

DGIN 5201 — Digital Transformation Course Syllabus

Instructor Information

Instructor: Dr. Colin Conrad and Dr. Vlado Keselj
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Lectures: Mon-Wed 16:05–17:25 **Location:** On-line

Important Dates

Please check the course calendar on the web site for more details.

1. Wed Jan 6, 2021: Term starts
2. Mon Jan 11, 2021: Lectures start (synchronized)
3. Fri Jan 15, 2021: Last day to add classes
4. Fri Jan 29, 2021: Last day to drop classes without “W”
5. Fri Feb 5, 2021: Munro Day, University closed
6. Mon Feb 15, 2021: Nova Scotia Heritage Day, University closed
7. Feb 15–19, 2021: Winter Study Break, no classes
8. Mon Mar 8, 2021: Last day to drop classes with “W”
9. Fri Apr 2, 2021: Good Friday, University closed
10. Wed Apr 7, 2021: Friday class schedule applies
11. Thu Apr 8, 2021: Friday class schedule applies
12. Thu Apr 8, 2021: Lectures end, Reports due
13. Apr 10–23, 2021: Exams period

Course Description

Digital technologies are critical to new product development and business transformation. Digital Innovation refers to “the carrying out of new combinations of digital technologies and physical components to produce novel products, processes, and service” (Yoo et al., 2010). The concept of digital innovation entails not only ‘Digitization’ of physical products or traditional services but it also requires firms to revisit their use of corporate digital resources, such as IT (Information Technology) assets and capabilities. This core digital innovation course focuses on the design and management of digital innovation projects for both public sector and private sector organizations. Specifically, this course provides students with knowledge and skills to initiate and execute digital innovation and transformation projects in existing organizations or new start-ups.

Tentative Course Schedule

The tentative weekly course schedule is as follows:

Week 1	<p>What is Digital Transformation?</p> <p>[Colin, Vlado] Course and syllabus introduction; what do we mean by ‘digital transformation’; brief history of computing and internet</p>
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Week 2	Disruptive Innovation and Business Strategy [Colin] The concept of disruptive innovation; Classic disruption of business processes; Disruptive innovations and market types; Technology adoption, the Gartner curve, and adoption cycles; Interactive activity - Beyond COVID-19, what has most disrupted your life?
Week 3	Collecting Feedback with a Canvas [Colin] (Assignment 1 released, 15%) Envisioning business models using a canvas; Identifying business models of prominent disruptive products; How to collect user feedback; Interactive activity - identify popular business models
Week 4	Rapid Prototyping: Scripts, Version Control, Back End [Vlado] Review of Unix-style computing environment, scripting languages (Perl, Python, PHP); understanding and use of version control (git, GitLab, GitHub), HTML and CGI backend
Week 5	Rapid Prototyping: Front End, Database Servers [Vlado] Front-end design, CSS, JavaScript, frameworks; multi-tier architectures, databases
Week 6	Rapid Prototyping: Web Frameworks, Testing, Design Patterns [Vlado] (Assignment 2, 15%; groups are formed) Use of web frameworks; testing; design patterns
Week 7	Entrepreneurship and Interpreneurship [Colin] What makes starting a new venture different from starting a small business?; Venture capital 101; Dilemmas faced by startup founders; Innovating within an organization; Interactive activity - Prototype pitches and group formation
Week 8	Emerging Technology: AI and Deep Learning [Vlado] (Seminar report 5%, Prototype Specification 4%) Interactive activity - Check in 1 Prototype specification
Week 9	Emerging Technology: Robotic Process Automation [Colin] (Seminar report 5%, Prototype 3%) Interactive activity - Check in 2 Prototype
Week 10	Emerging Technology: Blockchain Technology [Vlado] (Seminar report 5%, Alpha test 5%) Interactive activity - Check in 3 Alpha Test
Week 11	Emerging Technology: IoT and Industry 4.0 [Colin] (Seminar report 5%, Beta test 8%) Interactive activity - Beta Test Check-in
Week 12	Final Presentations [Colin, Vlado] (Final Project Demo and Report, 30%) Interactive activity - Final project demos

