVAL**

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content

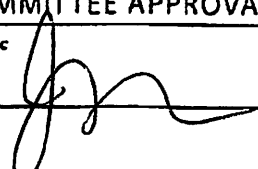
Overlap check done?  YES

This approval indicates that all the necessary course content and overlap concerns have been resolved. The Faculty/Academic Unit commits to providing the necessary resources.

Faculty Graduate Studies Committee <b>Mirza Faisal Beg</b>	<b>Mirza Faisal Beg</b> Digitally signed by Mirza Faisal Beg DN: cn=Mirza Faisal Beg, o=Simon Fraser University, ou=Engineering Science, email=mbeg@sfu.ca, c=CA Date: 2018.04.19 13:05:59 -0700	Date <b>April 19, 2018</b>
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A library review will be conducted. If additional funds are necessary, DGS will contact the academic unit prior to SGSC.

**SENATE GRADUATE STUDIES COMMITTEE APPROVAL**

Senate Graduate Studies Committee <b>Jeff Derksen</b>	Signature 	Date <b>June 21 2018</b>
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**ADMINISTRATIVE SECTION (for DGS office only)**

Library Check: May 22, 18  
 Course Attribute: \_\_\_\_\_  
 Course Attribute Value: \_\_\_\_\_  
 Instruction Mode: \_\_\_\_\_  
 Attendance Type: \_\_\_\_\_

If different from regular units:  
 Academic Progress Units: \_\_\_\_\_  
 Financial Aid Progress Units: \_\_\_\_\_

# ENSC 813 – Deep Learning Systems in Engineering

## Course proposal

### MOTIVATION

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Many engineering systems are nowadays being designed and built around deep learning models. It is important for engineering students to understand the basics of deep learning, be able to implement and test deep learning models, and understand the challenges around their training and deployment. This course teaches deep learning “as a tool” to be used in various engineering systems.

### OBJECTIVES

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After completing this course, the students should:

- Understand key ideas behind deep learning
- Understand the terminology and be able to follow the literature in the field
- Be able to formulate a machine learning problem, implement and test a deep learning model for the problem in the relevant software (currently, the course examples and assignments are based on Tensorflow and Keras)

### PROPOSED CALENDAR ENTRY

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Machine learning basics, generalization theory, training, validation, and testing. Introduction to artificial neural networks, feedforward networks, convolutional networks, types of layers in deep models. Architectural and memory calculations. Regularization and optimization of deep learning models. Recurrent and recursive networks. Overview of hardware architectures for deep learning. The course culminates in a major project focusing on engineering applications of deep learning in signal processing, communications, biomedical engineering, robotics, or other areas.

### PREREQUISITES

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MATH 251, ENSC 280, ENSC 380; or permission of instructor.

### TEXTBOOKS

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- [GBC] I. Goodfellow, Y. Bengio, and A. Courville, *Deep Learning*, MIT Press, 2016. ISBN 0262035618. Book website: <http://www.deeplearningbook.org/>
- [AML] Y. S. Abu-Mostafa, M. Magdon-Ismail, H.-T. Lin, *Learning From Data*, 2012. ISBN 1600490064. Book website: <http://amlbook.com/>

## COURSE TOPICS

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<u>Topic</u>	<u>GBC Chapter</u>	<u>AML Chapter</u>
Machine learning basics	1-5	
Generalization theory, training, and validation		1, 2, 4
Feedforward networks	6	
Convolutional networks	9	
Regularization in deep learning	7	
Optimization of deep learning models	8	
Recurrent and recursive networks	10	
Hardware architectures for deep learning	(instructor-provided material)	
Applications	11-12	

## COURSE PROJECT

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Course projects are performed individually by each student. The students choose their project topics within the first four weeks of the semester, which leaves them nine weeks to work on it. In the past, Kaggle competitions (<https://www.kaggle.com/>) were a popular source of data for the projects. Towards the end of the course, each student makes a brief presentation to the class about their project, methodology, and results. Deliverables include project report, trained model, a few test samples, and a test script.