Evaluation Criteria

30% Assignments

Tentative Assignment break down

15% Assignment 1 (due January 29th)

15% Assignment 2 (due February 26th)

20% Seminar Reports

Prepare three of four brief reports, each worth 6.66%

- AI and Deep Learning (due March 1st)
- Robotic Process Automation (due March 8th)
- Blockchain Technologies (due March 15th)
- IoT and Industry 4.0 (due March 22nd)

50% Course Project

Tentative Course Project grade break down

4% Project Specification (due March 3rd)

3% Prototype (due March 10th)

5% Alpha Test (due March 17th)

8% Beta Test (due March 24th)

10% Project Demo (due March 31st)

15% Project Final Report and Code Submission (due April 7th)

5% Team and Peer Evaluation (due April 7th)

The rest of the syllabus are a reminder of Faculty of Computer Science and Dalhousie policies that are applicable to all CS courses.

Reminder of Some Policies and Other Information Related to CS Courses at the Dalhousie

Responsible Computing Policy

Usage of all computing resources in the Faculty of Computer Science must be within the Dalhousie Acceptable Use Policies (<http://its.dal.ca/policies/>) and the Faculty of Computer Science Responsible Computing Policy. (https://www.cs.dal.ca/downloads/fcs_policy_local.pdf)

Copyright Notice

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Culture of Respect

Every person has a right to respect and safety. We believe inclusiveness is fundamental to education and learning. Misogyny and other disrespectful behaviour in our classrooms, on our campus, on social media, and in our community is unacceptable. As a community, we must stand for equality and hold ourselves to a higher standard.

What we all need to do ¹:

1. **Be Ready to Act:** This starts with promising yourself to speak up to help prevent it from happening again. Whatever it takes, summon your courage to address the issue. Try to approach the issue with open-ended questions like “Why did you say that?” or “How did you develop that belief?”
2. **Identify the Behaviour:** Use reflective listening and avoid labeling, name-calling, or assigning blame to the person. Focus the conversation on the behaviour, not on the person. For example, “The comment you just made sounded racist, is that what you intended?” is a better approach than “You’re a racist if you make comments like that.”
3. **Appeal to Principles:** This can work well if the person is known to you, like a friend, sibling, or co-worker. For example, “I have always thought of you as a fair-minded person, so it shocks me when I hear you say something like that.”
4. **Set Limits:** You cannot control another person’s actions, but you can control what happens in your space. Do not be afraid to ask someone “Please do not tell racist jokes in my presence anymore” or state “This classroom is not a place where I allow homophobia to occur.” After you have set that expectation, make sure you consistently maintain it.
5. **Find or be an Ally:** Seek out like-minded people that support your views, and help support others in their challenges. Leading by example can be a powerful way to inspire others to do the same.
6. **Be Vigilant:** Change can happen slowly, but do not let this deter you. Stay prepared, keep speaking up, and do not let yourself be silenced.

¹Source: Speak Up! ©2005 Southern Poverty Law Center. First Printing. This publication was produced by Teaching Tolerance, a project of the Southern Poverty Law Center. Full “Speak Up” document found at: <http://www.dal.ca/dept/dalrespect.html> Revised by Susan Holmes from a document provided April 2015 by Lyndsay Anderson, Manager, Student Dispute Resolution, Dalhousie University 902.494.4140 lyndsay.anderson@dal.ca www.dal.ca/think.

University Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and the Senate.

<https://academiccalendar.dal.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=69&chapterid=3457&loadusercredits=False>

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

http://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of: a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (NS, NB, PEI, NFLD).

http://www.dal.ca/campus_life/student_services/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/student-life-policies/code-of-student-conduct.html

Diversity and Inclusion — Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness (Strategic Priority 5.2).

<http://www.dal.ca/cultureofrespect.html>

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit the office in the McCain Building (room 3037) or contact the programs at elders@dal.ca or 902-494-6803 (leave a message).

Learning and Support Resources

General Academic Support — Advising

http://www.dal.ca/campus_life/student_services/academic-support/advising.html

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/guidelines/fair-dealing-guidelines.html>

Dalhousie University Library <http://libraries.dal.ca>