## GRADING

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25%	Assignments
35%	Midterm exam
40%	Final project



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**MEMORANDUM**

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**ATTENTION** Jeff Derksen, Dean of Graduate Studies **DATE** May 11, 2018  
**FROM** Stuart Poyntz, FCAT Associate Dean & Chair,  
FCAT-Graduate Studies Committee **PAGES** 1  
**RE:** Interactive Arts and Technology – New Graduate Course Proposal  
IAT 848 Mediated, Virtual and Augmented Reality

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On behalf of the Faculty of Communication, Art and Technology, I am forwarding for SGSC's consideration the following New Graduate Course Proposal for the school of Interactive Arts and Technology.

- 1) New Graduate Course Proposal for the school of Interactive Arts and Technology.

IAT 848 “Mediated, Virtual, and Augmented Reality”

While SIAT has been teaching undergraduate courses on XR for many years (e.g., IAT445, IAT343), many graduate courses included VR projects, this course addresses the student need for explicitly addressing VR/AR on a graduate level.

**School of Interactive Art & Technology**

New course: IAT 848 Mediated, Virtual, and Augmented Reality

Term of official offering: Spring 2019

Course Delivery: 2 hour seminar and 2 hour lab for 13 weeks

Prerequisite: IA T 806 and IAT 801 or 802 or 803 or 834 or permission of the instructor

The changes were reviewed and approved on May 7<sup>th</sup>, by the FCAT Graduate Studies committee.

Thank you for your attention to this matter.

Stuart Poyntz  
Associate Dean, FCAT

Chair, FCAT Graduate Studies Committee

cc: Bernhard Riecke, Graduate Program Chair, School for the Contemporary Arts





FACULTY OF COMMUNICATION, ART AND TECHNOLOGY  
School of Interactive Arts + Technology - Director's Office

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## MEMORANDUM

To: Faculty Graduate Studies Committee

From: Bernhard Riecke,  
Chair, Graduate Program, School of Interactive Art & Technology

Date: April 13, 2018

Re: New graduate course proposal: IAT 848 Mediated, Virtual, and Augmented Reality

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The following new course has been approved by the School of Interactive Arts & Technology and is forwarded to the Faculty Graduate Studies Committee for approval. This curriculum item should be effective for Spring 2019. Please include it on the next FGSC agenda.

While SIAT has been teaching undergraduate courses on XR for many years (e.g., IAT445, IAT343), many graduate courses included VR projects, this course addresses the student need for explicitly addressing VR/AR on a graduate level.

### **School of Interactive Art & Technology**

New course: IAT 848 Mediated, Virtual, and Augmented Reality

Term of official offering: Spring 2019

Course Delivery: 2 hour seminar and 2 hour lab for 13 weeks

Prerequisite: IAT 806 and IAT 801 or 802 or 803 or 834 or permission of the instructor

A handwritten signature in cursive script, reading 'Bernhard Riecke', is positioned above a horizontal line.

SIAT Graduate Chair



# New Graduate Course Proposal

Course Subject (eg. PSYC) <b>IAT</b>	Number (eg. 810) <b>848</b>	Units (eg. 4) <b>3</b>
Course title (max. 100 characters) <b>Mediated, Virtual, and Augmented Reality</b>		
Short title (for enrollment/transcript - max. 30 characters) <b>MR/VR/AR</b>		
Course description for SFU Calendar (course descriptions should be brief and should never begin with phrases such as "This course will..." or "The purpose of this course is..." If the grading basis is satisfactory/unsatisfactory include this in the description) <b>See attached</b>		
Rationale for introduction of this course While SIAT has been teaching undergraduate courses on XR for many years (e.g. IAT445. IAT343), and many graduate courses included VR projects, this course addresses the student need for explicitly addressing VR/AR on a graduate level.		
Term of initial offering (eg. Fall 2019) <b>Spring 2019</b>	Course delivery (eg. 3 hrs/week for 13 weeks) <b>2 h seminar &amp; 2 h lab for 13 weeks</b>	
Frequency of offerings/year <b>once a year</b>	Estimated enrollment per offering <b>12</b>	
Equivalent courses (courses that replicates the content of this course to such an extent that students should not receive credit for both courses) <b>N/A</b>		
Prerequisite and/or Corequisite <b>IAT 806 and one of IAT 801 or 802 or 803 or 834 or permission of the instructor</b>		
Criminal record check required? <input type="checkbox"/> Yes <input type="checkbox"/> No if yes is selected, add this as prerequisite		Additional course fees? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Campus where course will be taught <input type="checkbox"/> Burnaby <input checked="" type="checkbox"/> Surrey <input type="checkbox"/> Vancouver <input type="checkbox"/> Great Northern Way <input type="checkbox"/> Off campus		
Course Components * <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Seminar <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Independent <input type="checkbox"/> Capstone <input type="checkbox"/> _____		
Grading Basis <input checked="" type="checkbox"/> Letter grades <input type="checkbox"/> Satisfactory/ Unsatisfactory <input type="checkbox"/> In Progress / Complete		
Repeat for credit? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Total repeats allowed? <b>0</b>	Repeat within a term? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Required course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Final exam required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Capstone course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Combined with a undergrad course? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, identify which undergraduate course and the additional course requirements for graduate students:		

\* See important definitions on the curriculum website.

**RESOURCES**

If additional resources are required to offer this course, provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course Steve DiPaola, Diane Gromala, Kate Hennessey, Bernhard Riecke, Chris Shaw, Wolfgang Stuerzling
Additional faculty members, space, and/or specialized equipment required in order to offer this course Access to the existing VR/AR/MR equipment that SIAT already acquired for teaching undergraduate VR/AR/MR courses

**CONTACT PERSON**

Academic Unit / Program SIAT	Name (typically, Graduate Program Chair) Bernhard Riecke	Email siat-grad-chair@sfu.ca
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**ACADEMIC UNIT APPROVAL**

A course outline must be included.

Non-departmentalized faculties need not sign

Graduate Program Committee Bernhard Riecke	Signature <i>Bernhard Riecke</i>	Date April 13, 2018
Department Chair Thecla Schiphorst	Signature <i>Thecla Schiphorst</i>	Date April 16 2018

**FACULTY APPROVAL**

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content

Overlap check done?  YES

This approval indicates that all the necessary course content and overlap concerns have been resolved. The Faculty/Academic Unit commits to providing the necessary resources.

Faculty Graduate Studies Committee <i>[Signature]</i>	Signature STUART FORNER	Date MAY 14, 2018
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A library review will be conducted. If additional funds are necessary, DGS will contact the academic unit prior to SGSC.

**SENATE GRADUATE STUDIES COMMITTEE APPROVAL**

Senate Graduate Studies Committee Jeff Derksen	Signature <i>[Signature]</i>	Date June 21 2018
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ADMINISTRATIVE SECTION (for DGS office only)

Library Check: May 22, 2018  
 Course Attribute: \_\_\_\_\_  
 Course Attribute Value: \_\_\_\_\_  
 Instruction Mode: \_\_\_\_\_  
 Attendance Type: \_\_\_\_\_

If different from regular units:  
 Academic Progress Units: \_\_\_\_\_  
 Financial Aid Progress Units: \_\_\_\_\_

## **IAT 848 – Mediated, Virtual, and Augmented Reality**

### **Course Description**

**Covers the emerging field of virtual, augmented, mediated, and mixed reality from human-centered, research, technical, and ethical perspectives. Discusses and analyzes design, development, usage, and evaluation of technologies that can be used to mediate human experience and interaction with virtual and real environments including Virtual, Augmented, and Mixed Realities (together known as XR). Investigates how these emerging technologies can affect and augment human perceptual, motor, cognitive and socio-emotional processes. Analyzes human-centered approaches to interaction with 3D real and virtual content, using visual, auditory, haptic, kinesthetic, physiological and neurophysiological modalities. Design guidelines and practices are covered throughout. Considers aesthetic, cultural and ethical implications of mediating reality.**

# **Graduate Course Outline: IAT 848**

## **“Mediated, Virtual, and Augmented Reality”**

### **Calendar Description:**

Covers the emerging field of virtual, augmented, mediated, and mixed reality from human-centered, research, technical, and ethical perspectives. Discusses and analyzes design, development, usage, and evaluation of technologies that can be used to mediate human experience and interaction with virtual and real environments including Virtual, Augmented, and Mixed Realities (together known as XR). Investigates how these emerging technologies can affect and augment human perceptual, motor, cognitive and socio-emotional processes. Analyzes human-centered approaches to interaction with 3D real and virtual content, using visual, auditory, haptic, kinesthetic, physiological and neurophysiological modalities. Design guidelines and practices are covered throughout. Considers aesthetic, cultural and ethical implications of mediating reality.

**Instructor(s):** Steve DiPaola, Diane Gromala, Kate Hennessey, Bernhard Riecke, Chris Shaw, Wolfgang Stuerzlinger, as well as potential guest lecturers and lectures for specific modules.

**Campus:** Surrey

### **Course-level educational goals and desired learning outcomes**

*After successfully completing the course, students should be able to do the following*

- Critically engage with, reflect, discuss, and analyze interactive VR/MR/AR (abbreviated as XR) experiences using and applying relevant scholarly frameworks, theories, and concepts
- Explain, evaluate, discuss current challenges of XR on the technical, ethical, perceptual, and user experience level
- Prepare a XR research proposal and evaluate its feasibility, including a clear motivation and argument for the gap in literature and current state of the art and and argument for its contribution
- Design and create a real-time immersive/XR experience that identifies the context of participants and stakeholders, and takes advantage of the potential of the technology. This includes being able to argue convincingly why it makes sense to use the chosen technology and its potential integration in larger systems.
- Being able to design, run, analyze and present user studies/evaluation/research of XR system/user experience/performance

### **Format**

- 2h seminar & 2h lab

### **Requirements / prerequisite**

- Basic programming skills, as documented through IAT806 or equivalent demonstration or documentation of basic programming competency, or instructor permission.
- Basic research methods skills, as documented through having taking a graduate research methods course (e.g., IAT 801, 802, 803, 834), or instructor permission.

## **Grading**

- **Assignments** 50%
- **Participation** 10%
- **Project(s)** 40%

## **Teaching/learning activities include:**

- **Interactive lecturing and demonstrations, including flipped-classroom components (reading and video tutorials at home incentivized by assignments)**
- **Group discussions (in-class or online chat- and discussing forums)**
- **Regular reading, writing and/or revision/reviewing/feedback assignments**
- **Online and in-class tutorials on various topics ranging from conceptual to technical**
- **Group/individual research projects and presentations**

## **Topics and Overview**

As this field is rapidly evolving topics covered will evolve over time. Current topics include but are not limited to:

- **Introduction into mediated, virtual and augmented realities:**
  - **Overview, Background and Motivation**
  - **Definitions**
  - **History and development**
  - **Different kinds of alternate realities**
  - **Presence, immersion, and reference frames**
- **Overview of technologies**
  - **Hardware, software, interfaces,**
  - **How to move through alternate realities**
  - **How to interact with alternate realities**
- **Designing for human capabilities:**
  - **Perceptual, cognitive, sensorial & physiological modalities**
  - **The human in multiple realities**
- **What can go wrong: Adverse side effects**
  - **From motion sickness to disorientation, strain, usability, and practical challenges**
  - **Design guidelines**
- **Closing the action-perception loop: Interaction and feedback**
  - **The human in the loop**
  - **Input, output, and what happens in between**
  - **Interaction paradigms**
- **How to design alternate realities and MR/VR/AR content**
  - **Principles for designing for alternate realities**
  - **Determining context: e.g., training, learning, exploring, gaming, storytelling/narratives, socially interacting (synchronously & asynchronously), visualizing data & sensemaking**
  - **Iterative design and evaluation**
    - **Co-creating with Participants, Stakeholders, Communities**
    - **Intertwining technology, aesthetics (look & feel) & interaction**
    - **Assessing content & context: accounting for use scenarios in specific contexts; siting: access, sustainability/longitudinal use, fit with institutional, social contexts, needs & expectations; accounting for longitudinal use: upgrades, technical support; evolution of use**

- Innovation, entrepreneurial considerations
- User interface guidelines for alternate realities
- User studies in alternate realities
- Implications, potentials and challenges in designing alternate realities
  - Scientific, health, and technological aspects
  - What should or should we not design? Social, societal, cultural, and ethical perspectives
  - Artistic, aesthetic & narrative perspectives
- Responsibility, ethics, and the future of alternate realities

Current research topics and challenges as well as design guidelines and practices will be covered throughout the course and above topics.

## Readings

- Gaggioli, A., Riva, G., Peters, D., & Calvo, R. A. (2017). Positive Technology, Computing, and Design: Shaping a Future in Which Technology Promotes Psychological Well-Being. In *Emotions and Affect in Human Factors and Human-Computer Interaction* (pp. 477–502). Elsevier.
- Hale, K. S., & Stanney, K. M. (2014). *Handbook of Virtual Environments: Design, Implementation, and Applications* (2 edition). Boca Raton, FL, USA: CRC Press.
- Jerald, J. (2016). *The VR Book: Human-Centered Design for Virtual Reality*. New York, NY, USA: Association for Computing Machinery and Morgan & Claypool.
- LaViola, J. J., Kruijff, E., McMahan, R. P., Bowman, D., & Poupyrev, I. P. (2017). *3D User Interfaces: Theory and Practice* (2nd edition). Addison-Wesley.
- Lombard, M., Biocca, F., Freeman, J., IJsselstein, W. A., & Schaevitz, R. J. (Eds.). (2015). *Immersed in Media: Telepresence Theory, Measurement & Technology* (2015 edition). Springer.
- Riva, G., Bafios, R. M., Botella, C., Mantovani, F., & Gaggioli, A. (2016). Transforming Experience: The Potential of Augmented Reality and Virtual Reality for Enhancing Personal and Clinical Change. *Frontiers in Psychiatry*, 7.
- Schmalstieg, D., & Hollerer, T. (2016). *Augmented Reality: Principles and Practice* (1 edition). Boston: Addison-Wesley Professional.

Additional readings, video tutorials/presentation, lecture notes, and latest research papers will be provided through the course management system (Canvas) and will be updated on an ongoing basis as technology and research evolves.



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MEMORANDUM

<b>ATTENTION</b>	Stuart Poyntz, Chair Faculty of Communication, Art & Technology Undergraduate Curriculum Committee	<b>DATE</b>	7 May 2018
<b>FROM</b>	Kirsten McAllister, Chair School of Communication Graduate Program Committee	<b>RE</b>	Calendar changes re: a change to the MA program, a new course and a course change

At its meeting of 14 March 2018, the School of Communication's Graduate Program Committee approved the following new course, course change and program changes which have been approved by the School of Communication which after receiving FGSC's approval will then be forwarded to the Faculty Graduate Studies Committee for approval.

These curriculum items should be effective for Spring 2019. Please include it on the next FGSC agenda.

The changes are as follows:

CMNS 893 - although a project option has always been offered, this will allow a clear distinction between projects examined like a thesis and those just examined by two readers (which as per the 2015 General Graduate Regulations require the student takes one more course than students whose thesis or project is examined by an external examiner).

~~CMNS 896 - course change (change to the number of credits) to make all the students complete with close to the same number of units~~

~~CMNS MA - To update and revise the calendar format as requested by the Dean of Graduate Studies' Office: removal of the research areas and change to the number of units students who complete non thesis based programs to align with GGR 1.7.3.~~

~~CMNS PhD - To update and revise the calendar format as requested by the Dean of Graduate Studies' Office: removal of the research areas.~~

Would you please place these items on the agenda of the next meeting of the FCAT Graduate Committee?

Thank you,

Kirsten McAllister  
Chair, School of Communication  
Graduate Program Committee



## New Graduate Course Proposal

Course Subject (eg. PSYC) <b>CMNS</b>	Number (eg. 810) <b>893</b>	Units (eg. 4) <b>6</b>
Course title (max. 100 characters) <b>MA project</b>		
Short title (for enrollment/transcript - max. 30 characters) <b>MA project</b>		
Course description for SFU Calendar (course descriptions should be brief and should never begin with phrases such as "This course will..." or "The purpose of this course is..." If the grading basis is satisfactory/unsatisfactory include this in the description) <b>MA project examined by two readers</b>		
Rationale for introduction of this course <b>To permit students to complete an MA (Communication) capstone project examined by two readers per GGR 1.7.2.</b>		
Term of initial offering (eg. Fall 2019) <b>Spring 2019</b>	Course delivery (eg. 3 hrs/week for 13 weeks) <b>capstone</b>	
Frequency of offerings/year <b>3 per year</b>	Estimated enrollment per offering	
Equivalent courses (courses that replicates the content of this course to such an extent that students should not receive credit for both courses) <b>none</b>		
Prerequisite and/or Corequisite <b>CMNS 801 and one of CMNS 800, CMNS 802 or CMNS 804</b>		
Criminal record check required? <input type="checkbox"/> Yes if yes is selected, add this as prerequisite		Additional course fees? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Campus where course will be taught <input checked="" type="checkbox"/> Burnaby <input type="checkbox"/> Surrey <input type="checkbox"/> Vancouver <input type="checkbox"/> Great Northern Way <input type="checkbox"/> Off campus		
Course Components * <input type="checkbox"/> Lecture <input type="checkbox"/> Seminar <input type="checkbox"/> Lab <input type="checkbox"/> Independent <input checked="" type="checkbox"/> Capstone <input type="checkbox"/>		
Grading Basis <input type="checkbox"/> Letter grades <input type="checkbox"/> Satisfactory/ Unsatisfactory <input checked="" type="checkbox"/> In Progress / Complete		
Repeat for credit? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Total repeats allowed? <b>3</b>	Repeat within a term? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Required course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Final exam required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Capstone course? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Combined with a undergrad course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, identify which undergraduate course and the additional course requirements for graduate students:		

\* See important definitions on the curriculum website.

**RESOURCES**

If additional resources are required to offer this course, provide information on the source(s) of those additional resources.

Faculty member(s) who will normally teach this course <b>This course is supervised by the MA student's Senior Supervisor.</b>
Additional faculty members, space, and/or specialized equipment required in order to offer this course

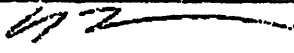

**CONTACT PERSON**

Academic Unit / Program <b>CMNS</b>	Name (typically, Graduate Program Chair) <b>Kirsten McAllister</b>	Email <b>cmngrchr@sfu.ca</b>
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**ACADEMIC UNIT APPROVAL**

A course outline must be included.

Non-departmentalized faculties need not sign

Graduate Program Committee <b>Kirsten McAllister</b>	Signature 	Date <b>May 31, 2018</b>
Department Chair <b>Peter Chow-White</b>	Signature 	Date <b>June 4, 2018</b>

**FACULTY APPROVAL**

The course form and outline must be sent by FGSC to the chairs of each FGSC (fgsc-list@sfu.ca) to check for an overlap in content

Overlap check done?  YES

This approval indicates that all the necessary course content and overlap concerns have been resolved. The Faculty/Academic Unit commits to providing the necessary resources.

Faculty Graduate Studies Committee <b>Stuart Poyntz</b>	Signature 	Date <b>June 4, 2018</b>
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A library review will be conducted. If additional funds are necessary, DGS will contact the academic unit prior to SGSC.

**SENATE GRADUATE STUDIES COMMITTEE APPROVAL**

Senate Graduate Studies Committee <b>Jeff Derksen</b>	Signature 	Date <b>June 21 2018</b>
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**ADMINISTRATIVE SECTION (for DGS office only)**

Library Check: Jun 5  
 Course Attribute: CCAP  
 Course Attribute Value: PROJECT  
 Instruction Mode: \_\_\_\_\_  
 Attendance Type: \_\_\_\_\_

If different from regular units:  
 Academic Progress Units: \_\_\_\_\_  
 Financial Aid Progress Units: \_\_\_\_\_